XJTLU

2021 POSTGRADUATE RESEARCH SYMPOSIUM

16 December 2021

Xi'an Jiaotong-Liverpool University
西交利物浦大學

XJTLU | GRADUATE SCHOOL

ABOUT XJTLU POSTGRADUATE RESEARCH SYMPOSIUM

The annual XJTLU Postgraduate Research Symposium is to provide a forum for exchanging and discussing research ideas among postgraduate researchers from a wide range of disciplinary areas. Postgraduate research students from universities in China and the UK are warmly welcome to join XJTLU students to showcase their latest research through poster and oral presentations, and receive feedback from academics and fellow students. The symposium aims to foster an inclusive research community among postgraduate student body and research staff.

HOSTED BY

Xi'an Jiaotong-Liverpool University (XJTLU)

SUPPORTED BY

UK-Jiangsu World Class University Consortium

Jiangsu Industrial Technology Research Institute (JITRI)

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江苏省产业技术研究院 JIANGSU INDUSTRIAL TECHNOLOGY RESEARCH INSTITUTE

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INSTITUTION	ABBREVITATION
Beijing University of Chemical Technology	BUCT
Cardiff University	Cardiff
China Foreign Affairs University	CFAU
China University of Mining and Technology	CUMT
Chongqing Technology and Business University	CTBU
East China Normal University	ECNU
Hebei Agricultural University	HEBAU
Heilongjiang University	HLJU
Jilin University	JLU
Lancaster University	Lancaster
Macau University of Science and Technology	M.U.S.T.
Minzu University of China	MUC
Monash University	Monash
Nanjing Normal University	NNU
Nanjing University of Posts and Telecommunications	NJUPT
Shanghai Jiao Tong University	SJTU
Sichuan University	SCU
Soochow University	SUDA
Southeast University	SEU
Sun Yat-sen University	SYSU
University College London	UCL
University of Liverpool	UoL
University of Wales Trinity Saint David	UWTSD
Xi'an Jiaotong Liverpool Univesity	XJTLU
Yangzhou University	YZU
Zhengzhou University	ZZU

ABSTRACTS

001

ACTING TO UNDERSTAND AND UNDERSTANDING TO ACT IN DIGITAL DESIGN PROCESSES

Chitraj BISSOONAUTH (PhD)

SUPERVISORS: Martin Goffriller (XJTLU)
Rosa Urbano Gutierrez (UoL)
Thomas Fischer, Christiane M. Herr (External)

SCHOOL: Design School

This research investigates two modes of operations – acting to understand and understanding to act – in the context of digital design processes. While these activities have previously been discussed in design-related theories, empirical research documenting their interplay in digital design processes remains scarce. To understand the circular causal conversation of these operations, this project employs protocol analysis methods to record designers completing a design task involving geometry rationalisation and 3D modelling.This study sheds light on the interplay and nature of these designerly activities while also introducing a new method to capture these operations, thus extending previous
work in the field.

002

LANDSCAPE TRANSLATIONS: ARCHITECTURE DESIGN STRATEGIES FOR RECOVERING OBSOLETE PRODUCTIVE SPACES IN SHANGHAI, CHINA

Daniela PICO PEREZ (PhD)

SUPERVISORS: Juan Carlos Dall'Asta, Gisela Loehlein (XJTLU)
Soumyen Bandyopadhyay (UoL)

SCHOOL: Design School

Obsolete productive spaces regeneration requires innovative design solutions to face the accelerated transformation of contemporary cities. These places offer the opportunity to represent memory and presence as a remembrance of the past and as generators of new ways of living according to contemporary society's changing and increasing necessities.
This research aims to investigate landscape architecture as a source of knowledge to translate landscape principles into the design process of recovery and regeneration of obsolete productive spaces. Moreover, this research has identified *Indetermination* as a theoretical framework to describe the fluctuating conditions in which landscape discipline operates. Interpreting the principles of *Indeterminate spaces* will structure the research to establish guidelines for the architecture design process.

003 A PARAMETRIC FORM LANGUAGE FOR FIBRE REINFORCED CONCRETE PREFABRICATED FAÇADE ELEMENTS USING 3D PRINTED FORMWORK

Deyan QUAN (PhD)

SUPERVISORS	Davide Lombardi (XJTLU) Rosa Urbano (UoL) Christiane M. Herr (External)
SCHOOL	Design School

This project aims to examine how material functional performance aspects can be integrated into a parametric form language to achieve geometric flexibility for architectural components. It explores a façade form language by hybrid production methods combining fibre reinforced concrete and robotically 3D printed formwork. It develops a façade form language, followed by a series of material experiment cycles to inform the design of the parametric forms which are not achievable with conventional methods. Anticipated outcomes of this project include a parametric form language, physical prototypes, a geometric façade strategy, and a structural performance database of digitally designed prefabricated façade elements.

004 SPACES FOR CREATIVITY: RESEARCH AT THE INTERSECTION OF ARCHITECTURAL DESIGN, ENVIRONMENTAL PSYCHOLOGY, AND HCI

Fatemeh TAHERYSAYAH (PhD)

SUPERVISORS	Claudia Westermann, Hai-Ning Liang (XJTLU) Christina Malathouni (UoL)
SCHOOL	Design School

Embedded in a cross-disciplinary research project, involving researchers from architecture, computer science and psychology, the PhD research aims at developing strategies for the integration of empirical approaches to embodied experience into architectural design processes. The research seeks to advance the discourse on embodied experience in architectural environments from within design research. It will contribute to a human-centered approach to architectural design and the related discourse on embodied experience that has been initiated by architectural phenomenology but so far has been primarily a dialogue between theorists and scientists. The methodology will involve quantitative and qualitative methods to test and evaluate the suitability of recent low-cost consumer technology, i.e., biosensors, eye tracking devices, and bodyworn cameras, to measure human responses to architectural contexts, comparing built environments with virtual environments and physical models as typically employed in architectural design processes.

005 RESEARCH ON PROTECTION STRATEGIES OF EARTHEN CITY SITES IN NORTHWEST CHINA: USING THE CASE OF GAOCHANG CITY

Junfu CHANG (PhD)

SUPERVISORS	Xiaodi Zhou, Wei Chen
UNIVERSITY/ INSTITUTES	Southeast University

Many earthen city sites are preserved in Northwest China and most of them are faced with great challenges in protection. The site of Gaochang (Qocho) City, which located in Turpan, Xinjiang, is a representative case among them. The challenges existing in the protection of Gaochang city sites were studied from two aspects. One is the analysis of current deterioration factors, the other is the evaluation of finished protection projects. Comprehensive strategies are therefore put forward to improve the protection of earthen city sites, which involve historical research, preventive protection, technical protection methods and display requirements.

006 THE ROLE OF PUBLIC SPACES IN SUSTAINABLE TOURISM – A STUDY OF PUBLIC SPACES IN DUBAI

Manju BALA (PhD)

SUPERVISORS	Gisela Loehlein (XJTLU) Abrahems Gareth (UoL)
SCHOOL	Design School

The global travel and tourism industry has implications for economies raising concerns about sustainability making it imperative to plan and utilize high quality public places.

The present research is on Dubai with the Government intensely focused on infrastructure and tourism to boost economy. Despite this fact, UAE currently does not offer a full-time PhD program for architects and spatial designers.

The research examines the sustainable policy initiatives on tourism and explores urban policies on interior and exterior public spaces, government mechanisms, user engagement, perceptions and satisfaction.

The exploratory study has adopted the Mixed Methods approach and place making methods.

007 LARGE-SCALE RAPID ENERGY MODELLING OF EXISTING RESIDENTIAL BUILDINGS IN JIANGSU PROVINCE

Mengfan JIN (PhD)

SUPERVISORS Marco Cimillo, Hyung-Chul Chung (XJTLU)
David Chow (UoL)

SCHOOL Design School

Energy modelling of existing buildings has a number of applications, including energy efficiency and sustainability diagnosis, assessment and certification, retrofit design, development and configuration of advanced control systems, smart city and smart grid applications, building stock simulation to inform policy making [1].
Some of the limitations to its use relate to the current restrictions at the large scale and the inconsistency between the available data and those required for modelling [2].
The key objective of the research is the development of a comprehensive, systematic and reliable methodology for rapid energy modelling, involving the combined use of drones, 3D photo-modelling, thermal imaging and GIS for large-scale applications.

References:
[1] Kavgic M., Mavrogianni A., Mumovic D., Summerfield A., Stevanovic Z., Djurovic-Petrovic M., A review of bottom-up building stock models for energy consumption in the residential sector, Building and Environment, Volume 45, Issue 7, 2010, Pages 1683-1697.
[2] Steven JigeQuan, Qi Li, GodfriedAugenbroe, Jason Brown and Perry Pei-Ju Yang (2015)"Urban Data and Building Energy Modeling: A GIS-based Urban Building Energy Modeling System Using the Urban-EPC Engine",Planning Support Systems and Smart Cities, pp 447-469

008 PRACTICAL APPROACH FOR CULTURAL HERITAGE PROTECTION AND LIVING ENVIRONMENT IMPROVEMENT OF ARCHAEOLOGICAL PARKS: USING THE CASE OF KELE NATIONAL ARCHAEOLOGICAL PARK IN CHINA

Rui XIANG (PhD)

SUPERVISORS Dongqing Han

UNIVERSITY/ INSTITUTES Southeast University

The conditions of rural areas in Southwest China created an urgent need for the development of the Kele Archaeological Park. Based on the varying demands of both the government and local residents, the final design and construction were coordinated and improved in three aspects. The first is the improvement of living environment, the second is the improvement of the overall cohesiveness of the landscape environment and the third is the systematic display of historical and cultural resources. The results of the Kele case provides a practical model for the design and construction of similar archaeological parks in China.

009 RESEARCH ON METHODOLOGIES OF PLACE-MAKING IN HIGH SPEED RAIL AREA IN CHINA

Simon YUE (PhD)

SUPERVISORS Yiping Dong, Cece Alessandro (XJTLU)
Schmiedeknecht Torsten (UoL)

SCHOOL Design School

China is widely recognized as a global leader in both high speed rail technology in quantity of rail usage and expansion with over 37,000 km's of rail in 2020. With the 13th five-year Plan and the further implementation of the eight horizontal and eight vertical rail mandate, China's aims to further integrate the nation geographically and thus economically using HSR technology. Within this territorial expansion, the thesis explores the transformation of the station and how urbanity and architecture has evolved and will evolve through past and current case studies to identify the principles to create successful place-making architecture to contribute to the above mandate.

010 THE REINTEGRATION OF POETIC SPACE: THEORIES AND DESIGN OF THE JIANGNAN GARDENS IN THE QING AND MING DYNASTIES AND THEIR CONTEMPORARY INTERPRETATION

Siqi DENG (PhD)

SUPERVISORS Claudia Westermann, Yiping Dong (XJTLU)
Christina Malathouni (UoL)

SCHOOL Design School

In recent decades, voices of resistance have emerged against the monotony of China's cities that came with rapid modernisation. Within this context, the evocation of a notion of the 'poetic' has become extremely popular among contemporary architects. While its definition has remained vague, the 'poetic' serves as a link between contemporary practice and Chinese traditional conceptions of space. The Jiangnan classical gardens are often mentioned in this context. They are referred to as archetypes of poetic space and as a source of inspiration. This thesis aims to study the degree and nature of the continuity of the conception of poetic space across time.

011

CONTEXTUALIZING INDUSTRIAL HERITAGE REGENERATION IN SHENZHEN: A RELATIONAL PERSPECTIVE ON CULTURAL AND SPATIAL PRODUCTION

Yifei LI (PhD)

SUPERVISORS: Yiping Dong (XJTLU)
Soumyen Bandyopadhyay (UoL)
Teresa Hoskyns (External)

SCHOOL: Design School

In the last decade, vacant historical industrial buildings in China have been increasingly valued and transformed into creative cultural communities. However, many regeneration projects have been problematic in evoking local identities while losing spatial vitality. The research studies the pioneering regeneration of industrial heritage in Shenzhen driven by the grand cultural events. It theorizes upon the concept of distinction and cultural production to case study the pertinent spatial practice, examining the relationship between the industrial structure transformation and urban cultural regeneration in the local context. The role of community operation, creative class, and design interventions would be unfolded as well.

012

CIM-BASED TECHNOLOGY ROADMAP FOR MAINTAINING AND MANAGING CHINESE RURAL TRADITIONAL RESIDENTIAL DWELLINGS

Yuchong QIAN (PhD)

SUPERVISORS: Jiawei Leng

UNIVERSITY/ INSTITUTES: Southeast University

Due to the lack of scientific construction standards and management systems, most of Chinese rural traditional residential dwellings are in poor conditions. City Intelligent Modeling *(CIM)* is a three-dimensional digital city information model constructed by integrating multi-source heterogeneous data based on Building Information Modeling *(BIM)*, Geographic Information System *(GIS)*, Internet of Things *(IoT)*, and other technologies. This report introduces a CIM-based "4M" (Modeling - Monitoring - Mining – Management) technology roadmap to build a dynamic three-dimensional visualized maintenance and management platform, which can maintain the rural traditional residential dwellings with less intervention, high efficiency, and high accuracy.

013

REVERSAL OF CISPLATIN RESISTANCE IN OVARIAN CANCER VIA SOD1-TARGETED RNA INTERFERENCE

Attila Tamás SZÉNÁSI (PhD)

SUPERVISORS: Mu Wang (XJTLU)
Sonia Rocha (UoL)

SCHOOL: XJTLU Wisdom Lake Academy of Pharmacy

Acquired cisplatin resistance poses a major therapeutic barrier for ovarian cancer patients accounting for more than 200,000 deaths annually worldwide. The upregulation of the antioxidant defense system, including the reactive oxygen species neutralizing superoxide-dismutase-1 (SOD1) has been implicated by our group as key protein in the development of cisplatin resistance in ovarian cancer. Prior evidence shows that *in vitro* RNA-interference (RNAi) mediated SOD1 knockdown reverses the cisplatin resistant phenotype of epithelial ovarian cancers. Our preliminary results confirm, that nanoparticle-siRNA mediated SOD1 knockdown renders cisplatin more potent, and the observed cisplatin-sensitive cancer phenotype asserts further *in vivo* studies in the future.

014

TARGETING ALTERED METABOLISM FOR PROSTATE CANCER THERAPY

Chao HE (PhD)

SUPERVISORS: Mu Wang (XJTLU)
Sonia Rocha (UoL)

SCHOOL: XJTLU Wisdom Lake Academy of Pharmacy

Prostate cancer (PCa) affects a substantial number of men, and current therapies are in urgent need of improvement. The dietary intervention of ω-3 polyunsaturated fatty acids (PUFAs) has shown some promises. This project aims to unveil the mechanisms underlying. Our study indicates that PUFAs inhibit the proliferation of PCa cells by mediating mitochondrial dysfunction and triggering ferroptosis. Furthermore, many critical enzymes involved in mitochondrial metabolism exhibited altered post-translational modifications when examined by acetylome and succinylome profiling. Further scrutiny of these candidates may provide deeper insight into metabolism of PUFAs and promising therapeutic strategy for PCa.

015

DYNAMICS OF mRNA m6A METHYLOME INDUCED BY HEPATITIS B VIRUS X PROTEIN AND ITS SIGNIFICANCE FOR THE PATHOGENESIS OF HEPATOCELLULAR CARCINOMA

Enakshi SIVASUDHAN (PhD)

SUPERVISORS: Rong Rong, Zhiliang Lu, Jia Meng (XJTLU)
Neil Blake (UoL)

SCHOOL: School of Science

Cancer causing viruses remain the second most common risk factor for cancer development in humans. Hepatitis B Virus, an oncogenic virus, contributes to over 80% of liver cancer cases. This study investigates the role of Hepatitis B Virus X (HBx), a crucial regulatory protein, in driving carcinogenesis by inducing epigenetic chemical modification, m6A methylation, on an mRNA level. Preliminary HBx gain and loss-of-function cell culture models and RNA sequencing based functional analysis show that HBx alters m6A methylation patterns in liver cancer cells while inducing promising new targets that modulate immune regulation in the tumour microenvironment, aiding in cancer progression. These findings herald immense potential for identifying novel therapeutic targets.

016

BONE MARROW STEM/PROGENITOR CELLS PROMOTE THE FUNCTIONALIZATION OF SEGMENTAL HYBRID TISSUE ENGINEERED TRACHEA IN ORTHOTOPIC TRANSPLANTATION

Fei SUN (PhD)

SUPERVISORS: Hongcan Shi

UNIVERSITY/ INSTITUTES: Yangzhou University/ Medical College

Due to the lack of ideal tracheal grafts, tracheal transplantation has always been a thorny problem waiting to be solved in clinical practice. Here, we have innovated a fully biomimetic tissue engineered trachea, which was hybridized with a vacuum-assisted decellularized trachea and a 3D printed C-type PCL macroporous mesh stent. Subsequently, we seeded mesenchymal stem cells and endothelial progenitor cells on the surface of the grafts, and performed tracheal orthotopic transplantation. The results showed that the grafts were vascularized, epithelialized, and cartilage formed, thereby forming a functionalized tracheal graft to maintain long-term healthy survival of the recipients.

017

LRTCLS: LOW-RANK TENSOR COMPLETION WITH LAPLACIAN SMOOTHING FOR UNVEILING THE ROLE OF N^6-METHYLATION(m^6A) IN DISEASE PATHOGENESIS

Jiani MA (PhD)

SUPERVISORS: Hui Liu

UNIVERSITY/ INSTITUTES: China University of Mining and Technology / School of Information and Control Engineering

Identifying potential N^6-methylation(m^6A)-disease associations contributes to unveiling the molecular mechanisms of diseases at the epi-transcriptome layer. Recent studies have found that m^6A interacts with the post-transcriptional regulations, which may help us further explore various roles m^6A plays in the disease pathways. Existing computational methods mainly focus on predicting whether an m^6A-disease association exists or not, ignoring the divergence of the role m^6A plays in diseases. To distinguish the various roles of m^6A in molecular functions and biosynthetic pathways, we proposed a low-rank tensor completion-based method to address the prediction issue and specify the post-transcriptome machinery in disease pathogenesis.

018

A BAYESIAN-BASED APPROACH FOR BIOMARKER IDENTIFICATION IN HEPATOCELLULAR CARCINOMA

Jing LI (PhD)

SUPERVISORS: Xin Liu, Jia Meng (XJTLU)
Francesco Falciani (UoL)

SCHOOL: XJTLU Wisdom Lake Academy of Pharmacy

We developed a Bayesian-based approach to identify potential biomarkers in Hepatocellular carcinoma (HCC) tumorigenesis. Gene interactions were retrieved from the KEGG pathway database and split into a list displaying gene interaction directions. RNA-seq data from HCC liver tissue and non-tumor tissue were analyzed by topological network and classified using random forest algorithm. The most significant genes of classification were chosen among all those having a high Gini decrease ranking. With this model, we can identify core genes and pathways involved in HCC oncogenesis. Our findings leverage the knowledge of potential tumor biomarkers and will benefit the disease diagnostic and prognosis.

019

TIGECYCLINE IN THE TREATMENT OF VENTILATOR-ASSOCIATED PNEUMONIA DUE TO *STENOTROPHOMONAS MALTOPHILIA*

Lei ZHA (PhD)

SUPERVISORS: Ferdinand Kappes, Elmer V. Villanueva (XJTLU); Neil French (UoL); Boris Tefsen (Ronin Institute)

SCHOOL: School of Science

Tigecycline is a potential alternative to the fluoroquinolone combination trimethoprim–sulfamethoxazole in treating *Stenotrophomonas maltophilia* infections. Clinical evidence regarding the use of tigecycline in *S. maltophilia* infections is scarce. In this study, we assessed the efficacy of tigecycline treating *S. maltophilia* ventilator associated pneumonia (VAP) in comparison with fluoroquinolones. **Results**: The standard dose of tigecycline therapy was associated with a lower clinical and microbiological cure rate in patients with *S. maltophilia* VAP compared with fluoroquinolones. **Conclusions**: We recommend against using the standard dose of tigecycline in treating *S. maltophilia* VAP unless new clinical evidence emerges.

020

CHARACTERISATION OF PLASMA MEMBRANE-ASSOCIATED sAP4

Sancy Mary JOYSON (PhD)

SUPERVISORS: David O'Connor (XJTLU); Tobias Zech (UoL); Sung-Kay Chiu (Shanghai XP Biomed Ltd.)

SCHOOL: School of Science

Transcription factor AP-4 (TFAP4) is involved in several cellular processes and cancer. Among the TFAP4 isoforms, sAP4 localises in the cytoplasm and on the plasma membrane. Therefore, to characterise sAP4, localisation of sAP4 as a cluster on the plasma membrane and co-localisation with the lipid raft marker was observed by microscopy and sucrose density gradient. Furthermore, a change in sAP4 cluster size is observed when the cells are cultured in different serum concentrations. As most of the proteins associated with lipid rafts are involved in cell signalling and migration, sAP4 may have a role in cell-cell communication or cell migration.

021

THE EFFECT OF ATRAZINE ON THE POPULATION DYNAMICS OF *DAPHNIA PULEX* IN THE PRESENCE OF PREDATION RISK CUES

Shanshan QIN (PhD)

SUPERVISORS: Zhou Yang

UNIVERSITY/ INSTITUTES: Nanjing Normal University / School of Life Sciences

Atrazine in the water environment may affect the survival, growth and reproduction of a variety of non-target organisms, which threatens the stability of the population and the sustainability of the ecology. This experiment studied the response and the population dynamics of *Daphnia pulex* to predation cues under the influence of atrazine of different concentrations (0, 0.05, 0.1 and 1 mg L^{-1}). The results showed that the presence of atrazine affected the time to the maximum population density and the fitness of the population, and had a negative impact on the population dynamics in the presence of predation risk cues.

022

WATER QUALITY OF MAJOR INFLOW RIVERS OF TAIHU LAKE AND ITS RELATIONSHIP WITH LAND-USE PATTERN

Shuang LIU (PhD)

SUPERVISORS: Sekar Raju (XJTLU); Alan McCarthy (UoL); Evelien Adriaenssens (Quadram Institute of Bioscience)

SCHOOL: School of Science

Taihu Lake is the third largest freshwater lake in China and among other functions, serves as a drinking water source for surrounding cities. This lake is facing various environmental problems and inflow rivers are believed to contribute to the pollution of Taihu lake. Here, the water quality of the rivers was evaluated by measuring multiple nutrient and microbiological parameters in winter and summer 2020. The data demonstrated that four out of six parameters with guideline values exceeded the acceptable limits. Many inflow rivers were affected by varying degrees of pollution which were correlated with land-use patterns at the sampling locations.

023

N6-METHYLADNOSINE (m6A) BINDING PROTEIN IGF2BP3 REGULATES HOST-VIRAL INTERACTION

Siying LIU (PhD)

SUPERVISORS	Rong Rong (XJTLU) Neil Blake (UoL)
SCHOOL	School of Science

N6-methyladenosine (m6A) modification is the most abundant modification on RNA and widely participate in biological processes. This project aims to define the regulatory role of IGF2BP3, a newly defined m6A recognition protein, during RNA viral infection. Vesicular stomatitis virus (VSV) infection of *Igf2bp3*$^{-/-}$ Raw264.7 cells and *Igf2bp3*$^{-/-}$ mice were used to examine host-virus interaction. Viral replication was significantly enhanced in *Igf2bp3*$^{-/-}$ cells, which was also confirmed by RNA-interfere experiments on VSV-infected immune cells, suggesting a pro-viral function of IGF2BP3. Combined with RNA-seq data analysis, these results suggest IGF2BP3 might play a general pro-viral role through inhibition of host innate immunity.

024

NUTRITIONAL STRATEGIES OF MIXOTROPHIC *OCHROMONAS GLOEOPARA* IN RESPONSE TO pH CHANGES

Xiaoqing XU (PhD)

SUPERVISORS	Zhou Yang
UNIVERSITY/ INSTITUTES	Nanjing Normal University

As one of the important environmental factors in aquatic ecosystem, water pH affects the growth of plankton by changing carbonate balance system, We hypothesized that different pH response may shift mixotrophic organisms towards more heterotrophic nutrition with decreasing pH. The hypothesis was tested in experiments with the mixotrophic *Ochromonas gloeopara*, grown under autotrophic, mixotrophic and heterotrophic conditions. Our results show that with the decrease of pH, the contribution of photosynthesis to mixotrophic growth strongly reduced. These findings support the hypothesis that mixotrophs become more heterotrophic with decreasing pH, which alters their functional role in food webs and the carbon cycle.

025

DEVELOPING A DEEP LEARNING-BASED APPROACH FOR PREDICTION OF DRUG–TARGET INTERACTION

Yang HAO (PhD)

SUPERVISORS	Jia Meng, Xin Liu (XJTLU) Francesco Falciani (UoL)
SCHOOL	School of Science

Deep learning based methods have been extensively explored to fully exploit the local features of both input compound structures and protein sequences to predict their binding affinities. an alternative encoder method that can encode the binding properties of proteins is desirable. We applied the method which contains chemical and structural characteristics of 20 amino acids, including hydrophobicity, solvent accessibility, etc. Designing this encoding method of interactively representing compounds and proteins also allows us to explore the potential key features that influence the connection between small molecules and proteins. This can alleviate another limitation of deep learning models-lack of interpretability.

026

DEVELOPMENT OF NanoBRET- AND NanoBiT- BASED RECEPTOR AND LIGAND BINDING ASSAYS FOR GPR54

Yi SONG (PhD)

SUPERVISORS	Zhiliang Lu, Rong Rong, Jia Meng (XJTLU) David Ferning (UoL)
SCHOOL	School of Science

Kisspeptin is a key neuro-mediator of the mammalian reproductive system, primarily signalling via its cognate receptor GPR54, and plays a role in the suppression of cancer cell metastasis. To understand its binding properties to its receptor, we developed bioluminescence resonance energy transfer-based (NanoBRET) and NanoLuc binary system-based (NanoBiT) assays, which can monitor ligand-receptor interaction between kisspeptin and GPR54 on the cell surface of living cells. The feasibility of two approaches has been verified and several pharmacologic parameters have been defined. Thus, this NanoBRET- and NanoBiT- approaches enabled the real-time binding to be quantified between kisspeptin/GPR54 system at 37°C for the first time.

027

MAINTENANCE OF HOST HEALTH BY BALANCING THE PATHOGENIC AND PROFITABLE FUNCTIONS IN THE GUT MICROBIOME

Yu WANG (PhD)

SUPERVISORS Yunzeng Zhang

UNIVERSITY/ INSTITUTES Yangzhou University / College of Bioscience and Biotechnology

Among the same animal society, certain individuals are found to harbor high proportion of pathogens in the gut microbiome but still maintain healthy, however, how they tolerate or resist the pathogens are still elusive. Here, we profiled the structure and function of the gut microbiome of a healthy captive cervinae society to address this question. Different accumulated proportion of known pathogens (2.33%-39.94%) were identified among the 10 individuals, while the relative abundance of beneficial bacteria such as Lactobacillus and Bifidobacterium was positively correlated with that of pathogens. Same correction patterns between the Virulence-associated and probiotic-associated genes were also observed.

028

FUNCTIONAL CHARACTERIZATION OF A POTENTIAL DRUG TARGET PROTEIN IN MYCOBACTERIA

Ziwen XIE (PhD)

SUPERVISORS Tatsuhiko Kadowaki (XJTLU)
Mal Horsburgh (UoL)
Boris Tefsen (Ronin Institute)
David Ruiz-Carrillo (EMBL)

SCHOOL School of Science

Mycobacterium tuberculosis (Mtb) is one of the most successful human pathogens and multi-drug resistance makes current treatments increasingly difficult. Its essential *Rv0647c* gene was localized in the cell wall, making it a potential drug target. The goal of this study was to characterize the function of *MSMEG_1353*, the homologous of *Rv0647c* in *Mycolicibacterium smegmatis (M.smeg)*, a commonly used model organism. By using CRISPR interference method, a mutant strain with down-regulated *MSMEG_1353* was created, which was subjected to a range of microbiological methods. Results indicate a role of *MSMEG_1353* in colony formation and cell growth.

029

EXPLORING YOUNG CONSUMERS' INTENTION TO PAY FOR SHARED EXPRESS PACKAGING: A MODERATED MEDIATION MODEL

Famei SHEN (Master)

SUPERVISORS Jianghang Chen (XJTLU)

SCHOOL International Business School Suzhou

People's prior experience will affect their current or future decisions. In this article, I investigate whether those with waste sorting experience are more willing to pay for shared express packaging. To examine my hypotheses, I conducted a survey of 251 young consumers from a professional data collection agency in China. The results reveal that young consumers' waste sorting experience is positively related to their willingness to pay for shared express packaging, and that their pro-environmental attitudes mediate this relationship. In addition, perceived social worth moderates the mediating effect of waste sorting experience on willingness to pay for shared express packaging via pro-environmental attitudes. Implications and future research directions are discussed.

030

OIL PRICE SHOCKS AND MACROECONOMICS STABILITY

Guimin YAO (PhD)

SUPERVISORS Syed Abbas, Hao Lan (XJTLU)
Jozef Konings (UoL)

SCHOOL International Business School Suzhou

How oil prices affect the economy has drawn a lot of attention due to the frequent and large fluctuations. We use the structural models to determine the differences of macroeconomics performances between the US and China when oil price swings.More importantly, on account of inflation targeting policy and business cycles, the shock effects are divided into different regimes.Our non-linear results demonstrate that world oil price has a greater impact on inflation in the China than the US. Our results also give suggestions to the policymakers to set up inflation rate target and monetary policy when they faced world oil price shock.

031

EFFECTS OF CONSUMER INVOLVEMENT ON DAIRY PRODUCTS

Han YIN (PhD)

SUPERVISORS: Eddy S. Fang (XJTLU)
Treasa Kearney (UoL)

SCHOOL: International Business School Suzhou

This paper investigates the antecedents and effects of involvement on dairy products. It is conducted on survey data from a sample of the dairy consumer in Shanghai. With the principal component analysis, it has been found that involvement in dairy is a multidimensional construct including four antecedents. Respondents are divided into three consumer segments according to involvement profile, that is, straightforward dairy lover, careless dairy lover and concerned dairy consumer. According to the ANOVA test, the segments differ in terms of involvement consequences (e.g., extensiveness of the decision-making process, impact and trust in information sources, cue utilization and purchase behavior).

032

LONG-RUN DISCOUNT RATES: EVIDENCE FROM UK REPEAT SALES HOUSING

Hang LAI (PhD)

SUPERVISORS: Stanimira Milcheva

UNIVERSITY/ INSTITUTES: University College London / Bartlett School of Sustainable Construction

This paper estimates how households assess future value while considering present cost. We exploit the unique feature in England and Wales that ownership of leaseholds remaining maturity is tradable and investigate the effect of remaining maturity of leaseholds on the price of a property. Conducting traditional hedonic method and augmented repeat sales method, we estimate the discount of price and price appreciation for leaseholds with various maturities relative to extremely long-run leaseholds and deprive the implied discount rates. Households discount future cash flows at various rate and it has declining trend.

033

MORE PROSOCIAL, MORE EPHEMERAL? EXPLORING THE FORMATION OF SOCIAL ENTREPRENEURS' EXIT INTENTION

Jianing DONG (PhD)

SUPERVISORS: Xiao Wang, Xuanwei Cao (XJTLU)
David Higgins (UoL)

SCHOOL: International Business School Suzhou

Why does social entrepreneurship tend to live shortly? A range of studies tried to answer this question, although very few delved into the "inner layer" to unveil the mechanism how social entrepreneurs decide to quit. Based on data, we find that prosocial motivation decreased entrepreneurs' work-related wellbeing, which increased entrepreneurial exit intention. Furthermore, we find that the impact of prosocial motivation on work-related wellbeing largely is stronger for males. Our research contributes to the growing research and our knowledge on social entrepreneurship in terms of individual personality trait and how it impacts social entrepreneur's intention of exiting the social business.

034

A NOVEL GRAPH LEARNING METHOD FOR SMALL AND MEDIUM-SIZED ENTERPRISES' CREDIT RISK ASSESSMENT IN SUPPLY CHAIN FINANCE

Jiaxing WANG (PhD)

SUPERVISORS: Guoquan Liu (XJTLU)
Zhu Yuan (UoL)

SCHOOL: International Business School Suzhou

The recent COVID-19 pandemic has created significant challenges for many companies and their supply chain networks. Small and medium-sized enterprises (SMEs) need supply chain finance(SCF) support greater than ever in such a difficult time. Although credit binding with core enterprises (CEs) can alleviate the anxiety of financial service providers(FSPs) for the data deficiency of SMEs, the interactive relationship between SMEs, which contain more abundant information, can improve the performance of financial risk analysis. In this paper, we propose an innovative graph learning method that combines the relationship of supply chain networks and the interactive relationship between SMEs.

035

POLITICAL CONNECTIONS, ENVIRONMENTAL VIOLATIONS AND PUNISHMENT: EVIDENCE FROM HEAVILY POLLUTING FIRMS IN CHINA

Jingjing WANG (PhD)

SUPERVISORS	Primary: Chris Florackis Second: Xi Fu
UNIVERSITY/ INSTITUTES	University of Liverpool

Using hand-collected data on corporate environmental violations of heavily polluting firms in China over the period of 2012-2015, I examine the relationship between political connections and the probability of environmental punishment. For identification, I exploit a regulatory reform, the enactment of Rule 18 in October 2013, which forced a large number of politically connected independent directors to resign from their positions. Using difference-in-differences specifications, I find that firms with resigned official directors due to Rule 18 experience a significant increase in the likelihood of being punished for environmental-related violations as well as the severity of punishment. The effect of Rule 18 on environmental punishment is more pronounced among firms located in regions with low judiciary efficiency and high levels of corruption, and firms without state ownership.

036

IS LAYOFF A PANACES FOR ORGANIZATIONAL TURNAROUND? THE DARK SIDE OF LAYOFF AND THE MODERATING EFFECT OF PHILANTHROPY AND EMPLOYEE-RELATED CSR

Jingyi WANG (PhD)

SUPERVISORS	Shili Chen (XJTLU) Angelidou Sofia (UoL) Tao Bai (University of Queensland)
SCHOOL	International Business School Suzhou

We investigate how philanthropy and employee-related CSR activities influence the effectiveness of layoff action in firms' turnaround. Extant literature has largely ignored the potential negative impact of layoff action on employee productivity, which in turn may hinder a firm's successful turnaround. This study highlights the potential negative impact of layoff action and proposes employee-related CSR as a strategic resource that can comfort employees remaining in the firm. Therefore, we expect employee-related CSR to positively moderate the relationship between layoff action and turnaround performance. In contrast, philanthropy—a social-oriented CSR activity strengthen the negative effect of layoff action on employee productivity.

037

DOES R&D INTENSITY PROMOTE THE ADOPTION OF CIRCULAR SUPPLY CHAIN MANAGEMENT? EVIDENCE FROM THE EMERGING MARKET OF CHINA

Mengqi JIANG (PhD)

SUPERVISORS	Lujie Chen (XJTLU) Yuanzhu Zhan (UoL)
SCHOOL	International Business School Suzhou

Our study aims to explore the relationship between research and development (R&D) intensity and circular supply chain management (CSCM) adoption of companies in China. Based on the panel data of 310 Chinese listed companies, we confirm the positive effect of R&D intensity on firms' CSCM adoption. We further observe that this positive effect is strengthened when the ratio of state-owned shares or the degree of industry competition is higher. However, overseas operating income does not affect the impact of R&D intensity on CSCM adoption. Our study provides insights into R&D – CSCM adoption relationship in an emerging economy context.

038

THE RELATIONSHIP BETWEEN FINANCIAL INCLUSION, FIRMS' EMPLOYMENT AND PERFORMANCE: EVIDENCE FROM CHINESE MICRO AND SMALL ENTERPRISES

Miao HE (PhD)

SUPERVISORS	Ye Bai, Fan Liu (XJTLU) Michalis P. Stamatogiannis (UoL)
SCHOOL	International Business School Suzhou

This paper will examine the relationship between financial inclusion, firms' employment and performance for Chinese micro and small enterprises (MSEs). I will use a cross region survey to collect the firm-level data. In this paper, I will firstly construct the multidimensional financial inclusion index and use it as my main independent variable. Then, I will test whether MSEs' financial inclusion improves firms' performances through the growth in firms' employment. In addition, I will further investigate whether the returns to financial inclusion are different for MSEs with different entrepreneurs' and enterprises' characteristics. Specifically, I will explore whether financial inclusion has an asymmetric effect on performance if the MSEs or owners are financially excluded at different levels.

039

DYNAMIC EFFICIENCY ASSESSMENT OF TOURISM INDUSTRY IN CHINA FROM A LOW CARBON PERSPECTIVE: A NON-PARAMETRIC APPROACH

Rui TAN (PhD)

SUPERVISORS Linjia Zhang, Yingchan Luo (XJTLU)

SCHOOL International Business School Suzhou

With the industry adjustment and pandemic shock, the tourism industry in China has faced many challenges. Negative externalities generated from tourism activities start to attract some attention in the literature. This research aims to identify the pathway of tourism efficiency evolution from a low carbon perspective. We will first establish an appropriate method to estimate CO_2 emissions related to tourism activities. Then, we will extend the existing DEA model by integrating the dynamic aspects into the internal and external heterogeneity framework. Finally, we will take CO_2 as the undesirable output to evaluate the eco-efficiency of the tourism industry in China.

040

TRADING OF ATTENTION-GRABBING STOCK IN THE CHINESE STOCK MARKET

Ruochen LU (PhD)

SUPERVISORS Qing Ye, Kevin Zhu (XJTLU)
Minjoo Kim (UoL)

SCHOOL International Business School Suzhou

Online searching volume, as one of the most frequently used measures of individual investor attention, has been applied to numerous studies analyzing impact of investor attention on trading performance. Taking advantage of the Chinese online searching volume data provided by Baidu, i.e. Baidu Index(BI), this research aims to test the price pressure hypothesis(Barber and Odean, 2008) in the Chinese stock market. Through the FM regression, we show that investor attention captured by BI predicts negative abnormal return over both short and long horizon. Furthermore, we adopt both portfolio and PVAR methodologies and disclose that individual investors are overall net-buyer of attention-grabbing stocks in the Chinese market while institution-dominated net-selling pressure contributes to the overall market performance.

041

ARE CLIMATE RISKS PRICED IN CHINESE CORPORATE BOND MARKET?

Shichen PAN (Master)

SUPERVISORS Yajun Xiao (XJTLU)

SCHOOL International Business School Suzhou

Climate change has become the most challenging risk, which creates aggregate loses to financial market and economic environment. (Giglio, Kelly and Stroebel, 2020). We examine if and to what extent climate risk is priced in Chinese corporate bond. We find bonds with higher climate risk exposure, proxied by the abnormal temperature betas, earn higher returns. The long-short strategy delivers the positive alpha, which is mainly delivered by the portfolio with high climate risk exposure.

042

EFFECTS OF SPECULATION, SHORT-SALE CONSTRAINTS AND MARKET INTEGRATION ON STOCK PRICE DISPARITY IN SEGMENTED MARKETS: EVIDENCE FROM CHINESE DUAL-LISTED A-H SHARES

Shuang LIANG (PhD)

SUPERVISORS Stephen Gong, Brian Wright (XJTLU)
John Zhang (UoL)

SCHOOL International Business School Suzhou

This study investigates the effects of speculation, short-selling and market integration initiatives on price disparity between A- and H-share issued by the same company during the period 2012-2019. The results support a negative relationship between dividend yield (a proxy for value investing), short interest and A-H premium, and a positive relationship between investors' gambling preference, speculative trading and A-H premium. Further, we also examine the impact of cross-border fund flows on the A-H premium and find the fund flows under the Stock Connect scheme can drive the A-H premium. The results suggest that speculation, short-sale constraints, and market segmentation are important contributing factors to violation of the Law of One Price in the Chinese stock markets.

043

THE INFLUENCE OF CSR DISCLOSURE AND INNOVATION ON DEBT FINANCING, EVIDENCE FROM CHINA

Xin FENG (PhD)

SUPERVISORS	Xudong Ji, Juan Tao (XJTLU) Yang Zhao (UoL)
SCHOOL	International Business School Suzhou

Drawing on stakeholder theory, agency theory, and legitimacy theory, this article examines whether firms' CSR and innovation performance increase access to debt financing for the Chinese listed companies. We find that socially responsible firms exhibit better borrowing ability, supporting the view that CSR facilities firms' access to debt financing. Besides, we also find that there is a positive relationship between patent application and debt financing. Thirdly, the results show that CSR activities positively moderate the relationship between innovation and debt financing. The findings support the view that CSR disclosure can reduce the financial constraints in innovative firms. Our paper suggests that innovative and CSR activities are not just competing forces for financing, and innovative firms can engage in more CSR activities to gain debt financing for supporting research and development.

044

EXPLORING INTEGRATED REPORTING IN CHINA MAINLAND: A MISSION APPROACH

Xinyu ZHAO (PhD)

SUPERVISORS	Mohamed Omran, Shi-Min How (XJTLU) Sardar Ahmad (UoL)
SCHOOL	International Business School Suzhou

The purpose of this study is to evaluate the effectiveness of integrated reporting (IR) in China General Nuclear Power Corporation (CGN), as one of the Chinese companies that pioneered IR, from a mission approach. This empirical research follows the case study method, using semi-structured interviews with CGN's managers, and analyzing reports and other documentation. We find that CGN's IR is motivated by the mission and contributes to its implementation. This study provides an innovative approach to analyze integrated reporting, and the findings provide managers with insight into how IR practice benefits the implication of mission.

045

PATENT AS COLLATERAL: EVIDENCE FROM CHINESE SMEs

Xuan ZHANG (PhD)

SUPERVISORS	Li Xie, Peng Cheng (XJTLU) Vasileios Kallinterakis (UoL)
SCHOOL	International Business School Suzhou

Entrepreneurial activity, especially innovative activity, is crucial to global economic development and long-term productivity growth; but the efficiency of enterprises' innovation is restricted by lacking capital. To improve innovation, firms are actively seeking external finance, particularly debt finance. China has been the main driver of the global growth in patenting activities in recent years. In 2019, China's patent pledge financing amounted to 110.5 billion RMB, a year-on-year increase of 24.8%. Thus, this paper is to investigate whether SMEs' pledged patents and efforts of Chinese government could enhance SMEs' access to external finance.

046

CONSUMER'S RISK PREFERENCE IN AUTONOMOUS VEHICLE ADOPTION: A STATED PREFERENCE EXPERIMENT APPROACH

Ya LIANG (PhD)

SUPERVISORS	Lixian Qian, Yang Lu (XJTLU) Tolga Bektas (UoL)
SCHOOL	International Business School Suzhou

In spite of the increasing attention to the adoption for autonomous vehicles (AVs), limited understanding has been advanced on consumers' risk preference to AVs. This study aims to fill this gap based on following three steps. First, we calibrate risk preference parameters (such as loss aversion) by operationalizing prospect theory. Second, we regress individual risk preference against socioeconomic characteristics. Finally, we conduct state preference experiment on the consumer choice of AVs and employ discrete choice modeling to analyze how risk preference affects consumers' choice. The results of this research will provide significant implications for government policy and business practices.

047

THE MEASURE OF CONFORMING TAX AVOIDANCE

Yang LOU (PhD)

SUPERVISORS Brian Wright (XJTLU)

SCHOOL International Business School Suzhou

The purpose of this paper is to propose a new measure of conforming tax avoidance (TM) and qualify it using real earnings management (EM) and tax-induced earnings management.

Based on financial data from publicly traded corporations in the United States from 1990 to 2020, the panel regression results indicate a negative correlation between ABTDs and total TM, with the residual being considered conforming TM. Second, the regression results indicate that both tax-induced and actual EM are capable of capturing considerable amounts of conforming TM. Subsequently, I demonstrate the validity of the new measure using the DID model.

048

FORECASTING REALIZED VOLATILITY: A HYBRID MODEL INTEGRATING BiLSTM WITH HAR-TYPE MODELS

Yi LUO (PhD)

SUPERVISORS Marwan Izzeldin, Mike Tsionas

UNIVERSITY/ INSTITUTES Lancaster University / Department of Economics

In the last few decades, artificial neural networks have been extensively used as a forecasting method for financial time series in both academia and industry. The major advantage of this approach is the possibility to approximate any linear and nonlinear behaviors without knowing the structure of the data generating process. This makes it suitable for forecasting time series which exhibit long-memory and nonlinear dependencies, like conditional volatility. However, many literatures have found that the quality of features is crucial to the success of the performance of such models. This paper proposes a hybrid methodology that combines both heterogeneous autoregressive (HAR)-type models and deep feedforward neural network (DFN) model as well as bidirectional long short-term memory (BiLSTM) model in predicting realized volatility. The results show that BiLSTM-based hybrid model outperforms all other models in the out-of-sample forecasting. Additionally, both the performance of DFN-based and BiLSTM-based hybrid model beat their single-model counterparts, indicating HAR-type components can be served as effective features in DFN and BiLSTM structure.

049

STUDY ON CREATIVITY MOTIVATION ANALYSIS OF SMEs UNDER THE NEW NORMAL BACKGROUND BASED ON GOVERNMENT, CORPORATION AND EMPLOYEES EVOLUTIONARY GAME AND SIMULATION ANALYSIS

Yi ZHANG (PhD)

SUPERVISORS Ping Liu, Yumei Luo

UNIVERSITY/ INSTITUTES Sichuan University / Business School

Under the new normal background, the technological innovation capability of technological-based enterprises has developed into an important force to promote a country or region economy development. This paper constructs the three-party evolutionary game model including government, SEM and employee, analyzes the key factors that influence the innovational strategic choices of three parties in in the game under different conditions, and simulate this kind of strategic choice through the use of simulation algorithm. The results make it clear that there exists difference between corporation and employee influenced by the willingness of government, and the corporation is more sensitive to the penalty and financial support from government; The cost of technological innovation is a key barrier for corporation and employee to do innovation.

050

CSR SHIFTING IN THE NEW DAY: THE PENETRATION MECHANISM

Yijie CHEN (PhD)

SUPERVISORS Szu-way Shu, Adam Cross (XJTLU)
Sardar Ahmad (UoL)

SCHOOL International Business School Suzhou

Zhu (2019) pointed out the relevant ranking system have announced that CSR progressing has now focused on consumers in Chinese academic context. However, even in English research, empirical knowledge of Chinese consumers concerning CSR is rather limited.
Certified Management System (CMS) is a mechanism that conduct CSR into a sustainable goal for the corporate. CMS is essential for the implementation of CSR into the firm's governance. However, the debating among academia were remain in totally different from one to another. Recent years, based on the Corporate Social Responsibility (CSR) report issued by those Chinese enterprises that their CSR activities include eliminate the poverty. This paper will introduce the background of CSR in the Chinese market. The paper will propose the estimated model through the literature review part. Our research will attempt to demonstrate the impact of CSR-derived CMS on consumer behavior and bring a holistic view of the CSR impact on enterprises' performance.

051 AN EXPLORATORY QUALITATIVE STUDY OF THE PREDICTORS OF CHINESE PROFESSIONAL WOMEN'S WORK-LIFE BALANCE IN MAINLAND CHINA

Ying PAN (PhD)

SUPERVISORS: Jie Li, Yue Xu (XJTLU)
Ming Li (UoL)

SCHOOL: International Business School Suzhou

This study conducted a qualitative study utilizing semi-structured interviews to explore the influencing factors of work-life balance of Chinese professional women. Interviewees were selected with women who have received higher education, possessed professional qualifications, and full-time employees in mainland China (N=20) based on the previous related literature. The findings suggest that the work-life balance of Chinese professional women is influenced by a complex interplay of individual-level factors, familial-level factors, job-level factors and contextual-level factors. This study contributes to the recognition of work and life issues through exploring understandings attributed to work and life domains of professional women in mainland China context.

052 A NEW FOUR-COUNTRY MODEL: THE CHOICE BETWEEN FREE TRADE AGREEMENTS AND MOST-FAVORED NATION TREATMENT

Yuanzhe LI (PhD)

SUPERVISORS: Hao Lan (XJTLU)
Jozef Konings (UoL)

SCHOOL: International Business School Suzhou

This article extends a four-country model to investigate the choice between FTAs and MFN treatment. It shows that trade creation and trade diversion may occur when asymmetric PTAs are formed. This article will examine the responses of different types of countries based on their trade agreement and seek to helping explain the reactions of different countries in the international trade. The model might be used in understanding the realistic policies, such as China's Belt and Road Initiative and China-New Zealand FTA.

053 THE MORE THE BETTER?" THE IMPACT OF QUANTITY AND LOCATION OF SUSTAINABLE PROCESS ON BULLWHIP EFFECT IN A HYBRID CLOSED-LOOP SUPPLY CHAIN

Yuehan YANG (PhD)

SUPERVISORS: Junyi Lin (XJTLU)
Carl Philip T. Hedenstierna (UoL)

SCHOOL: International Business School Suzhou

Many studies have investigated the quantification and control of bullwhip effect into the research of closed-loop supply chain. However, none of these studies focused the impact of location and quantity of sustainable process on the bullwhip effect and performance in a closed-loop supply chain. In this study, we explore the linear dynamic behaviour of a multi-echelon closed-loop supply chain under various scenarios with different quantity and location of sustainable process for the case of step demand and normal distribution (i.i.d.) demand via simulation. And we compare the simulation results of bullwhip effect and inventory variance among all the scenarios.

054 THE IMPACT OF SHADOW BANKING ON LISTED COMMERCIAL BANK PERFORMANCE: EVIDENCE FROM CHINESE WEALTH MANAGEMENT PRODUCTS

Yujia ZHONG (PhD)

SUPERVISORS: Sheng Zhao, Eddy Fang (XJTLU)
Ziyang Zhang (UoL)

SCHOOL: International Business School Suzhou

The rapid rise of shadow-banking activities in China since 2009 has attracted much attention in both academics and practitioners. We investigate a special financial instrument issued by Chinese banks, wealth management products (WMP) to explore its role in the development of China's shadow banking sector. Particularly, a mediation effect model is employed to illustrate the mechanism in which non-standard debt assets (NSDA) serve as a mediator between commercial banks performance and non-principal-guaranteed WMPs of commercial banks in China. We also control the influences of several bank-specific and regulatory determinants. Using a panel data set of 28 listed commercial banks over a period of 8 years (from 2013 to 2020), this study provides a new perspective to interpret the mechanism of the causes and consequences of shadow banking in China, especially the impact of shadow banking on listed Chinese commercial bank performance.

055 EFFECT OF POLICY INSTRUMENTS ON TRADE: A PARTICULAR FOCUS ON CHINA AND THE US NTMS

Yujie SHI (PhD)

SUPERVISORS: Nimesh Salike, Hossam Ismail (XJTLU)
Olga Gorelkina (UoL)

SCHOOL: International Business School Suzhou

This paper investigates the effect of tariff and non- tariff measures on China and the US imports. By using the notion of offer curve, we provide theoretical explanation on negative effects of these trade restrictions, at the same time, the positive effects of NTMs. We then provide empirical analysis by employing bilateral trade data of HS 6-digit product level using Hausmann- Taylor estimation technique. Our results suggest that the impact of tariffs is always negative while the effect of NTMs is ambiguous. Also, the econometric estimation suggests that tariffs are likely to have a larger negative impact than NTMs. These effects are relatively more evident for manufacturing products than for agricultural products. Lastly, NTMs tend to have a positive effect on low sophisticated manufacturing goods for the US.

056 INVESTIGATION FERROCENE DERIVATIVES IN 2D MATERIAL CONTACTED SINGLE MOLECULAR JUNCTION

Chang LIU (PhD)

SUPERVISORS: Li Yang (XJTLU)
Richard Nichols (UoL)

SCHOOL: School of Science

Significant efforts have been made to develop molecules that can transport electrical charges at the nanometer scale. However, challenges for understanding of molecular junctions between electron transport and molecular binding structures, molecule-electrode interface are still unresolved, especially for non-metallic electrodes. In this project, single molecular conductance of ferrocene and its derivatives with Au|Au and Au|graphene were measured using a scanning tunneling microscopy (STM), in particular the current distance I(s) technique. The aim is to see if the rectifier performance of a system based on asymmetric electrode-molecular connection can be made. The electrochemical properties of the molecules of interest were studied by cyclic voltammetry, and the graphene was characterized by STM and Raman. It is found that the conductance of ferrocene's derivatives increases with the number of CC triple bonds, and a higher conductance value is achieved for the Au|graphene system. Our results highlight the importance of using 2D materials like graphene for the next generation devices based on molecular components.

057 OPTIMIZATION OF pH-UNIVERSAL O_2 REDUCTION ELECTROCATALYSIS BY PRECISE CONTROL OVER STRUCTURAL VARIABLES VIA BASIC BATHING

Chuangchuang YANG (PhD)

SUPERVISORS: Lang Xu

UNIVERSITY/ INSTITUTES: China University of Mining and Technology

It is difficult to determine unambiguously structure-function correlations of biomass-based catalysts due to their complex structures. In this research, the innovative basic bathing method was employed to tune precisely the structural variables of N-doped metal-free ORR electrocatalysts derive from wheat straw. The prepared catalyst exhibited outstanding catalytic performance of ORR at pH-universal. The basic bathing method could increase precisely mesopore volume. We also proposed the linear relations between mesopore volumes and limiting current densities. Finally, the synergistic effects of nitrogen species were researched by DFT calculations.

058 CIRCULARLY POLARIZED THERMALLY ACTIVATED DELAYED FLUORESCENCE EMITTERS IN THROUGH-SPACE CHARGE TRANSFER ON ASYMMETRIC SPIRO SKELETON

Shengyi YANG (PhD)

SUPERVISORS: Liangsheng Liao

UNIVERSITY/ INSTITUTES: Soochow University / Institute of Functional Nano & Soft Materials (FUNSOM)

This work describes a strategy to produce circularly polarized thermally activated delayed fluorescence (CP-TADF). A set of two structurally similar organic emitters SFST and SFOT are constructed, whose spiro architectures containing asymmetric donors result in chirality. Upon grafted within the spiro frameworks, the donor and acceptor are fixed proximally in a face-to-face manner. This orientation allows intramolecular through-space charge transfer (TSCT) to occur in both emitters, leading to TADF properties. The donor units in SFST and SFOT have a sulfur and oxygen atom, respectively; such subtle difference has great impacts on their photophysical, chiroptical and electroluminescence (EL) properties.

059 FACILE PREPARED TROPINONE-BASED ENONE DYES WITH VISIBLE LIGHT INDUCED PHOTOTHERMAL LIQUIFICATION AND COLD CRYSTALLIZATION PROPERTIES FOR SAFE, ON-DEMANDED-RELEASED ADHESIVE

Tanlong XUE (PhD)

SUPERVISORS: Jun Nie

UNIVERSITY/ INSTITUTES: Beijing University of Chemical Technology / College of Materials Science and Engineering

In this work, a series of tropinone based enone dyes (TPs) bearing different length of alkoxy group were facile prepared through one spot reaction. TPs present good light absorption ability in blue light region and display extremely low radiation yield. The melting point and crystallization of TPs could be turned by adjusting the length of alkoxy group. Interestingly, some of TPs present cold crystallization property, therefore they could maintain fluidity in low temperature like human body temperature for a period, which provide a safe and long window for the adhesion process. The adhesion strength of TPs toward glass is comparable to that of present low molecular weight adhesives. Under 405 nm irradiation, temperatures of TPs rapidly ascend and TPs readily melt, therefore light triggered adhesion switch were achieved. This work provides a novel kind of dye molecules and its application as adhesive, it may appeal broad interesting in many fields due to its excellent photothermal conversion ability and facile synthesis.

060 TRANSITION METAL COMPLEX FOR HYBRID GRAPHENE MOLECULAR JUNCTIONS

Tingwei GAO (PhD)

SUPERVISORS: Li Yang (XJTLU), Richard Nichols (UoL), Yannick Dappe (CNRS, France)

SCHOOL: School of Science

Molecular electronics have been considered as a promising solution to tackle the physical size limit beyond the conventional electronic devices. Wiring a molecule between two electrodes forms a molecular junction (MJ) and it is enssential to understand the charge transport of MJ in order to utilize the full potential of the molecular devices. Here, the conductance values of transition metal complex $[Fe(pyterpy)_2](PF_6)_2$ under Au/Graphene electrodes have been measured using electrochemistry scanning tunneling microscopy with various potential voltages. The data presented an off-on-off effect in conductance, indicating a new insight of charge transport mechanism.

CORTISOL - NATURE'S ALARMING CLOCK 061

Tong JI (PhD)

SUPERVISORS: Christopher Gwenin (XJTLU), Richard Nichols (UoL)

SCHOOL: School of Science

Recently stress has received widespread attention because of its close relation to health. Consequently, this literature review introduces the response path of stress and the impact of stress on health. It also describes the current stress evaluation methods such as questionnaire testing, physical signals detection, etcetera. The review explains the advantages of choosing cortisol as the stress biomarker and compares the current cortisol samplings technics and methods available.

Among those detection methods, lateral flow immunoassay sensor and electrochemical immunosensor are considered as the most promising research prospects, as they have the potential to achieve a truly Point of Care diagnosis.

ROBUST COAL MATRIX INTENSIFIES ELECTRON/SUBSTRATE INTERACTION OF NICKEL-NITROGEN (Ni-N) ACTIVE SITES FOR EFFICIENT CO_2 ELECTROREDUCTION AT INDUSTRIAL CURRENT DENSITY 062

Weiqi LIU (PhD)

SUPERVISORS: Lang Xu

UNIVERSITY/ INSTITUTES: China University of Mining and Technology

Carbon encapsulating metal composites have been widely employed in electrocatalytic CO_2 reduction. However, the current densities of most samples are relatively low, which hardly satisfy industrial requirements. Herein, we select cost-effective anthracite coal with a naturally robust architecture as the catalyst support. The coal matrix can not only promote electrons from the inside to surface catalytic centres but also capture CO_2 from the outside to active sites, thus intensifying the electron/substrate interaction of Ni-N active sites. The electrocatalyst exhibits an industry-level current density of 223 mA cm^{-2} and a high faradaic efficiency of 97% for CO production.

063

INVESTIGATING A NOVEL MAGNETIC NANOPARTICLE DIRECTED ENZYME PRODRUG THERAPY FOR CANCER

Yihan WANG (PhD)

SUPERVISORS	Christopher Gwenin (XJTLU) Neil Berry (UoL)
SCHOOL	School of Science

Chemotherapy has several adverse effects by targeting fast-dividing cells. To overcome these defects, a new promising treatment, directed enzyme prodrug therapy (DEPT) has been investigated for years, which allows enzymes to be delivered to the tumour site and then activate prodrugs into their cytotoxic forms. Various carriers can be used to direct enzyme. In this project, we focus on magnetic nanoparticles directed enzyme therapy (MNDEPT). This project aims to develop a novel prodrug/enzyme combination for MNDEPT. By investigating the most well-studied Nitroreductase nfnB from E. coli and prodrug CB1954 combination, more prodrug/enzyme combination will be put forward and analyzed.

064

INVESTIGATING CHARGE TRANSPORT OF SELF-ASSEMBLED MONOLAYERS (SAMs) BASED LARGE-AREA JUNCTIONS

Yijia WANG (PhD)

SUPERVISORS	Li Yang (XJTLU) Richard Nichols (Uol)
SCHOOL	School of Science

Molecular junctions have been reduced to the level of single molecules. Single-molecule junctions is the basic unit in molecular electronics, which plays an important role in studying the charge transfer between molecular bridges. However, in practical electronic application, rather than a single molecule, molecules are normally formed through thin layers of materials, allowing electrical charge to cross by a tunneling process. This project proposes to form noncovalent self-assembled monolayers (SAMs) large-area junctions through a eutectic alloy of gallium and indium (EGaln) as a tip and two-dimensional materials as bottom electrode. Asymmetric elements such as asymmetric anchor groups and asymmetric electrodes will be introduced in SAMs junctions to carry out an in-depth experimental and theoretical research on charge transport mechanism. Currently, we have set up and tested the EGaln system based on previous studies. The molecular arrangement of SAMs has been examined using scanning tunneling microscopy (STM). Further work on new molecular designs with different electrodes is ongoing.

065

URBAN ELDERLY'S PERCEPTION AND RECEPTION OF TECHNOLOGY IN SMART ELDERLY CARE

Chenfei QIAN (PhD)

SUPERVISORS	Yu Song, David Goodman (XJTLU) Susan Pickard (UoL)
SCHOOL	School of Humanities and Social Sciences

Smart Elderly Care (SEC)-- using the information technology to effectively provide elderly care services and improve elderly's life quality-- is widely viewed as a solution to the severe elderly care issue. This study uses both qualitative and quantitative methods to analyse data collected from Shanghai, Suzhou and Huzhou to address following questions: what are elderly's demands for smart elderly care technology, and what factors would influence their attitudes toward SEC technology? Findings will enrich scholarly understanding of the dynamic development of technology and elderly care in China.

066

URBANIZATION AND SOCIAL INEQUALITIES IN CONTEMPORARY CHINESE SCIENCE FICTION

Danxue ZHOU (PhD)

SUPERVISORS	Xi Liu, Zheng Chen (XJTLU) Peng Ding (UoL)
SCHOOL	School of Humanities and Social Sciences

Contemporary Chinese science fiction is observed by many scholars to serve as a unique medium for addressing the issue of large-scale urbanization in China. Relevant social phenomena including rural-urban divide and migration, social stratification and polarization are manifested in many contemporary China sci-fi works. By reimagining and reconstituting urban spaces and city life in near or remote future, Chinese SF authors actively engaged with the politics of seeking spacial, developmental and technological justice. It is significant to investigate the representation of Chinese urban development issues from the combined perspectives of literary and sociological studies, and explore the creative encounter between sci-fi realism and urban theories.

067 THE SOCIAL CONSTRUCTION OF COMMUNITY - POWER, IDENTITY AND BELONGING

Kirsty MATTINSON (PhD)

SUPERVISORS	David Goodman (XJTLU) Kathy Burrell (UoL)
SCHOOL	School of Humanities and Social Sciences

Processes of urbanization and internal migration, have radically changed the urban sociology of Chinese cities. Demographic change and physical expansion has resulted in novel communities where populations of rural origin migrant workers live alongside recently "urbanized" locals. Both populations have experienced social and spatial mobility- both groups belong to the subordinate classes and are subject to various forms of symbolic domination. Migrant workers retain their rural hukou; transferring between regions in an attempt to gain upwards economic and social mobility. The resettled population have remained in their natal place but transcended the rural urban divide to become full urban citizens often in possession of considerable economic capital. This study examines community dynamics through the lens of identity and belonging within Suzhou city and, using personal biography, analyzes prospects for social change or social reproduction within new urban space.

068 A STUDY ON INTER-GENERATIONAL MOBILITY OF RE-SETTLERS IN THE THREE GORGES RESERVOIR AREA

Liyao JIN (PhD)

SUPERVISORS	Lixin Zhou
UNIVERSITY/ INSTITUTES	Chongqing Technology and Business University

This research analyzed the realistic foundation of economic and social development in the TGRA, which is closely related to re-setters' development. And with the help of systematical reviews on the existing theoretical basis and researches about resettlement, it constructed the theoretical analysis framework to explore the relations of external forces of resettlement, structural transformation of the development environment and inter-generational mobility. And then by adopting the means of comparative analysis, field investigation and econometric analysis including OLS, Ordered Logistic and Probit, the quantified analysis of the effect of the resettlement on inter-generational mobility of education and occupation was analyzed by analyzing the survey data of Chongqing and Jiangxi and Jiangsu, which including 1168 samples. The impact path and the countermeasure and suggestion are also be explored.

069 FROM RESIDENTS TO NEW CITIZENS: ASPIRATIONS, IDENTITIES AND DECISION-MAKING OF INTERNAL MIGRANTS IN SUZHOU, CHINA

Shiyang CHEN (PhD)

SUPERVISORS	Paul Cheung, Beibei Tang, David Goodman (XJTLU) Susan Pickard (UoL)
SCHOOL	School of Humanities and Social Sciences

This project is based on an initiative of the Chinese state to make 100 million internal migrants into 'new citizens' in cities where they can enjoy equal public services with established residents since 2015. Existent literature largely tended to represent migrants as a uniformly impoverished floating underclass with lives subject to the conditioning of *hukou* system. Interim findings of the project indicate that previous studies have underestimated the autonomy of individual migrants in their responses to internal migration policies. These findings also reveal a diverse range of internal migrant attempts of going beyond arrangements institutionalised by the state in meeting their own ends.

070 ENTRY, ADAPTATION AND RETENTION: LIVING IN GUANGDONG-HONG KONG-MACAO GREATER BAY AREA AMONG HONG KONG MIGRANTS

Xiaomin GUO (PhD)

SUPERVISORS	Xiaohui Zhong
UNIVERSITY/ INSTITUTES	Sun Yat-sen University

There is a new trend of migration from Hong Kong to the mainland cities since the initiation of the national development plan for Guangdong-Hong Kong-Macao Greater Bay Area (GBA) in 2017. Studies on transnational and inter-regional migration focus on South-South and South-North migration, while less attention is given to recent new North-South migration. At the same time, studies on migration in GBA emphasizes the intentions and patterns of migration, especially among young Hong Kong people, while the retention of migrants who have already lived in GBA is largely under-researched. To address this gap, this research examines how middle-aged and senior Hong Kong migrants have managed to stay in Guangdong province, with a focus on housing and living arrangements. The data was drawn upon from in-depth interviews conducted in 2019 with 37 Hong Kong migrants and 5 staff members from formal and informal organisations. We developed a framework that incorporates institutional-level, social-level and individual-level factors to analyse the adaptation patterns of Hong Kong migrants for staying in GBA. We found that a series of cross-border supportive and deregulatory policies have incentivised Hong Kong people to access GBA. However, due to the over-complexity of local policies and a lack of institutionalised support at the grass-root level, Hong Kong migrants had to rely on family and kinship ties, social associations and other informal systems to deal with challenges encountered. As a result, Hong Kong migrants who have a strong informal support network in the mainland are more capable to adapt to lives and retain in GBA, particularly those with better economic resources and past traveling experiences. This research provides novel evidence and informs policymakers about establishing outreach branches in Hong Kong migrant communities for providing information and service support.

071

POWER AND HARMONY: FACE AS A MEAN OF SOCIAL CONTROL IN CHINESE SOCIAL MEDIA

Yi ZENG (PhD)

SUPERVISORS: Pawel Zygadlo (XJTLU)
Angela Becher (UoL)
David S. G. Goodman (University of Sydney)

SCHOOL: School of Humanities and Social Sciences

As the recent scholarship convincingly demonstrated, for centuries face (lian, mianzi) was one of the main factors determining communication, social encounters and social control in China. Despite progressing modernisation of Chinese society, face seems not to lose its contemporary significance. The arrival of social media that has long become a dominant communication method, Chinese' self- representation process and re-mediated social relation (guanxi) that facework roots in were not left intact. This research is then a try to investigate how Chinese social media has adapted face culture towards generating "controlled netizens" by integrating factorial survey with a qualitative analysis on interview data.

072

A STUDY OF *XIU LIN* IN *THE CASUAL RECORDING AT NIGHT* BY HE BANG'E —A MANCHU REWRITING OF *THE PREFECT OF NANKE*

Ying LIANG (PhD)

SUPERVISORS: Loredana Cesarino (XJTLU)

SCHOOL: School of Humanities and Social Sciences

Casual Conversations at Night is a collection of *zhiguai* (tales of the strange) written by He Bang'e (1736-?), a high-born Manchu official in the Qing dynasty (1636-1912). This presentation will discuss its tale *Xiu Lin* as a rewriting of the famous story of *The Prefect of Nanke*. Through comparing *Xiu Lin* with other *Nanke* rewritings and adaptations, it will bring light to He's uniqueness in *zhiguai* writing as both a Confucian scholar and a Manchu official, and it will argue that he re-wrote this tale to justify Manchu emperors' punishment of some Han officials.

073

REPRESENTATION OF ECOLOGICAL ETHICS IN WU MINGYI'S *THE MAN WITH COMPOUNDED EYES* AND HUI HU'S *THE AZURE TRAGEDY*

Yue ZHOU (PhD)

SUPERVISORS: Xi Liu, Songqing Li (XJTLU)
Peng Ding (UoL)

SCHOOL: School of Humanities and Social Sciences

In dealing with the environmental crisis, many contemporary Chinese science fiction writers provide imaginative solutions. Wu Mingyi and Hui Hu focus on marine pollution, such as floating trash dumps and whaling, among all kinds of environmental problems. They call for reflection on excessive consumption, human-induced destruction of nature, and overharvesting by creating an ecological catastrophe. In the lens of ecocriticism and posthumanism, it is argued that these two ecology-themed sci-fi works are a social critique of the ongoing process of modernity and global capitalism in China. This research aims to tease out ecological philosophy specific to China in today's western-dominant literature.

074

THE POLITICAL ECONOMY OF ENERGY TRANSITION AND ULTRA-HIGH VOLTAGE (UHV) TRANSMISSION AND IN CHINA —INDUSTRIAL POLICIES, LOCAL GOVERNANCE, AND TECHNOLOGICAL INNOVATION

Yulong GUO (PhD)

SUPERVISORS: Chun-fung Chen, David S.G. Goodman (XJTLU)
Sarah Clement (UoL)

SCHOOL: School of Humanities and Social Sciences

This thesis aims to explain the role of the state, specifically state-owned enterprises (SOEs), and local governments in China in promoting energy transition by UHV technologies, using the theories of developmental state to against neoliberalism. This thesis argues that energy transition is not only related to environmental protection and sustainable development but more importantly to energy security and developmental rights. Semi-structured interviews mainly in Henan Province will be conducted to explicate the interaction among core stakeholders in UHV systems, including central authorities, local bureaucratic apparatuses, and SOEs. The intended outcome will illustrate the extent to which government intervention could be an efficient measure to facilitate energy transformation and economic development.

075 UNDERSTANDING '17+1': SOURCES, IMPLICATIONS AND THEORETICAL PERSPECTIVES

Zhaosheng SHI (PhD)

SUPERVISORS	Dragan Pavlićević, Ceren Ergenc (XJTLU) Obert Hodzi (UoL)
SCHOOL	School of Humanities and Social Sciences

Among so-called 'China-led' regional multilateral institutions, the '17+1' platform provides a particular interesting case given that it was established without clear rationale for such a regional grouping being there – China and Central and Eastern European countries (CEECs) are very different in all aspects, with little complementarity, and there are great differences amid CEECs themselves. Hence, this study aims to find out the underlying reasons for establishing the '17+1' platform, the mechanism of this modern so-called 'multilateral' cooperation, and its implications for regional and international relations, while also providing a theoretical framework for understanding China-led multilateralism in Europe and beyond.

076 DEEP ENSEMBLE LEARNING-BASED LANDSLIDE SUSCEPTIBILITY ANALYSIS USING REMOTE SENSING DATA

Cheng CHEN (PhD)

SUPERVISORS	Lei Fan, Konstantinos Papadikis (XJTLU) Ryan Judge (UoL)
SCHOOL	Design School

The occurrence of landslides is catastrophic, causing unnecessary property damage, human casualties, etc. Landslide susceptibility mapping (LSM) research attempts to mitigate such hazards by identifying landslide prone areas. In this study, integrated supervised learning algorithms are trained for LSM, including augmented regression trees and random forests, Xgboost, while new CNN-LSTM models are proposed. Based on remote sensing data and rainfall, historical geological exploration data, etc., 15 conditioning factors are extracted from these sources and used in the model. the results show that the proposed new prediction model can achieve better prediction performance with 90.91% precison, 89.10% recall and 90.00% F1-score.

077 A TWO-DIMENSIONAL STUDY ON THE IMPACT OF PORE SPACE CONNECTIVITY ON THE IMMISCIBLE TWO-PHASE FLOW IN A WATER-WET, WATER-OIL SYSTEM UNDER STEADY STATE CONDITIONS

Han ZHANG (PhD)

SUPERVISORS	Konstantinos Papadikis, Stephen J. Shaw (XJTLU) Ming Li (UoL)
SCHOOL	Design School

Immiscible displacements in porous media are unquestionably of great significance in numerous natural and industrial processes. Topological features of the porous medium have been found to exert a strong influence on the hydrodynamic behaviour of single and two-phase flows as they express a measure of pore space and consequently flow path connectivity and availability. The current study investigates the effect of the pore space connectivity, expressed through the Euler characteristic, on the hydrodynamic behaviour of a water-wet, oil-water two-phase system at steady state. Two-dimensional simulations are conducted in artificially generated porous media with constant diameter circular solid grains using a multi-relaxation time lattice-Boltzmann model.

078 DEVELOPING A COMPREHENSIVE 3D POINT CLOUD DATASET FOR CONSTRUCTION PROJECTS

Hong HUANG (PhD)

SUPERVISORS	Cheng Zhang, Yong Yue, Fangyu Guo (XJTLU) Ji Han (UoL)
SCHOOL	Design School

Scan-to-BIM technologies are investigated to extract semantic information from point clouds. Meanwhile, Deep Learning (DL) techniques have been proposed to process 3D point clouds and proved as a promising approach in unmanned vehicle driving. However, due to the little available dataset specified for construction projects, implementing deep learning in Scan-to-BIM applications is limited. Therefore, a point cloud dataset for construction is urgently desired. This project aims to develop a comprehensive 3D point clouds dataset integrating the Red/Green/Blue (RGB), XYZ, intensity, and thermal data collected by using digital cameras, terrestrial laser scanners and infrared cameras.

079

FROM INDUSTRY 4.0 TO CONSTRUCTION 4.0: BARRIERS TO DIGITAL TRANSFORMATION IN AEC INDUSTRY

Kaiyang WANG (PhD)

SUPERVISORS Fangyu Guo, Cheng Zhang, Jianli Hao (XJTLU)
Dirk Schaefer (UoL)

SCHOOL Design School

Digital transformation (DT) has been advocated in the architecture, engineering, and construction (AEC) industry to improve project productivity, quality, and safety, while reducing schedule delays, cost overruns, and environmental impacts. However, the process of DT is still plagued with barriers in the AEC industry. The aim of this study is to identify the critical barriers to DT in the Chinese AEC industry and to analyze the quantified correlation among the critical barriers to DT. Finally, the findings of this study can apprise industry stakeholders of the critical barriers that obstruct the successful DT and develop the means to mitigate them.

080

GROUND DESERT SAND BLENDED CEMENT: A MULTI-SCALE EXPERIMENTAL INVESTIGATION

Mengdi LIU (PhD)

SUPERVISORS Engui Liu, Jun Xia, Jianli Hao (XJTLU)
Liugi Di Sarno (UoL)

SCHOOL Design School

As the most consumed binding material for construction, cement impacts carbon emission and energy consumption. The use of supplementary cementitious materials (SCMs) with cement can decrease the overall environmental impacts of cement production and use. However, the traditional SCMs are less available and sustainable from a worldwide perspective. This research was focused on developing a new SCM of ground desert sand to enhance sustainability. The blended cement was tested in regards to mechanical properties, chemical, and microstructural characterizations. Due to nucleation, dilution, chemical, and pozzolanic reactivities, the ground desert sand enhanced blended cement's early hydration and long-term strength development.

081

DEM SIMULATIONS OF TRIAXIAL BEHAVIOR OF GRANULAR MATERIALS

Minyi ZHU (PhD)

SUPERVISORS Guobin Gong, Jun Xia, Charles Loo (XJTLU)
Xue Zhang (UoL)

SCHOOL Design School

The discrete element method (DEM) appears to be a promising avenue for investigating the triaxial behaviour of granular materials, such as soil and concrete. In current project, a set of properly-calibrated DEM particle flow codes are used in PFC3D to study the behaviour of soil and concrete under complex stress conditions. A series of undrained triaxial tests on loose sand with different pre-shearing histories are conducted in DEM simulations in PFC3D. The pre-shearing history types includes the pre-shearing cycle and pure pre-shearing. The drained tests with different loading paths are also conducted. The macroscopic and microscopic behaviours are investigated.

082

EXPERIMENTAL AND ANALYTICAL INVESTIGATION ON THE BEHAVIOUR OF MASONRY STRENGTHENED WITH THE USE OF TEXTILE REINFORCED MORTARS (TRM'S) SUBJECTED TO ELEVATED TEMPERATURES

Pengliang YANG (PhD)

SUPERVISORS Theofanis Krevaikas, Charles Loo (XJTLU)
Ryan Judge (UoL)

SCHOOL Design School

Textile reinforced mortar (TRM) system is a composite material, containing high strength fibric textile (e.g. basalt, carbon, glass, and Kevlar) and thermo-isolated cementitious matrix. TRM system is widely used in structural strengthening application. As a composite material, TRM system contains several phases, therefore, testing TRM system properties is a system work. In this work TRM composite testing will be introduced. Furthermore, TRM system confined masonry column subjected to elevated temperature test will also be presented.

083 UNLOCKING THE INDIVIDUAL DETERMINANTS OF RENOVATION WORKERS' BEHAVIOUR TOWARDS RENOVATION WASTE

Shiwang YU (PhD)

SUPERVISORS: Jianli Hao, Xiaonan Tang, Fangyu Guo (XJTLU)
Luigi Di Sarno (UoL)

SCHOOL: Design School

The rapid development of urbanization leads to the thriving real estate market for houses and spurs the enormous demand for renovation. Plenty of renovation wastes (RW) generated during renovation activities stimulate severe social and environmental problems. As the direct implementer of renovation work and producer of RW, the renovation workers' behavior towards renovation waste (BtRW) greatly influences the generation of RW on site. A questionnaire study was conducted to investigate the determinants of BtRW. The results of data analysis showed that the renovation workers' BtRW was predicted by knowledge, environmental awareness, the values and the perceived influence of BtRW.

084 COLD-FORMED STEEL JOIST AND CONCRETE SLAB COMPOSITE SYSTEM

Silas OLUWADAHUNSI (PhD)

SUPERVISORS: Charles Loo, Theofanis Krevaikas (XJTLU)
Steve Jones (UoL)

SCHOOL: Design School

The use of open cold-formed steel sections in composite beams has widely been investigated, with different shear transfer methods. In this project, a rectangular hollow section (RHS), a closed section, is being investigated for suitability. So far, 12 push-out specimens comprising Z-tabs and stiffened angle connectors (SAC) have been tested. Test results showed that SAC provided superior shear capacity, and the failure mode was weld fracture, while Z-tab specimens failed by a combination of connector fracture or shearing off and concrete crushing. Only Z-tab connectors showed ductile behaviour with characteristic slip capacity equal to or greater than 6 mm.

085 EMBODIED CARBON EMISSIONS EVALUATION AND REDUCTION FOR A BUILDING REFURBISHMENT PROJECT OF CHINA

Wenting MA (PhD)

SUPERVISORS: Jianli Hao, Cheng Zhang, Fangyu Guo (XJTLU)
Luigi Di Sarno (UoL)

SCHOOL: Design School

Building refurbishment are promoted by the Chinese government to prevent large demolition and rebuilt in building sector. In the context of carbon neutrality, building refurbishment projects are required to reduce the carbon emissions. Current studies focused on reducing the operational carbon emissions of building refurbishment, while embodied carbon emissions are neglected. In order to fill this research gap, this study aims to evaluate and reduce the embodied carbon emissions of the building refurbishment projects. Embodied carbon emissions of materials and waste are evaluated for an educational building refurbishment project in Suzhou, China as a case study.

086 SUSTAINABLE STORMWATER MANAGEMENT IN CHINA: FOCUS ON IMPLEMENTATION OF LIDs IN SPONGE CITY PROGRAMME

Xiaohua LIN (PhD)

SUPERVISORS: Konstantinos Papadikis, Hyung-Chul Chung (XJTLU)
Andy Morse (UoL)

SCHOOL: Design School

Modelling the hydrological effects is important for understanding and predicting the potential hydrological consequences of land use/land cover change and climate variability. The main aim of the study is to understand and quantify the hydrological processes and the influence of future changes (climate, land cover, etc.) on watershed hydrology. An improved hydrological model is developed for long term hydrological simulation, which is capable for assessing the individual and combined impacts of land cover change and climate alteration on watershed hydrology. In addition, sustainable stormwater management practices are identified and optimised in the watershed for effective management urban runoff and stormwater resource.

087

RESEARCH ON MECHANICAL PROPERTIES OF CONCRETE FILLED DOUBLE SKIN STEEL TUBE UNDER COMPRESSION-TORSION COMBINED FORCE

Xu LIAO (PhD)

SUPERVISORS Xian Li

UNIVERSITY/ INSTITUTES China University of Mining and Technology / School of Mechanics and Civil Engineering

In order to study the mechanical properties of concrete filled double skin steel tube (CFDST) under compression-torsion combined force, static tests were carried out on 24 CFDST specimens with the section size and axial compression ratio as parameters. And the influence of material strength and slenderness ratio on the compression-torsion performance was analyzed using finite element models. The results show that when the axial compression ratio was less than 0.5, it has little effect on torsional capacity. And the torsional capacity decreased significantly when it was more than 0.5. And the strain at multiple positions during the force process was analyzed.

088

AUTOMATING COMPLEX CONSTRUCTION ASSEMBLY TASKS BY INTEGRATING BUILDING INFORMATION MODELLING AND ROBOTICS TECHNOLOGY

Yizhe WANG (PhD)

SUPERVISORS Yihai Fang

UNIVERSITY/ INSTITUTES Monash University / Faculty of Engineering, Department of Civil Engineering

The application of construction robotics has been proved to be a difficult goal to be reached because of the poor quality of robots, the lack of hardware and the unstructured construction environment. However, the comprehensive building information available in BIM environment is considered to be promising in solving the problems. Monash University develops a collaborative robotics platform and implement automation technologies for prefabrication and off-site construction. Using this big data platform with a ubiquitous sensing network, the researcher aims to develop automated complex construction assembly approaches with machine learning algorithms.

089

AN EFFICIENT APPROACH TO AUTOMATIC CONSTRUCTION OF 3D WATERTIGHT GEOMETRY OF BUILDINGS USING POINT CLOUDS

Yuanzhi CAI (PhD)

SUPERVISORS Lei Fan, Cheng Zhang (XJTLU)
Kristian Krabbenhoft (UoL)

SCHOOL Design School

Recent years have witnessed an increasing use of 3D geometric models of the built environment. There exist various types of approaches to automating the construction of 3D building geometry. However, in those studies, few attention has been paid to watertight geometries derived from point cloud data, which are of use to the management and the simulations of building energy. To this end, an efficient reconstruction approach was introduced and was tested using the point cloud data representing six building sites of distinct spatial configurations in this study. The experimental results showed that accurate watertight building geometries were successfully created.

090

EFFECT OF VEGETATION PATCH ON COMPOUND CHANNEL FLOWS

Yutong GUAN (PhD)

SUPERVISORS Xiaonan Tang (XJTLU)
Ming Li (UoL)

SCHOOL Design School

Vegetation on the floodplain of compound channels provides extra resistance to flow, consequently affecting flow velocity and shear stress distribution. A series of experiments was conducted to investigate the flow structure of vegetated compound channels. The velocity obtained exhibits three distinct layers: a higher velocity layer in the main channel, a slower velocity layer on the floodplain and a gradual layer in the vegetated zone. Two mixing layers were observed at the interface between the main channel and the floodplain, and at the vicinity of the vegetated zone, which means these two layers are dominated by strong momentum exchange.

091 OPTIMIZING CUBEMUSEUM FOR CULTURAL ARTIFACT LEARNING AND MUSEUM GIFTING: A PARTICIPATORY DESIGN APPROACH

Ningning XU (Master)

SUPERVISORS	Yue Li (XJTLU)
SCHOOL	School of Advanced Technology

Cultural artifacts are the main way for publics to learn and experience cultural heritage. This research explores how to optimize CubeMuseum, a hybrid Museum gifting with tangible Augmented Reality (AR) interface, especially through visualization and gamification elements. The contribution specifies the design requirements for this type of museum gifting and provide the guideline of generating embodied knowledge in AR, both obtained through participatory design sessions include online survey, focus groups and usability studies with publics, as well as interviews involved seven museum experts. The findings from qualitative analysis suggest that users value visualization and gamification elements in experiencing artifact learning.

092 EXPLORING HEAD-BASED MODE-SWITCHING IN VIRTUAL REALITY

Rongkai SHI (PhD)

SUPERVISORS	Hai-Ning Liang, Yong Yue (XJTLU) Shan Luo (UoL)
SCHOOL	School of Advanced Technology

Mode-switching supports multilevel operations using a limited number of input methods. We explore the use of head gestures for mode-switching in scenarios when both users' hands are performing tasks in virtual reality (VR). We present a first user study that evaluated eight filtered head gestures using a proven methodology. Results show that move forward/backward and roll left/right led to better performance and are preferred by participants. A second study integrating these gestures in a VR painting application is conducted to further explore their applicability. Results show that application with head gestures led to improved interaction and user experience.

093 VISUAL EXPLAINABLE AI FOR BIOCHIP CLASSIFICATION INTERFACES

Ruben NG (PhD)

SUPERVISORS	Paul Craig, Rui Yang (XJTLU) Anh Nguyen (UoL)
SCHOOL	School of Advanced Technology

This project looks at how we can use information visualisation to improve the output of the data generated by the biochips. Model-developers and model-users are two categories of users that we have identified. We are investigating how information visualization may be used to assist in developing models to classify chip readings and to assist users in interpreting the biochip data. Three prototypes have been developed, which include Well Experiment Visualiation, a prototype is to display well sensors that react to antibiotic, the second prototype is ForestVis to know which antibiotic is detected in the selected environment and the third prototype is the web interface to show the present of antibiotics in certain location. We would also explore on how to represent uncertainty in a way that helps improve the users.

094 LET YOUR EARS LEAD YOUR EYES: SOUND-GUIDED FRAMING IN CINEMATIC VIRTUAL REALITY

Wenbai XUE (PhD)

SUPERVISORS	Cheng-hung Lo, Yong Yue (XJTLU) Pooya Sareh (UoL)
SCHOOL	Academy of Film and Creative Technology

In CVR, the framing produced with the virtual camera can become voluntary when a viewer can navigate the virtual scene with a certain degree of freedom. This issue may disrupt the continuum of narration in the film and jeopardise the desired experience, especially when the set narrative clue by the director is out of the viewer's visible range. However, people can hear sounds from different directions and consequently locate the source. Therefore, we hypothesise that sound could be a practical approach to mediate the possible conflicts between the director's desired shots and those resulting from the viewer's voluntary movements.

095

EDGE ENHANCEMENT FOR STEREOSCOPIC FIRST PERSON VIEW DURING TELEOPERATION OF UNMANNED GROUND VEHICLES FOR OBSTACLE AVOIDANCE

Yiming LUO (PhD)

SUPERVISORS: Hai-Ning Liang (XJTLU)
Shan Luo (UoL)

SCHOOL: School of Advanced Technology

First Person View (FPV) technology has progressed rapidly and is widely used in the teleoperation of unmanned ground vehicles (UGV). Stereoscopic FPV can bring depth perception to operators to enhance teleoperation of UGV. Edge perception is one of the most important abilities for operators in the teleoperation of a UGV under complex environments with obstacles around the UGV. We present a simple yet efficient edge enhancement algorithm for stereoscopic FPV. The results show that our edge enhancement algorithm can improve user performance in complex static and dynamic obstacle avoidance tasks without decreasing user experience.

096

A STUDY ON RADAR TARGET DETECTION AND CLASSIFICATION METHODOLOGIES

Yu DU (PhD)

SUPERVISORS: Ka Lok Man, Eng Gee Lim (XJTLU)
Jeremy Smith (UoL)

SCHOOL: School of Advanced Technology

Target detection and classification is important part of scenario analysis in autonomous driving and intelligent transportation systems. Moreover, robust all-weather sensing ability is one of the indispensable characteristics for the sensing elements in such systems, while radar has shown a great potential as the major sensor thanks to the environmental insensitivity of electromagnetic waves. However, reliable classification and detection of objects by radar sensor in real-time has proved to be quite challenging. In this project, major classical and state of art approaches are throughout summarized, and several potential deep neural network attempts have been discussed in comparison with traditional methodologies.

097

RESEARCH ON THE CORE CHARACTERISTICS AND KEY PATH OF TALENT TRAINING IN COLLEGES AND UNIVERSITIES WITH INDUSTRY CHARACTERISTICS UNDER THE NEW DEVELOPMENT PATTERN

Chenmeizi YANG (PhD)

SUPERVISORS: Chenmeizi YANG (PhD)

UNIVERSITY/ INSTITUTES: China University of Mining and Technology

As an important focus of the new development pattern, colleges and universities with industry characteristics show the core characteristics that they are oriented to the development of service industry and cultivate independent innovation and creative talents; Focus on improving practical operation ability and cultivating application-oriented talents with excellent skills; Break through the shackles of industry development and cultivate international talents leading the forefront of industry development. Update the knowledge pedigree and reconstruct the course content by taking the needs of industrial technology development as the guide; With the goal of promoting the development of industrial economy, optimize teaching methods and improve teaching quality; Reshaping the evaluation system, changing the evaluation concept and cultivating industry talents with both morality and ability are the key path to improve the quality of talent training.

098

WHETHER GLOBAL EDUCATION MATTERS FOR RURAL STUDENTS: RURAL TEACHERS' PERCEPTIONS IN CHINA

Cuicui LI (PhD)

SUPERVISORS: Guoliang Chen

UNIVERSITY/ INSTITUTES: East China Normal University

Considering the growing networked societies, global education has become influential amongst policymakers and educationalists. This study explores Chinese rural teachers' perceptions, alongside their approach towards global education. That is, rural teachers provide a unique definitional framework of global education, their perceptions are shaped by various factors such as personal teaching experience, relevant policies, student's social-economic, and local context. Rural schools adopt a whole school approach to global education. From a critical perspective, however, global education remains in a fringe position in rural schools, and certain disconnections exist between teacher conception of global education and the way they currently practice it.

099

PROFILING THE MULTILINGUAL EDUCATION: AN INVESTIGATION ON GUIZHOU PROVINCE UNIVERSITIES

He JIANG (PhD)

SUPERVISORS Guoyan Zhou

UNIVERSITY/ INSTITUTES Minzu University of China

The study of multilingual education in ethnic areas is an important part of Chinese education, especially in Guizhou Province, which is a province with 18 ethnic minorities. Among them, Miao, Bouyei, Zhuang, Shui, Yi etc. have their own language and word. Through the combination of quantitative and qualitative research methods, combined with the content of language life to explore the educational status of minority college students in Guizhou Province.

100

USING TEACHER AND PEER FEEDBACK VIDEOS AS RESOURCES TO DEVELOP L2 LEARNERS' LANGUAGE LEARNING IN AN ONLINE ENVIRONMENT

Huiwan ZHANG (PhD)

SUPERVISORS Wei Wei

UNIVERSITY/ INSTITUTES Macau University of Science and Technology / University International College

Video feedback addresses the work for the general audience especially during the COVID-19, and this study investigates L2 students' language learning mechanisms and justification during their feedback video watching in their online courses. Together with descriptive data generated from the online management system, semi-structured interviews were conducted to explore their watching behaviors and the underlying reasons for their learning strategies. It was found the *teacher-to-all* videos were the most frequently watched, while the watching percentage was the highest for *peer* videos. Students reported their goal-setting processes in *teacher-to-all* videos, and their peer-evaluation/self-reflection when watching *peer* videos.

101

A COMPARATIVE STUDY - THE ROLE OF MIDDLE MANAGERS IN HIERARCHICAL ORGANIZATION AND NETWORK ORGANIZATION

Jiaxin LI (PhD)

SUPERVISORS Xiaojun Zhang, Youmin Xi (XJTLU)
Paul Jones (UoL)

SCHOOL Academy of Future Education

Nowadays, the rapid development and broad application of ICT have exposed the drawbacks of hierarchical organizational structure. As a manifestation of quickly and flexibly adapting changes in the VUCA environment, network organizations keep being studied and applied to practice. Middle managers as the participants can be helpful to investigate the mechanism of hierarchical and network organization profoundly. At the same time, the existence of two logics of hierarchical and network organization leads to role complexity of middle managers. Therefore, a comparative study will be conducted to explore the role of middle managers in the two organizational mechanisms.

102

A COUNTRY'S NATIONAL CULTURE AFFECTS VIRTUAL LEARNING ENVIRONMENT ADOPTION IN HIGHER EDUCATION: A SYSTEMATIC REVIEW (2001–2020)

Na LI (PhD)

SUPERVISORS Xiaojun Zhang, Youmin Xi (XJTLU)
Maria Limniou (UoL)

SCHOOL Academy of Future Education

Although virtual learning environments (VLEs) have long been forecasted to accelerate the educational revolution, their adoption by teachers and students has not always been as effective as is expected over the years. The extant contradictive and inconsistent research findings from individual country or region fail to address the problem. To provide a holistic view, this study follows the PRISMA protocol and synthesize 145 empirical studies across 42 countries and regions from 2001 to 2020. The main contribution lies in integrating the institutional theory and the elements of country, culture, and university with the decision to adopt VLEs.

103

RESEARCH ON THE TEAM INNOVATION IN THE PERSPECTIVE OF HEXIE MINDSET

Xuan LI (PhD)

SUPERVISORS Peng Liu, Youmin Xi (XJTLU)
Wiebe Van Der Hoek (UoL)

SCHOOL Academy of Future Education

There have been many studies on the effect of individual differences of team members on team innovation. The research on the mechanism of harmonious mind on team innovation performance is still insufficient while it is argued that the complex dynamics is underlying mechanism of team innovation. The participant research method is adopted to study the project activities of HeXie Management Research Center and staff's cognition of HeXie mindset in a qualitative way. It is found that the cognitive degree of the HeXie mindset plays a moderating role in this process. The development of the HeXie mindset model can help the team determine the HeXie theme and carry out efficient team collaboration under the goal orientation. The determination of team goals and effective team communication is conducive to the construction of standardized process in the project process and promote team innovation. Relying on the practice research of harmonious management research Center, we can further explore the theory of HeXie management and lay a practical foundation for the development of HeXie mindset.

104

STUDENTS' INTERCULTURAL COMPETENCE DEVELOPMENT AND HABITUS CHANGE DURING TRANSITION TO HIGHER EDUCATION

Yang HANG (PhD)

SUPERVISORS Xiaojun Zhang, Youmin Xi (XJTLU)
Ulrike Bavendiek (UoL)

SCHOOL Academy of Future Education

Students' transition to higher education (HE) is the navigation into a complex context that contains various academic, social, and ethnic cultures. During these cultural transitions, students will experience changes in their habitus. Intercultural competence (IC) plays a crucial role in cultural transitions, but its dimensions and relationship with students' habitus change are under investigated. Thus, this study will adopt mixed methods to explore three research questions: 1) How do students undergo cultural transitions to HE; 2) What IC dimensions do students develop to smooth cultural transitions to HE; 3) How do students' IC influence their habitus change?

105

EVOLUTION OF MULTIPLE CONFLICTIVE INSTITUTIONAL LOGICS – A CASE STUDY FROM HIGHER EDUCATION INSTITUTION

Ye JIANG (PhD)

SUPERVISORS Xiaojun Zhang, Youmin Xi (XJTLU)
Peter Kahn (UoL)

SCHOOL Academy of Future Education

This study explores how the conflictive institutional logics interact and hybridized into a new logic over time, by specifically focusing on the dynamic relations among the logics during the hybridization process. Relying on an inductive case study in the setting of a Sino-foreign Cooperative University, we have following conclusions and contributions. First, the relationships between multiple institutional logics can change over time. Second, this study concludes a four-stage hybridization process model - separation, formalization, selective bridging, and hybridization. This research contribute to institutional logics theory by exploring the compatibility and complementarities between the conflictive logics during their evolution over time.

106

A STUDY ON THE CURRENT STATUS OF PARENTING STYLES OF INFANTS AND YOUNG CHILDREN AGED 0-3 YEARS IN CHINA AND THEIR INFLUENCING FACTORS

Yixuan LI (PhD)

SUPERVISORS Rong Yan, Fei Ma (XJTLU)
Kate Bennett (UoL)

SCHOOL Academy of Future Education

In the past, people thought it was meaningless to educate 0-3 year olds, but researches have proved that the cognitive development of infants and children aged 0-3 years is important throughout their lives. Parents, as the primary caregivers are intimately involved in the lives of their children. Research on the status quo of parenting methods indicates that there are few studies on parental parenting methods of 0-3 year-old infants in China and lack of measurement tools. Therefore, this study will develop a parenting style measurement tool to investigate the current status of parenting style and its influencing factors in China, and analyze the correlation between the influence factors.

107

A NOVEL SEPARATE BIDDING ENERGY MANAGEMENT SYSTEM FOR PEER-TO-PEER ENERGY TRADING

Bidan ZHANG (PhD)

SUPERVISORS: Eng Gee Lim (XJTLU)
Lin Jiang (UoL)
Yang Du (JCU)

SCHOOL: School of Advanced Technology

Peer-to-Peer (P2P) energy trading is one of the most viable solutions to incentivize prosumers and promote efficient energy sharing in microgrids. Prosumers can utilize an appropriate energy management system that cooperated with bidding strategies to participate in P2P trading. Nevertheless, a unified management method or bidding strategy may not adapt to integrating multiple energy sources as it is difficult to deal with discrepancies between cost and operational characteristics. We proposed a novel residential separate bidding energy management system (SBEMS) that combine prosumer's energy scheduling with bidding behaviours under a real-time market. The SBEMS is formulated based on different characteristics of controllable and uncontrollable sectors to achieve individual energy cost minimization.

108

LIGHTWEIGHT OPTIMIZATION BASED ON CONFORMAL GRADIENT MESOSCALE LATTICE

Fuyuan LIU (PhD)

SUPERVISORS: Min Chen (XJTLU)

SCHOOL: School of Advanced Technology

Lattice is a promising candidate for lightweight and stiffing structures desirable in aerospace and other advanced industry fields. Most lattice-based optimization methods had no considerations of global geometric and loading impact, which resulted in low specific stiffness. The research intends to design conformal gradient lattice structure with Generative Design Method driven by Finite Element Analysis to increase the specific stiffness of complex configuration. Herein, a variety of generative principles are applied to populate mesoscale lattice. The feasible design is validated by three-point bending experiment. Finally, the optimized structure shows preferable mechanical performance against uniform lattice structure.

109

A FEDERATED LEARNING BASED APPROACH FOR MULTI-HORIZON SOLAR FORECASTING AND POWER RAMP-RATE CONTROL

Haoran WEN (PhD)

SUPERVISORS: Eng Gee Lim, Huiqing Wen (XJTLU)
Lin Jiang (UoL)
Yang Du (JCU)

SCHOOL: School of Advanced Technology

Solar forecasting is essential for better grid integration of photovoltaic (PV) generation. In this work, a novel multi-step forecasting (MSF) approach is proposed for PV power ramp-rate control (PRRC). The method utilizes attention-based encoder-decoder to extract both spatial and temporal information of historical observations. Besides, we introduce a Federated Learning (FL) framework with a novel separable parameter aggregation strategy to further improve forecasting ability. The results demonstrate the proposed approach outperforms state-of-the-art approaches in terms of forecasting accuracy and generalization on a variety of real-world datasets. In the PRRC application, the MSF- based control can detect more ramp-rates (RR) violations with a higher success rate of 98.9% compared with the single-step forecasting-based control.

110

EXPLOITING ATTENTION-CONSISTENCY LOSS FOR SPATIAL-TEMPORAL STREAM ACTION RECOGNITION

Haotian XU (PhD)

SUPERVISORS: Kaizhu Huang (XJTLU)
Y Goulermas (UoL)

SCHOOL: School of Advanced Technology

Action recognition has been a hot topic in deep learning. We propose a new perspective inspired by the human visual system to combine both spatial and temporal streams to measure their attention consistency. Specifically, a branch-independent convolutional neural network (CNN) based algorithm is developed with a novel attention-consistency loss metric, enabling the temporal stream to concentrate on consistent discriminative regions with the spatial stream under the same period. Our proposed framework achieves 75.7\% top-1 accuracy on Kinetics400 and 95.7% on UCF101. In conclusion, the improvement in accuracy achieved on complex action classes shows that our proposed network can act as a potential benchmark to handle complicated scenarios.

111 LEARNING DISENTANGLED GRAPH CONVOLUTIONAL NETWORKS LOCALLY AND GLOBALLY

Jingwei GUO (PhD)

SUPERVISORS: Kaizhu Huang, Rui Zhang (XJTLU)
Xinping Yi (UoL)

SCHOOL: School of Advanced Technology

Graph Convolutional Networks (GCNs) emerge as the most successful learning models for graph-structured data. Despite their success, existing GCNs usually ignore the entangled latent factors typically arising in real-world graphs, leading to non-explainable node representations. Even worse, while the emphasis has been placed on local information, the global knowledge of the entire graph is lost to certain extent. To address these issues, we propose a novel framework, called LGD-GCN, taking advantage of both local and global information for disentangling node representations. Extensive evaluations show that LGD-GCN brings significant performance gains over the competitive models in both disentangling and node classification.

112 SIMULTANEOUSLY SEGMENT AND CLASSIFY NUCLEI BY POINTS

Kai YAO (PhD)

SUPERVISORS: Jie Sun, Kaizhu Huang (XJTLU)
Curran Jude (UoL)

SCHOOL: School of Advanced Technology

Automatic nuclei segmentation and classification plays a vital role in digital pathology. we study and design a new method to simultaneously detect, segment, and classify nuclei from Haematoxylin and Eosin (H&E) stained histopathology data. We address the detection and classification of each nuclei as a novel semantic keypoint estimation problem to determine the center point of each nuclei. Next, the corresponding class-agnostic masks for nuclei center points are obtained using dynamic instance segmentation. By decoupling two simultaneous challenging tasks, our method can benefit from class-aware detection and class-agnostic segmentation, thus leading to a significant performance boost.

AERIAL ACOUSTIC COMMUNICATION 113

Liming SHI (PhD)

SUPERVISORS: Xinheng Wang, Limin Yu, Kaizhu Huang (XJTLU)
Xu Zhu (UoL)

SCHOOL: School of Advanced Technology

Aerial acoustic communication (AAC) has been developed for both industrial and commercial Internet-of-things (IoT) applications. Benefited from the embedding and popularity of high-fidelity audio interface in current commercial off-the-shelf (COTS) devices, the AAC technology has been widely introduced to our modern lives in practical applications of data transmission, sensing and localization. AAC utilizes the air as medium and modulates acoustic wave to deliver information from speaker to microphone. Although AAC has limitations due to ambient interference and limited acoustic bandwidth, the propagation property of acoustic wave magnifies advantages in Doppler-shift estimation, which benefits work in sensing and localization.

SPIN SEEBECK EFFECT AND MAGNETORESISTANCE IN ANTIMONENE NANORIBBON 114

Liyan LIN (PhD)

SUPERVISORS: Xiaohong Yan

UNIVERSITY/ INSTITUTES: Nanjing University of Posts and Telecommunications / College of Electronic and Optical Engineering

Due to their novel physical and chemical properties, two-dimensional (2D) materials have been widely investigated both theoretically and experimentally. We investigate the spin-dependent electric and thermoelectric properties of zigzag antimonene nanoribbons (ZANRs) using density-functional theory combined with non-equilibrium Green's function method. We demonstrate that spin Seebeck effect can be generated in ZANRS with a temperature difference, rather than bias voltage, between the source and the drain. Moreover, the magnetoresistance is obtained in our research, which could be used to fabricate highly-efficient spin caloritronics magnetoresistance devices.

115

MULTISCALE LOADING CAPACITY PREDICTION OF AUXETIC LATTICE TUBULAR STRUCTURE USING SHAKEDOWN THEOREM

Lizhe WANG (PhD)

SUPERVISORS	Min Chen (XJTLU) Yuyuan Zhao (UoL)
SCHOOL	School of Advanced Technology

Auxetic lattice tubular structures have a great potential for industrial applications. In order to predict load bearing capacity under cyclic working conditions, a multiscale analysis approach based on shakedown theorem is proposed. A representative volume element with curved periodicity model in microscale is linked to its macroscale counterpart through the homogenization theory. Besides, a tetrahedron element with reduced Gaussian point numbers is developed to formulate the large-scale shakedown optimization programming. In this work, a typical peanut-like auxetic lattice tube is used to validate the proposed approach and the design impact to the loading capacity is also studied by sensitivity analysis.

116

NONISOLATED SWITCHING-CAPACITOR-INTEGRATED THREE-PORT CONVERTERS WITH SEAMLESS PWM/PFM MODULATION

Peichao XU (PhD)

SUPERVISORS	Huiqing Wen, Jieming Ma (XJTLU) Jiafeng Zhou (UoL)
SCHOOL	School of Advanced Technology

Efficiency and power density of power converters for interfacing photovoltaic panels, energy storage components such as batteries, and loads in photovoltaic (PV) systems become more and more important. Compared with individual converter design for different terminals, power-integrated multiport converters shows obvious advantages in simplifying the system structure, reducing the component count, and improving the operation reliability. Originated from the high power-density switched capacitor topology, a nonisolated switching-capacitor-integrated three-port converter (SCI-TPC) is presented to achieve single-stage direct power conversion among three ports. In order to minimize the cross regulation effect, pulse-width-modulation (PWM) and pulse-frequency-modulation (PFM) are adopted to realize the flexible power regulation and achieve power balance among three ports. Main operation modes, power flow distribution, and power transfer characteristic are analyzed. With the seamless PWM and PFM hybrid modulation, the current stress can be reduced and the overall conversion efficiency over a full operating range can be improved. Main experimental results are provided to validate the effectiveness of the proposed concept.

117

A FULLY AUTOMATED PAPER-BASED MICROFLUIDIC PLATFORM ENHANCED BY ARTIFICIAL INTELLIGENCE FOR ULTRA-SENSITIVE POINT-OF-CARE DIAGNOSIS

Sixuan DUAN (PhD)

SUPERVISORS	Pengfei Song, Kaizhu Huang (XJTLU) Kai Hoettges (UoL)
SCHOOL	School of Advanced Technology

Microfluidic paper-based analytical devices (μPADs) hold great potential for point-f-care (POC) diagnosis. These devices, made from ubiquitous paper, are simple, low-cost, easy-of-fabricate, and require no external powers. Though rapid research advances have been made, uPADs are still facing a technological dilemma: the sensitivity and simplicity cannot be harmonized. To solve this problem, ultrasensitive sensing mechanisms such as enzyme-linked immunosorbent assay (ELISA) have been utilized; however, this integration severely compromised device reproducibility due to multiple complex steps of ELISA. In this project, we propose to tackle this problem by developing fully automated μPADs with an advanced deep learning algorithm.

118

RATIONAL ORTHOGONAL WAVELET APPLIED TO TARGET DETECTION AND TRACKING IN UNDERWATER ACOUSTIC SENSOR NETWORKING

Tiantian GUO (PhD)

SUPERVISORS	Limin Yu, Enggee Lim, Fei Ma (XJTLU) Miguel Lopez-Benitez (UoL)
SCHOOL	School of Advanced Technology

The purpose of this research is to accurately detect and track multiple targets in the underwater environment. As a powerful time-frequency/scale analysis tool, complex rational orthogonal wavelet is promising in multipath signal decomposition. A fusion algorithm will then be applied to combine multipath signals constructively to improve the detection rate. The signals will be converted into feature maps as the input of the neural network. Neural network will be used for target detection and classification. This study will demonstrate the effectiveness of the system design with a geometrical underwater acoustic channel model.

119 SCHEDULING OPTIMISATION AND COORDINATION WITH INTEGRATED NAVIGATION UNDER HETEROGENEOUS NETWORK IN AUTOMATED GUIDED VEHICLES (AGVS)

Tongpo ZHANG (PhD)

SUPERVISORS: Limin Yu, Enggee Lim, Fei Ma (XJTLU)
Lopez-Benitez Miguel (UoL)

SCHOOL: School of Advanced Technology

This project proposes an integrated navigation Multi-AGV system design. This system has one tracking function based on Apriltag. One scheduling algorithm is mainly an approximate shortest path algorithm for Multi-AGV System's scheduling . The system also has one network selection algorithm that combines AHP, AVHA and TOPSIS. This network selection algorithm can select the best access network for AGVs in multi-AGV collaboration in a heterogeneous wireless network environment.

120 COST-EFFECTIVE AND EXTENSIBLE LLC-RESONANT VOLTAGE-MULTIPLIER-BASED DIFFERENTIAL POWER PROCESSING OPTIMIZER FOR MISMATCHED PHOTOVOLTAIC SYSTEMS

Xue WANG (PhD)

SUPERVISORS: Huiqing Wen, Wen Liu (XJTLU)
Jiafeng Zhou (UoL)

SCHOOL: School of Advanced Technology

Mismatched photovoltaic (PV) power systems due to the shadow effect will result in serious consequences such as reduced output power, hot spot problem, and low reliability. As one promising architecture to address this issue, differential power processing (DPP) optimizer has been extensively discussed to improve the actual energy yield through the charge redistribution among PV elements such as modules or sub-modules. However, since a large number of hardware components must be added in the conventional DPP optimizer, high cost and poor extensibility have become the bottleneck for the practical application of DPP technique in long-string photovoltaic systems. This paper presents an LLC-resonant voltage-multiplier-based DPP (LLC-VM-DPP) optimizer to address these problems. Specifically, the LLC resonant inverter with two switches is operating as a voltage equalizer to compensate the power reduction of shaded PV elements. The switch count is limited to two even for long-string photovoltaic systems. No feedback is required for the control implementation. Thus, the overall system performance such as the cost, circuit complexity, extensibility, power density, and efficiency can be improved. Simulation and experimental evaluation of the LLC-VM-DPP architecture for four-module-series-connection PV systems under different shading scenarios was carried out. Detailed power loss analysis was presented. With the LLC-VM-DPP architecture, the measured output power under severe shading scenario can be improved up to 32.9% while the presented DPP optimizer cost for four-module-series-connection PV systems can be reduced up to 45.41%.

121 CHALLENGES FOR DEEP NEURAL NETWORKS IN RADAR AND VISION FUSION

Yi ZHOU (PhD)

SUPERVISORS: Limin Yu (XJTLU)
Xu Zhu (UoL)
Yutao Yue (JITRI)

SCHOOL: School of Advanced Technology/
XJTLU-JITRI Academy of Industrial Technology

Radar is overlooked in autonomous driving research because of its noisy measurements with low semantic information. The radar point clouds are sparse, noisy and with no height resolution. For each detected object, both the number and the position of points within it are random. Therefore, the feature-level fusion of radar and vision is difficult. On the other hand, radar is a good complementation of camera. It can accurately measure distance and Doppler velocity in all weather. In this poster, we will present some challenges to fully utilize the radar in the fusion framework.

122 HIGH-PERFORMANCE PHOTOVOLTAIC CONSTANT POWER GENERATION CONTROL WITH RAPID MAXIMUM POWER POINT ESTIMATION

Yinxiao ZHU (PhD)

SUPERVISORS: Huiqing Wen (XJTLU)
Yihua Hu, Lin Jiang (UoL)

SCHOOL: School of Advanced Technology

Photovoltaic (PV) constant power generation (CPG) control is regarded as an advanced active power control by limiting the maximum feed-in power in order to avoid the adverse impacts of high-penetration PV systems such as overloading and over-voltage. Conventional CPG strategies show obvious limitations in terms of the dynamics response, oscillations during the steady state, and the estimation speed of limited power points (LPPs). In this paper, a novel CPG control with the rapid approach to LPPs is proposed with the estimation of maximum power point (MPP), which guarantees fast converging speed in response to rapid changes in environmental conditions and low power oscillations for the steady state. Specifically, the proposed control allocates the operating point at the left-hand side of the MPP, which can not only avoid the instability issue but also simplify the MPP and LPP estimation. Furthermore, based on the estimated available power P_{avi}, the proposed CPG control contributes a direct solution in approaching the region around LPP or MPP, which improves the converging speed under environmental-changing conditions. The proposed control can be directly applied for the existing PV system and no additional hardware devices such as irradiance sensors are required, which is cost-effective.

123 ACOUSTIC HUMAN MOTION DETECTION VIA SMARTPHONE

Yuanying QU (PhD)

SUPERVISORS: Xinheng Wang (XJTLU)
Xu Zhu (UoL)

SCHOOL: School of Advanced Technology

In acoustic sensing techniques, acoustic sensors use the main functionality, namely recording and playing the sound, to explore related research and achieve various applications along with novel user experiences. Acoustic sensing is developed among the research, where human-centred research is a vital branch. The research aims to achieve the acoustic human motion detection via smartphone. Until now, the preliminary results has been derived from the experiment that proves the feasibility of the project and provides constructive suggestions for future research.

124 SWITCHABLE INTERLAYER MAGNETIC COUPLING OF BILAYER CrI_3

Yue JIANG (PhD)

SUPERVISORS: Xiaohong Yan

UNIVERSITY/ INSTITUTES: Nanjing University of Posts and Telecommunications / College of Electronic and Optical Engineering

As a representative of the two-dimensional (2D) intrinsic magnetic van der Waals materials, CrI_3 has attracted worldwide attention. We investigate the H-type bilayer CrI_3 where the two layers are aligned in anti-parallel directions. Based on first-principles calculations, we propose two states with different interlayer magnetic couplings, i.e., ferromagnetic and antiferromagnetic, and analyze the superexchange mechanism inside. It is found that the two magnetic coupling states are stacking-dependent, and could be switched by applying out-of-plane axial strain and electron doping. Our findings show great application potential in the design of heterostructural and spintronic devices based on 2D magnetic materials.

125 IMPROVING MODEL ROBUSTNESS WITH LATENT DISTRIBUTION LOCALLY AND GLOBALLY

Zhuang QIAN (PhD)

SUPERVISORS: Qiufeng Wang, Kaizhu Huang (XJTLU)
Xinping Yi (UoL)

SCHOOL: School of Advanced Technology

We consider model robustness of deep neural networks against adversarial attacks from a global manifold perspective. Leveraging both the local and global latent information, we propose a novel adversarial training method through robust optimization, and a tractable way to generate Latent Manifold Adversarial Examples (LMAEs) via an adversarial game between a discriminator and a classifier. The proposed adversarial training with latent distribution (ATLD) method defends against adversarial attacks by crafting LMAEs with the latent manifold in an unsupervised manner. ATLD preserves the local and global information of latent manifold and promises improved robustness against adversarial attacks.

126 A DEEP REINFORCEMENT LEARNING PERSPECTIVE ON MULTI-AGENT AND MULTI-OBJECTIVE PATH PLANNING

Ziren XIAO (PhD)

SUPERVISORS: Xinheng Wang (XJTLU)
Shan Luo (UoL)

SCHOOL: School of Advanced Technology

We present and investigate a novel and timely application domain for deep reinforcement learning (RL): Multi-Agent and Multi-Objective Path Planning. Path planning is the core functionality of how robots can cooperate with each other's, and is the subject of extensive attention in light of the advent of geographic based Internet services such as the navigation of cars and shop recommendations. We show that casting the path planning as RL enables training deep network policies that capture intricate patterns in objectives and path conditions, and leverage this to outperform the state-of-the-art.

127

"TEACHERS' EMOTIONAL LABOR" PUBLICATIONS IN WEB OF SCIENCE: A BIBLIOMETRIC ANALYSIS

Aihui WU (PhD)

SUPERVISORS: Rining WEI, Zhoulin Ruan (XJTLU)
Lesley Randles, Jean-Marc Dewaele (UoL)

SCHOOL: School of Humanities and Social Sciences

The present paper first explored the bibliometric characteristics of publications on "teachers' emotional labor" (TEL) in the Social Sciences Citation Index and the Arts & Humanities Citation Index of Web of Science (WoS). Search with the term "teacher emotional labor" retrieved 173 publications in the WoS between 1900 and 2020. The bibliometric characteristics of the publications were reported. Then CiteSpace was utilized to visualize TEL research and to obtain insights into focuses and future TEL research directions. The findings obtained will be of value to TEL scholars for understanding the status quo of their field and informing their future research.

128

UNDERSTANDING GENDER POLITICS IN KOREAN DRAMA: PERSPECTIVES FROM CLASSICAL PHILOSOPHY AND CHINESE SOCIETY

Jialu CHU (PhD)

SUPERVISORS: Yanning Huang, Sophie Sturup (XJTLU)
Georgina Everett (UoL)

SCHOOL: School of Humanities and Social Sciences

Korean drama is one of the popularity of Korean popular culture, which has a huge number of fans and contains the profound philosophy of life and gender ethics. Notably, the content of Korean drama is implicated in the classical philosophy of East Asia. Combining the approaches of cultural studies and gender studies, this doctoral project proposes to study how, on the one hand, classical philosophy through its gendered perspectives have been influencing Korean drama; and on the other hand, how the gendered Korean drama's representation has now been impacted Chinese society, constantly shaping Chinese audience's gender ideologies and practices.

129

THE TRANSLATION OF MULTI-WORD CHUNK IN CHINESE POLITICAL TEXTS – FROM COGNITIVE PERSPECTIVE

Liuqi WANG (PhD)

SUPERVISORS: Hui Wang, Zhoulin Ruan (XJTLU)
Aiqing Wang (UoL)

SCHOOL: School of Humanities and Social Sciences

This article explores the translation of Multi-word Chunks (MWCs) in Chinese political texts from the cognitive perspective. MWCs under investigation, extracted from 6 reports of two Chinese leaders and translated by institutional translators, are analysed according to the idiom, collocation, and fragment dichotomy. Guided by the dual-process hypothesis, the study scrutinizes the cognitive process MWCs in translation and its constraints. Theoretically, the results suggest holistic processing is prominent in Chinese-English political translation and analytical one supplementary. Pedagogically, the research reveals that the shared representation between Source and Target Languages shall be prioritized in the training of the student translators.

130

MILTON AND EARLY-ROMANTICISM

Roslyn IRVING (PhD)

SUPERVISORS: Thomas Duggett (XJTLU)
Paul Baines (UoL)

SCHOOL: School of Humanities and Social Sciences

'Thus Night oft see me in thy pale career,
Till civil-suited Morn appear,
[...] kerchiefed in a comely cloud,
While rocking winds are piping loud,'
(Milton 2003: 121-2 & 125-6).

John Milton's late-Renaissance works mark the beginning of Romanticism. This poster tracks the poet's tropes, values and themes through early-Romantic texts and philosophies, using Milton's 'Il Penseroso' as its framing case study. It will demonstrate how the receptivity to creativity, emotion and nature found in his poetry and valued by early-Romantic writers continue to resonate (Hazlitt 1848).

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131

LANGUAGE USE AND LANGUAGE ATTITUDES OF MULTILINGUAL SPEAKERS: A CASE STUDY OF MIAO UNIVERSITY STUDENTS IN GUIZHOU, CHINA

Shumin DONG (PhD)

SUPERVISORS Yu Weng

UNIVERSITY/ INSTITUTES Minzu University of China / School of Chinese Ethnic Minority Languages and Literature

This study explored Guizhou Miao students' language use in different domains, as well as their language attitudes regarding three main aspects: cognitive, affective, and behavioral tendencies. Data were gathered through a questionnaire and interviews with respondents. Their language use are different in different occasions. Their attitudes toward Putonghua are positive, while their attitudes toward the Miao language are neutral, and attitudes toward English are positive in the cognitive domain. Gender, type of living area, and year at university were statically significant predictors of language attitude. This paper makes suggestions for the harmonious development of a multilingual and multicultural society.

132

THE APPLICATION OF TASK-BASED APPROACH TO WRITING COURSE FOR ENGLISH MAJORS IN CHINA

Siyue MENG (PhD)

SUPERVISORS Argyro Kantara, Jessica Clamphan

UNIVERSITY/ INSTITUTES University of Wales Trinity Saint David/ Institute of Education and Humanities

This study aims to find out the effectiveness of employing task-based approach (TBA) in writing course and students' attitudes towards the approach. Academically, the study can lead to the deeper understanding of TBA related factors and theories, especially in terms of adult teaching and learning. Practically, pedagogical implications can be put forward on how to teach English writing with more scientific approaches and implement them to motivate adult learners. Researchers who are interested in teaching writing with TBA to adult learners can get related information from this study to facilitate their further research.

133

THE EFFECTIVENESS OF MOBILE GAME-BASED LEARNING ON ENGLISH VOCABULARY BASED ON QUIZLET

Wen JIA (PhD)

SUPERVISORS Bin Zou, Songqing Li (XJTLU)
David Oakey (UoL)

SCHOOL School of Humanities and Social Sciences

Although digital game-based vocabulary learning (DGBVL) has received increasing attention in two decades, the impacts of DGBVL on the depth of word knowledge have not yet been satisfactorily understood. To this end, a 18-week English vocabulary mobile Game-Based Learning experiment based on the Quizlet game function was conducted to investigate its effectiveness and features. The results revealed that experimental group's receptive and productive English vocabulary achievements were significantly higher than control group. In addition, the analysis on questionnaire showed that games' enjoyment, mobile learning's ubiquitousness and convenience as well as the accomplishment sense brought by multi-player cooperative games were the major features of this learning model. The findings in this study are highly encouraging for DGBVL as an effective pedagogical tool to be widely used in the future EFL classroom.

134

UNDERSTANDING THE EVALUATIVE LANGUAGE USED IN EMI SOCIAL SCIENCE LECTURES FROM AN ACADEMIC-ELF PERSPECTIVE

Xiaoling JIN (PhD)

SUPERVISORS Zhoulin Ruan, Steve Jeaco (XJTLU)
Hitomi Masuhara (UoL)

SCHOOL School of Humanities and Social Sciences

This case study aims to explore how EMI academics use various evaluative language to communicate with their students in academic lectures. EMI lectures use English as academic Lingua Franca (ELF) and EMI classroom interaction can be regarded as a shared means of academic communication between ELF academics and their students. Theoretically, this research will gain insight into the understanding of appraisal language in specific spoken registers. The practical significance of this study, however, is embodied in the importance of the ELF communication in academic lectures for the development of teaching and learning in EMI universities.

135

THE LEADING JAPANESE COSMETIC COMPANIES IN THE CHINESE MARKET: CROSS-CULTURAL ADVERTISING STRATEGY PERSPECTIVE

Xiaolong ZHANG (PhD)

SUPERVISORS Marco Pellitteri (XJTLU)

SCHOOL School of Humanities and Social Sciences

In the past fifty years, cross-cultural advertising has been receiving growing interest in academia. However, research in this field has mainly focussed on comparing differences and similarities in the creative strategies and implementations across multiple markets; usually USA, EU nations, and developed Asian countries; Asian developing countries have been overlooked, and intra-country studies are still rare. My research explores six leading Japanese cosmetic brands' advertising strategies in China using a combination of quantitative and qualitative methods. My aim is to explement the aforementioned research gaps and advance cross-cultural advertising methods for future use in intra-country studies.

136

"I AM NOT FREEZED FOR NO REASONS!": YOUNG LEARNERS' PROCESSING OF ORAL CORRECTIVE FEEDBACK IN THE EFL CLASSROOM

Xin FANG (PhD)

SUPERVISORS Zhoulin Ruan, Yan Zhao (XJTLU)
Nektaria Efstathia Kourtali (UoL)

SCHOOL School of Humanities and Social Sciences

Existing studies into the role of oral correction with young EFL learners fail to explain whether it is the quality or the quantity that leads to learners' language development. This is because researchers are often obsessed with examining the final language production. In this research, I argue for a perspective on how learners process the oral correction during language learning and how such a perspective can be insightful about learners' language development. This research proposes a framework with two main constructs: how young learners engage with teacher's correction, and how they prepare themselves for their engagement. This could shed the light on whether and how the oral correction benefits young learners from a process-oriented perspective.

137

EMPIRICAL RESEARCH ON THE RECEPTION OF AUDIOVISUAL TRANSLATION FROM CHINESE TO ENGLISH

Yanan REN (PhD)

SUPERVISORS Xiaojun Zhang, Zhoulin Ruan (XJTLU)
Marco Paoli (UoL)

SCHOOL School of Humanities and Social Sciences

The advent of digital technology and globalization boomed cultural exchanges internationally, especially for exchanges of films and TV series as showcase of a country's culture and history. With cultural communication deepened, China's audio products have been introduced into many countries. Plenty of cases communicated successfully in Asia while most met with pitfall in English-speaking world. Thus, being empirical-oriented and multi-disciplinary, this study, from the perspective of reception, aims to explore the inherent demands of foreign audiences and measure their reception effects (response, reaction, and repercussion) to shed light on the spreading of China's audio products.

138

CULTURAL IMAGINATION OF THE OTHER: REPRESENTATION OF CHINESE ACTRESSES IN HOLLYWOOD MOVIES

Yao CHENG (PhD)

SUPERVISORS Michael High, Adeline Johns-Putra, Diana Garrisi (XJTLU)
Sarah Thomas (UoL)

SCHOOL School of Humanities and Social Sciences

Images of Chinese women in Hollywood movies embody the Western imagination of the East since representations are concrete symbols signifying intercultural communication. In Hollywood imagination, Chinese women are the Other who stands for exotic female images and Chinese culture. This research aims to address the difference between Chinese culture's self-recognition and the Western representation of Chinese culture. By conducting visual and textual analysis, I will compare the representations of Chinese actresses Ziyi Zhang and Bingbing Fan in four movies: *Crouching Tiger, Hidden Dragon, Rush Hour 2, X-men: Days of Future Past, and I am not Madame Bovary.*

139

FROM "ECOCRITICISM" TO "HARMONIOUS CRITICISM": A NEW MODE OF LITERARY ECOCRITICISM

Yao ZHOU (PhD)

SUPERVISORS Mingli Sun

UNIVERSITY/ INSTITUTES Jilin University

As ecology plays a more significant role, literary ecocriticism takes place as a cultural embodiment of English-speaking countries. Originating in the US, ecocriticism has made some progress, but also faces many limitations due to its basis on Western culture. To solve such limitations, a systematic theory targeted on the harmonious relationship of literary research objects should be put forward based on ecological criticism. The report discusses how this new theory, called "literary harmonious criticism", integrates the harmonious thoughts of Chinese literary theory and draws on the ideas of "harmonious discourse analysis" in linguistics to construct a more comprehensive framework.

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IMAGE CREATION AND LOCALISATION ON CORPORATE WEBSITES

Yuanxin YANG (PhD)

SUPERVISORS Hui Wang, Songqing Li (XJTLU)
Aiqing Wang (UoL)

SCHOOL School of Humanities and Social Sciences

Informed by Multimodality, Systemic Functional Linguistics, and user experience theories, this paper explores the homepage localisation of Huawei in the global context, focusing on how the verbal and visual codes work together to construct and re-construct the image of Huawei and the possible issues arising in image creation and localisation. The analysis of Huawei Mate 10 advertisements in Chinese and English reveals that effective image-text interaction helps enhance corporate image. It is suggested that the information selection and presentation and the image-text interaction can be tailored to the needs of the potential user in the future.

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ADDRESSING MICROAGRESSIONS: LGBTQIA+ INCLUSION IN THE LANGUAGE CLASSROOM

Yue ZHENG (Master)

SUPERVISORS Rining Wei (XJTLU)

SCHOOL School of Humanities and Social Sciences

Microagressions are understood as intentional or unintentional derogatory comments towards an oppressed social group. Research has indicated that LGBTQIA+ youth group is a target of microagression as the bias towards this group is becoming more subtle and less direct. Former studies have identified four types of microagression in education context: (1) Subtle Heterosexism (2) Heteronormativity and pathology (3) Discomfort and disapproval of LGBT lives (4) 'Culture' and religion. In this vein, we use in-depth interviews to collect data from pre-service bilingual teachers to explore those four types of microagression. This research could contribute to a more inclusive language classroom in an EFL context.

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I KNOW WHERE I AM: THE LOCATION AWARENESS IN VIRTUAL CINEMATIC EXPERIENCE

Zhiyuan YU (PhD)

SUPERVISORS Cheng-Hung Lo, Haining Liang (XJTLU)
Pooya Sareh (UoL)

SCHOOL Academy of Film and Creative Technology

Virtual Reality has gradually become a key medium for film-makers to create cinematic experience. While having unique features in some aspects such as the immersiveness, a director trained in traditional filmmaking may find it challenging to transfer the cinematographic language into this emerging medium. This project focuses on a fundamental difference between VR films and traditional films: VR's immersion naturally integrates the audience into the film scenes. Our work aims to study this impression of "Here I am", i.e. the location awareness, in VR films and how it may play a key role in devising cinematographic strategies for VR filmmaking.

143 FINANCIAL SPATIAL STRUCTURE, ECONOMIC AGGLOMERATION, AND CARBON EMISSION INTENSITY IN CHINA: THEORETICAL ANALYSIS AND SPATIAL-TEMPORAL CORRELATION EFFECTS

Bin YAN (PhD)

SUPERVISORS Feng Wang

UNIVERSITY/ INSTITUTES China University of Mining and Technology / School of Economics and Management

This paper investigates the mechanism of financial spatial structure restructuring and economic agglomeration phenomenon on carbon emission intensity covering China economy form 2005-2017. Theoretically, we improve the output density function, and empirically use dynamic spatial Durbin model. The results show that carbon emission intensity exists spatial spillier effects. Specifically, improving the financial spatial structure significantly reduces carbon emission intensity in both the long and short term. Then, economic agglomeration and energy consumption intensity impede carbon emissions reduction. Finally, financial spatial structure has less influence than energy consumption intensity and economic agglomeration, but a broader influence in the long run.

144 EFFECT OF WIND DIRECTION AND VELOCITY ON SAMPLING EFFICIENCY INSIDE MINI WIND TUNNEL

Bokun SUN (PhD)

SUPERVISORS Bailiang Li, Zheng Chen (XJTLU)
James Cooper (UoL)

SCHOOL School of Science

Wind direction and velocity can affect the sampling efficiency of instruments that employs tubing to intake air samples. Such effects were usually minimized by using window shades around sampling tubes. However, this bulky shading system may significantly change the air flows in wind-tunnel. Therefore, the aim of this experiment is exploring the influence of wind direction and velocity on sampling efficiency without shading system. Experiment results indicate there is up to 10% error compared to still air conditions. However, such errors may significantly affect the aerosol measurements as the deposition could only cause same order of magnitude change of concentration.

145 DEVELOP SPATIAL DISTURBANCE MODEL TO EXPLAIN VEGETATION DYNAMIC IN QINGHAI-TIBETAN PLATEAU

Dan LI (PhD)

SUPERVISORS Johannes Knops, Li Li, Lingyun Xiao (XJTLU)
Catherine Parr (UoL)

SCHOOL School of Science

Grassland degradation is a serious problem in Qinghai-Tibet Plateau alpine grasslands. Livestock grazing and rodents disturbance have been identified as the two most important factors causing grassland degradation. Livestock grazing and rodents interact and combined can lead to higher grassland degradation. My research will analyze this complex spatial process of grassland degradation, and identify the different degradation stages.

146 CONTRIBUTION OF $PM_{2.5}$-Pb IN ATMOSPHERIC FALLOUT TO Pb ACCUMULATION IN CHINESE CABBAGE LEAVES VIA STOMATA

Peipei GAO (PhD)

SUPERVISORS Wenju Liu

UNIVERSITY/ INSTITUTES Hebei Agricultural University / College of Resources and Environmental Sciences

Chinese cabbage, one of the most popular leaf vegetables worldwide, has a large cultivated area in North China during seasons with heavy haze. Our previous experiment found that Pb concentrations in leaves exceeded the safety limits of WHO (0.1 mg/kg) and China (0.3 mg/kg), although Chinese cabbage is grown in soil with a much lower Pb level (31.8 mg/kg) on open farmlands. The results of this experiment clarify that the contribution of $PM_{2.5}$ accounted for 80%–100% of Pb accumulation in Chinese cabbage leaves, and $PM_{2.5}$-Pb is transferred from atmospheric fallout to cabbage leaves via the stomata.

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RECONSTRUCTING MISSING INFORMATION AND INCREASING SPATIAL RESOLUTION FOR OMI TROPOSPHERIC NO_2 DATA

Qin HE (PhD)

SUPERVISORS Kai Qin

UNIVERSITY/ INSTITUTES China University of Mining and Technology / School of Environment and Spatial Informatics

As a pollutant in the Earth's atmosphere, NO_2 seriously affects human health and ecosystems. Satellite remote sensing measurements have played an important role in quantifying NO_2 concentrations at large scales, among which the OMI sensor has provided continuous measurements for up to 17 years and its tropospheric NO_2 columns are widely used. However, due to the data product with insufficient spatial coverage and low spatial resolution, it has been difficult to meet the needs of monitoring atmospheric changes dynamically and detecting the distribution of NO_2 concentrations in urban scale.
In response, this study fills the missing data of OMI due to "Row Anomaly" or cloud contamination, and improves the spatial resolution. Firstly, a framework for reconstructing missing data from OMI sensor in collaboration with NO_2 concentrations from morning and afternoon measurements is proposed to generate a set of daily tropospheric NO_2 products with high spatial coverage in mainland China. Secondly, a machine learning algorithm is used to establish the spatial correlation of remote sensing products with different resolutions, thus increasing the resolution of historical OMI measurements and generate a set of tropospheric NO_2 data with high spatial resolution in Jiangsu.

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NOVEL EQUILIBRIUM-BASED MICRODIALYSIS TECHNOLOGY AND MACHINE LEARNING TO PREDICT TRACE METAL(LOID)S BIOAVAILABILITY IN RADISH (RAPHANUS SATIVUS L.)

Sha ZHANG (PhD)

SUPERVISORS Zheng Chen (XJTLU)

SCHOOL School of Science

Microdialysis has been used in medical areas but also have great potential to assess the bioavailability of metal(loid)s in-situ on agricultural soils. Here, we tested the feasibility of an novel equilibrium-based microdialysis device, integrating a nano membrane tube into a 3D-printed skeleton, to assess the bioavailability of trace metal(loid)s in soil to radish. The sampling mechanism i.e., concentration gradient diffusion allows bulk porewater solute being dialyzed into the sampler until equilibrium. Based on solid biogeochemical hypothesis, machine learning (ML) was used to investigate the mechanism and to predict the bioaccumulation of trace metal(loid) in edible tuber and leaves. The results suggested metal(loid) concentration along in the dialysate can precisely predict the bioavailability, with a better or comparable performance than peer products. ML algorithms such as XGBoost tree, Random Forest and Neural network greatly improve the model performance and enhance our understanding of elemental bioavailability in soil-plant system. For instance, the underlying pattern between soil pH, arsenic species distribution and plant responses were collectively integrated into the uptake model suggesting a much more complex regulation than previous thought in the process of metal transfer from soil to plant. Additionally, changing dialysis solution with interested solutes allows to mimic root-soil interactions and reveal new insights of rhizosphere processes. The simple operation of pumping in & out allows the rapid sample preparation directly for the downstream analysis. Overall, we have developed a powerful tool for assessing bioavailability of elements in agricultural area and beyond.

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BIODIVERSITY AND YIELD TRADE-OFFS BETWEEN CONVENTIONAL AND ORGANIC FARMING: A META-ANALYSIS

Shanxing GONG (PhD)

SUPERVISORS Yi Zou (XJTLU)
Jenny Hodgson (UoL)

SCHOOL School of Science

Organic farming supports higher biodiversity than conventional farming, but at the cost of lower yields. We conducted a meta-analysis quantifying the trade-off between biodiversity gain and yield loss comparing conventional and organic farming. We developed a compatibility index (Cc-o) and the land-sparing/sharing (LS) index. Biodiversity gain is negatively related to yield loss for microbes and plants. The overall compatibility index value was close to zero. This value varies across taxa. The value of the LS index was 2.4 across all studies, but has a high uncertainty and also varies across taxa.

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A SYSTEMATIC REVIEW ON THE EFFECTS OF EXPOSURE TO ABIOTIC STRESSORS AND FOOD LIMITATION ON BREEDING FITNESS OF BIRDS

Sihao CHEN (PhD)

SUPERVISORS Emilio Pagani-Núñez (XJTLU)
Samantha Patrick (UoL)

SCHOOL School of Science

The adverse consequences of urbanization for breeding success of urban birds have been thoroughly studied. However, it is unclear how these factors interact among them and which are the most disruptive. To investigate this question, we used a migratory bird (Barn Swallows *Hirundo rustica*) that nests across urban to rural gradients and thus it is a perfect model to examine potential synergistic effects among landscape changes, the heat-island effect, noise and light pollution, and food limitation. We expected food limitation to be the dominant factor driving the negative consequences of urbanization, and examined which other factors exacerbated this pattern.

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THE INFLUENCE OF CLOSED PORES AND STACKED COAL GRAINS ON GAS TRANSPORT IN CO_2 INJECTION ENHANCED CH_4 RECOVERY PROCESS

Wei LIANG (PhD)

SUPERVISORS Jianguo Wang

UNIVERSITY/ INSTITUTES China University of Mining and Technology

This paper developed a numerical model to explore the hydraulic-mechanical coupling responses in CO2-ECBM process. This model considered the binary gas transport in ternary pores, the coal deformation, and stacked grains. After verification, this model is used to simulate a field trial in Qinshui Basin. The results showed that the contribution of gas in closed pores to total gas is more than 60% in high-rank coal and is proportional to the volume of closed pores. The stacked grains affect the roughness and can be expressed by three parameters. Higher effective roughness can produce lower cumulative CO2 injection and CH4 production.

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REMOVAL OF DIFFERENT SIZES *MICROCYSTIS* COLONIES AND DEGRADATION OF MICROCYSTINS BY *PARAMECIUM*

Wenjie XU (PhD)

SUPERVISORS Zhou Yang

UNIVERSITY/ INSTITUTES Nanjing Normal University

Harmful cyanobacterial blooms pose a serious threat to the freshwater environment. In removing cyanobacteria, herbivorous protozoa have great potential. Most grazing experiments have been performed with single cells or small colonies. However, in the wild, Microcystis occur as colonies of different sizes. To investigate the potential of protozoa in controlling colonial Microcystis, we, therefore, performed the grazing experiment of protozoa on in-suit Microcystis. Results show that Paramecium can completely eliminate small size Microcystis colonies; the reduction ratio of larger size Microcystis colonies reached approximately 70%. Moreover, with the removal of Microcystis, Paramecium can effectively degrade microcystins. Our study provided technical guidance for the application of Paramecium to control Microcystis colonies in situ.

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THE ENVIRONMENTAL EFFECTS OF FINANCIAL AGGLOMERATION UNDER INDUSTRIAL AND SPATIAL CORRELATION: A CASE STUDY OF 286 PREFECTURE- LEVEL CITIES IN CHINA

Wenna FAN (PhD)

SUPERVISORS Feng Wang

UNIVERSITY/ INSTITUTES China University of Mining and Technology / School of Economics and Management

Different from the environmental mechanism of industrial agglomeration, finance affects environmental pollution though the distribution of loans and investment. The empirical results show that the agglomeration of financial industry and its related industries has a positive impact on the local environmental protection, and the higher the agglomeration level of various industries, the more conductive to pollution reduction; meanwhile, financial agglomeration presents a negative spatial spillover effect on industrial wastewater emission intensity, it has a positive effect on environmental pollution in the eastern region, while shows a negative impact in the central and western regions.

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CAN INDUSTRIAL COLLABORATIVE AGGLOMERATION AND MANUFACTURING INTELLIGENTIZATION REDUCE CARBON EMISSIONS? PROVINCIAL-LEVEL EMPIRICAL EVIDENCE FROM CHINA

Xiaona MENG (PhD)

SUPERVISORS Shichun Xu

UNIVERSITY/ INSTITUTES China University of Mining and Technology

This paper attempts to explore the nonlinear relationship between industrial collaborative agglomeration and carbon emission, and analyze the emission reduction effect of manufacturing intelligent development with the help of spatial Durbin model composed of the panel data of 30 provincial regions in China from 2012 to 2019. The main findings are follows: (1) There is a classical inverted N-shaped curve relationship between industrial co-agglomeration and carbon emission. (2) The improvement of manufacturing intelligent level is conducive to realization of emission reduction targets. (3) There is obvious heterogeneity in the impact of the co-agglomeration of sub-industries on carbon emissions.

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SHORT-TERM EFFECTS OF LAND CONSOLIDATION OF DRYLAND-TO-PADDY CONVERSION ON SOIL CO_2 FLUX

Xiaoxiao LI (PhD)

SUPERVISORS Nan Hui

UNIVERSITY/ INSTITUTES Shanghai Jiao Tong University / School of Agriculture and Biology

To improve grain production capacity, many areas in the world are shifting from rainfed agriculture to irrigated agriculture. One example of such land consolidation is dryland-to-paddy conversion. However, the mutual feedback mechanisms between carbon flux variation and environmental factors during the farmland consolidation process are still poorly known. Here, we determined the effect of dryland-to-paddy consolidation on soil CO_2 flux in two isolated rectangular fields - the dryland (DL) cultivated with corn and the paddy field (PF) cultivated with rice. Our results showed that the soil carbon flux and temperature followed similar unimodal curves with greater soil CO_2 flux of in PF than in DL. The structural equation modeling results demonstrated that the changes in soil environmental factors, including temperature, and fungal OTU numbers, were the primary drivers for the soil CO_2 flux and soil carbon pool ($P<0.05$).

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REAL OR FAKE: A TEST OF THE SENTINEL METHOD

Yu ZENG (PhD)

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Samantha Patrick, Kate Parr (UoL)

SCHOOL School of Science

The “sentinel method” has been widely adopted to quantify predation intensity by establishing patches of prey (commonly worm-shaped insect prey) and recording the rate of disappearance or traces of predation after a certain period of exposure. Many studies used prey mimics (usually made of plasticine), which could substantially underestimate predation intensity. Prey mimics cannot move and lack chemical cues so they might be less attractive to predators. Here, we designed an experiment across a natural-to-urban gradient in Suzhou combining real mealworms and plasticine mimics to show that real mealworms should preferably be used to obtain accurate estimate of predation intensity.

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INFLUENCE OF HAND REPRESENTATION DESIGN ON PRESENCE AND EMBODIMENT IN VIRTUAL ENVIRONMENT

Jingjing ZHANG (PhD)

SUPERVISORS Mengjie Huang, Hai-Ning Liang, Rui Yang (XJTLU)
Ji Han (UoL)

SCHOOL Design School

Previous research has emphasized the influence of avatar representations on user perceptions in virtual environments, such as sense of presence and embodiment. However, there are insufficient evidence and conflicting conclusions in the literature. This research investigated the influence of virtual hand representation design on users’ sense of presence, body ownership, and agency. An experiment was designed and conducted with different realism levels of hand representation to collect participants’ perception data through self-report. The results showed that the realistic hand induces the highest presence and body ownership, but there is no significant difference in agency among different hand representations.

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MOVEMENT MODULATION IN VIRTUAL REALITY: ITS INFLUENCE ON AGENCY AND MOTOR PERFORMANCE

Liu WANG (PhD)

SUPERVISORS Mengjie Huang, Hai-Ning Liang, Rui Yang (XJTLU)
Ji Han (UoL)

SCHOOL Design School

Movement modulation in virtual rehabilitation can purposefully influence motor learning by manipulating the virtual representation. However, the effect of movement modulation on agency and motor performance requires further in-depth investigations. This study investigated the effect of five movement modulation modes on agency and motor performance by analyzing subjective responses and objective movement data. The results revealed that the implemented modulation modes significantly influences the agency. Also, there is a noticeable impact of movement modulation on motor performance in movement trajectory and velocity. The results can help support the development of more effective applications for virtual rehabilitation with movement modulation.

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MENTAL WORKLOAD EVALUATION OF VIRTUAL OBJECT MANIPULATION ON WebVR: AN EEG STUDY

Wenxin SUN (PhD)

SUPERVISORS: Mengjie Huang, Yong Yue, Rui Yang (XJTLU)
Ji Han (UoL)

SCHOOL: Design School

Virtual object manipulation as a key feature has been studied in simulated environments. Prior literature mainly studied performance measures in manipulation modes with different degrees of freedom (DoF), but few studies assessed user experience by evaluating psychological responses (e.g.,mental workload). This study compared manipulation modes (1DoF and 3DoF) to evaluate users' mental workload as a critical index of user experience by electroencephalogram (EEG) measures and self-reports on mouse-based interfaces. The results of EEG signals and subjective data demonstrated that the participants generally perceive less mental workload by 1DoF manipulation modes than 3DoF on mouse-based interfaces.

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RESEARCH ON DESIGN THINKING AND DESIGN METHODS OF SMART PRODUCTS BASED ON EMBODIED COGNITION

Yi ZHENG (PhD)

SUPERVISORS: Xiaoyou He

UNIVERSITY/ INSTITUTES: Macau University of Science and Technology / Faculty of Humanities and Arts

Human society has entered the fourth industrial revolution. With the wide application of artificial intelligence, traditional products gradually develop into smart products. However, in the process of smart product design, there is no corresponding change in design thinking and design methods. Therefore, design thinking and methods need to be changed to adapt to the rapid development of smart products. This thesis study smart product design from the perspective of embodied cognition, which is a forefront theory in cognitive science, and try to build the theoretical system of smart product design thinking and design methods.

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RESEARCH ON TRANSFER LEARNING IN EEG DATA ANALYSIS IN BRAIN-COMPUTER INTERFACE

Zitong WAN (PhD)

SUPERVISORS: Mengjie Huang, Yong Yue, Rui Yang (XJTLU)
Roberto Ferrero (UoL)

SCHOOL: Design School

Electroencephalogram (EEG) data are frequently used in rehabilitation system based on brain-computer interface (BCI). However, there is notable difference of individuals' EEG data, which affects the usability of BCI systems. To improve the user experience of BCI systems for rehabilitation purposes, transfer learning is explored in BCI to minimize the differences among users. Transfer learning adjusts the system with small-scale data of the task, and maintains the learning ability with individual difference. This work generalizes the algorithms of transfer learning and their practical applications in EEG data analysis in recent years, which has been published in Neurocomputing (JCR Q1).

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ECOWAS AND SADC'S APPROACH TO PROBLEMS OF REGIONAL (IN) SECURITY: A REVIEW OF THE LITERATURE

Ayodele S. OWOLABI (PhD)

SUPERVISORS: Debora Malito (XJTLU)
Obert Hodzi, David Dolowitz (UoL)
Michael Connors (External)

SCHOOL: School of Humanities and Social Sciences

This article evaluates the experiences of the Economic Community of West African States (ECOWAS) and the Southern African Development Community (SADC) as regional security organisations. It reviews the literature on regionalism in Africa to understand the evolution of security regionalism in West and Southern Africa. Adopting a comparative methodology, it finds that both organisations have traditionally responded to security threats caused by domestic political violence/crisis/conflicts. Although these threats are, by nature, intrastate, the spillover effects constitute problems for regional security. Both organisations have recorded some success in tackling these threats, but challenges include institutional incapacity and lack of common goals.

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IMPACT OF CLIMATE CHANGE RISK ON STOCK MARKET AND INVESTOR BEHAVIOUR

Junxian LYU (Master)

SUPERVISORS Yajun Xiao (XJTLU)

SCHOOL School of Humanities and Social Sciences

In order to study the impact of climate risk on China's A-share stock market, I use the weighted temperature change of major cities in China to represent climate change risk and compute the beta loading of stock returns to the temperature change. I go on to estimate price of climate risk, which indices whether climate risk is priced in the Chinese stock market. I further examine if the institutional investors are socially responsible in that they reduce their holding in "brown" stocks and add in "green" stocks.

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COMPLEX INTERDEPENDENCE: CHINA-JAPAN RELATIONS UNDER THE RISE OF CHINA

Puge CUI (PhD)

SUPERVISORS Yongsheng Zhou

UNIVERSITY/ INSTITUTES China Foreign Affairs University

After China being the second economy, it can be seen that the political relations of Japan and China have obviously fluctuated. When it comes to use complex interdependence theory to explain this phenomenon, it should be divided into two parts – resource interdependence and ability interdependence. Then, it can be argued that in terms of resource, when China depends more on Japan's technology, capital, tourism and education, two countries tend to in better relations. Besides, as for ability interdependence, when Japan depends more on China's military abilities, institutional abilities and ecological governance abilities, the bilateral relations tend to be more amicable.

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ZIMBABWE`S CONFLICT EXPERIENCES: CHALLENGES FOR PEACEBUILDING

Silence MASIYA (PhD)

SUPERVISORS Debora Malito (XJTLU)
Diana Jeater (UoL)

SCHOOL School of Humanities and Social Sciences

The post-independent Zimbabwe witnessed a wave of continuous politically motivated violence resulting in gross violation of human rights. Such violence led multi-stakeholders to initiate various peacebuilding efforts. This research argues that conflicts persist in Zimbabwe despite the adopted approaches to peacebuilding and post-conflict negotiations. The study further notes that structural disconnection exists between the top leadership, the middle, and the grassroots, affecting peacebuilding in Zimbabwe. I adopt empirical historiography and qualitative methodology to disclose the Zimbabwean conflict experiences that justify where Zimbabwe now sits, at the centre of complex peacebuilding networks.

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THE CURRENT SITUATION AND PROSPECT FORECAST OF RUSSIA-BELARUS INTEGRATION

Yuchao HU (PhD)

SUPERVISORS Lihua Shen

UNIVERSITY/ INSTITUTES Heilongjiang University /
Center for Russian language literature and culture studies

On September 9, 2021, Russia and Belarus reached an agreement on accelerating the integration of the alliance countries. As a sub-regional integration organization, the Russian-Belarusian Union has attracted the attention of the international community since its establishment. The integration of Russia and Belarus over the past 20 years has made important progress in the political, military, and economic fields. However, due to the existence of internal and external factors, the process has continued to fluctuate. In view of this, there is still uncertainty about whether Russia-Belarus integration will deepen rapidly or slowly merge.

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A QUANTITATIVE INSIGHT INTO THE ROLE OF SKIP CONNECTIONS IN DEEP NEURAL NETWORKS OF MODERATE COMPLEXITY THROUGH A CASE STUDY OF HETEROGENEOUS POROUS MEDIA

Abouzar CHOUBINEH (PhD)

SUPERVISORS: Jie Chen, Fei Ma (XJTLU)
Frans Coenen (UoL)

SCHOOL: School of Science

This research presents an investigation of whether skip connections significantly affect the performance of deep neural networks of moderate complexity or whether their inclusion has little or no effect. The analysis was conducted using Convolutional Neural Network (CNN) to predict four different multiscale basis functions for the mixed Generalized Multiscale Finite Element Method (GMsFEM). Three skip connection schemes were added to the base structure: (Scheme 1) from the first convolutional block to the last, (Scheme 2) from the middle to the last layer, and (Scheme 3) from the middle to the last and the second-to-last layers. The results demonstrate that the first improves the base models' performance only with respect to the training subset. With the exception of basis 4, the second tends to produce an enhanced performance of the other models with respect to the training, validation, and testing subsets. However, the third scheme proves most effective in all cases, increasing the coefficient of determination (R^2) value by 0.0224 to 0.044 and decreasing the Mean Squared Error (MSE) value by 0.0027 to 0.0058.

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WHERE ARE THE SIMILARITIES?

Binrui SHEN (PhD)

SUPERVISORS: Qiang Niu, Hui Zhang(XJTLU)
Linnong Yuan (UoL)
Shengxin Zhu(BNU)

SCHOOL: School of Science

The detection of similarities between pictures is laborious, and sometimes is unrecognizable with human eyes. A tool for detecting similarity between images may help to alleviate this problem. Some methods based on local feature points matching work for most of the time, while these methods may result in mess of matchings due to ignorance of global relationship between features. We present a framework to detect similar pictures with the graph matching techniques.

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ConsRM: COLLECTION AND LARGE-SCALE PREDICTION OF THE EVOLUTIONARILY CONSERVED RNA METHYLATION SITES, WITH IMPLICATIONS FOR THE FUNCTIONAL EPITRANSCRIPTOME

Bowen SONG (PhD)

SUPERVISORS: Jia Meng (XJTLU)
Daniel J. Rigden (UoL)

SCHOOL: School of Science

Motivation: N6-methyladenosine (m^6A) is the most prevalent RNA modification on mRNAs and lncRNAs. Evidence increasingly demonstrates its crucial importance in essential molecular mechanisms and various diseases. With recent advances in sequencing techniques, tens of thousands of m^6A sites are identified in a typical high-throughput experiment, posing a key challenge to distinguish the functional m^6A sites from the remaining 'passenger' (or 'silent') sites. **Results:** We performed a comparative conservation analysis of the human and mouse m^6A epitranscriptomes at single site resolution. A novel scoring framework, ConsRM, was devised to quantitatively measure the degree of conservation of individual m^6A sites. ConsRM integrates multiple information sources and a positive-unlabeled learning framework, which integrated genomic and sequence features to trace subtle hints of epitranscriptome layer conservation. With a series validation experiments in mouse, fly and zebrafish, we showed that, ConsRM outperformed well adopted conservation scores (phastCons and phyloP) in distinguishing the conserved and unconserved m^6A sites. Additionally, the m^6A sites with a higher ConsRM score are more likely to be functionally important. An online database was developed containing the conservation metrics of 177,998 distinct human m^6A sites to support conservation analysis and functional prioritization of individual m^6A sites. And it is freely accessible at: https://www.xjtlu.edu.cn/biologicalsciences/con.

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CHROMOSOME SEGMENTATION WITH IDEA OF RENDERING

Chengyu WANG (PhD)

SUPERVISORS: Fei Ma (XJTLU)
Valerio Selis (UoL)

SCHOOL: School of Science

Chromosome karyotyping is an important procedure in diagnosing genetic diseases, and the computer- aided way mainly contains two stages: segmentation and classification.
This research propose a novel chromosome segmentation module named ChrRender, with the idea of rendering the chromosome instances by combining rich global features from the backbone and coarse mask prediction from Mask R-CNN. The proposed methods are implemented on the public Q-band dataset BioImLab and a private G-band dataset, obtained AP50 of 96.579% and 96.809%, respectively.

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A NOTE ON CLOSED-FORM SPREAD OPTION VALUATION UNDER LOG-NORMAL MODELS

Dongdong HU (PhD)

SUPERVISORS	Hasanjan Sayit, Chengxiu Ling, Athanasios Makrodimopoulos (XJTLU) Linglong Yuan (UoL)
SCHOOL	School of Science

In this note, we give an alternative closed form formula for the price of spread call options under the log-normal models also. Our formula can be seen as a generalization of the closed-form formula presented in Bjerksund and Stensland's paper as their formula can be obtained by selecting special parameter values to our formula. Numerical tests show that our formula performs better for a certain range of model parameters than the closed-form formula proposed by Bjerksund and Stensland.

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TS-BERT: A FUSION MODEL FOR PRE-TRAINING TIME SERIES-TEXT REPRESENTATIONS

Jiahao QIN (PhD)

SUPERVISORS	Lu Zong, Xiaojun Zhang, Fei Ma (XJTLU) Yi Zhang (UoL)
SCHOOL	School of Science

There are many tasks to use news text information and stock data to predict the crisis. In the existing research, the two usually play one master and one follower in the prediction task. Use one of the news text and the stock data as the primary information source for the prediction task and the other as the auxiliary information source. This paper proposes a fusion model for pre-training time series-Text representations, in which news text and stock data have the same status and are treated as two different modes to describe crises. Our model has achieved the best results in the task of predicting financial crises.

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FINANCIAL STATEMENT ANALYSIS BASED ON MACHINE LEARNING METHOD

Junwei WEI (PhD)

SUPERVISORS	Conghua Wen, Chengxiu Ling (XJTLU) Yi Zhang (UoL)
SCHOOL	School of Science

During COVID-19, most companies' economic activity was off track, making their stock prices difficult to predict based on historical prices. Therefore, the company's financial statements have become an essential basis for judging the future trend of stock prices. We use machine learning methods to study the relationship between financial statements and stock prices in this context. At the current stage, we have used deep neural networks and recurrent neural networks methods to verify all the data of the North American market from 1980 to 2017. This poster presents the results of the current experiment.

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PLANETARY SYSTEMS IN STAR CLUSTERS: EVOLUTION AND DYNAMICAL FATE OF PLANETARY DEBRIS

Kai WU (PhD)

SUPERVISORS	M. B. N. Kouwenhoven, Tai-Jun Chen (XJTLU) Martin Gorbahn (UoL)
SCHOOL	School of Science

Most stars are formed in groups of gravitationally bound stars, containing thousands to millions of stars. Many stars are known to host planetary systems and debris structures. Planetary debris particles (planetesimals, comets, asteroids) are difficult to observe in distant planetary systems due to their small sizes compared to planets. They can, however, be studied using numerical simulations. In this project, we couple the simulation codes NBODY6++GPU and REBOUND to perform realistic simulations of circumstellar planetary debris structures in star clusters. Our results emphasize the influence of both planets and the star cluster environment on the dynamical evolution of debris structures.

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A NOVEL APPLICATION OF IMAGE-TO-IMAGE TRANSLATION: CHROMOSOME STRAIGHTENING FRAMEWORK BY LEARNING FROM A SINGLE IMAGE

Sifan SONG (PhD)

SUPERVISORS Jionglong Su (XJTLU)
Frans Coenen (UoL)

SCHOOL School of Science

In medical imaging, chromosome straightening plays a significant role in the pathological study of chromosomes and in the development of cytogenetic maps. Whereas different approaches exist for the straightening task, typically geometric algorithms are used whose outputs are characterized by jagged edges or fragments with discontinued banding patterns. To address the flaws in the geometric algorithms, we propose a novel framework based on image-to-image translation to learn a pertinent mapping dependence for synthesizing straightened chromosomes with uninterrupted banding patterns and preserved details. In addition, to avoid the pitfall of deficient input chromosomes, we construct an augmented dataset using only one single curved chromosome image for training models. Based on this framework, we apply two popular image-to-image translation architectures, U-shape networks and conditional generative adversarial networks, to assess its efficacy. Experiments on a dataset comprised of 642 real-world chromosomes demonstrate the superiority of our framework, as compared to the geometric method in straightening performance, by rendering realistic and continued chromosome details. Furthermore, our straightened results improve the chromosome classification by 0.98%-1.39% mean accuracy.

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EXACT TWO-SAMPLE TEST OF EQUALITY FOR PROPORTIONAL HAZARDS UNDER JOINT CENSORING BASED ON PARTIAL MLEs

Ting ZHANG (PhD)

SUPERVISORS Dejun Xie (XJTLU)

SCHOOL School of Science

In this paper, we consider the problem on the equality of two independent samples with proportional hazard under complete and censored samples. By assuming that the hazard function is time-dependent, we develop exact inference for the partial likelihood estimate of the ratio of two hazard rates. We then provide an efficient computational methodology to find the exact inference results.

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THE DYNAMICAL EVOLUTION OF TRIPLE SUPERMASSIVE BLACK HOLES IN GALAXY CENTERS

Xiuming XU (PhD)

SUPERVISORS Thijs Kouwenhoven (XJTLU)
Thomas Mohaupt (UoL)

SCHOOL School of Science

Supermassive black holes (BHs) reside in galaxy centers. When two galaxies merge, their BHs sink to the centre, form a supermassive BH binary and merge. The resulting burst of gravitational waves is short, but the timescale for the shrinking of BH binary is very long. Simultaneously, a third galaxy may intrude and its BH can facility the merger process. We use *N*-body simulations to study how a third BH affects the evolution of the binary, and make predictions for BH binaries and their gravitational waves. We find that a third BH accelerates the merger process of the binary.

178

THE DBAR-DRESSING METHOD FOR THE (2+1)-DIMENSIONAL JIMBO-MIWA EQUATION

Xuedong CHAI (PhD)

SUPERVISORS Yufeng Zhang

UNIVERSITY/ INSTITUTES China University of Mining and Technology

The (2+1)-dimensional Jimbo-Miwa equation is analyzed by means of the Dbar-dressing method. By means of the characteristic functions and Green's function of the Lax representation, the problem has been transformed into a new Dbar problem. A solution is constructed based on solving the Dbar problem with the help of Cauchy-Green formula and choosing the proper spectral transformation. Furthermore, we can obtain the solution formally of the Jimbo-Miwa equation when the time evolution of the spectral data is determined.

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RUN-AND-TUMBLE PARTICLES IN ONE DIMENSION WITH A FERTILE SITE

Xueqi YAO (PhD)

SUPERVISORS: Pascal Grange, Jia Meng (XJTLU)
Linglong Yuan, Takis Konstantopoulos (UoL)

SCHOOL: School of Science

Run-and-tumble particles move along a straight line: they run with constant speed, and switch direction (tumble) randomly. After going through the fertile site (a source of nutrient), an RTP produces new particles until it switches direction. We model the process of creation of new particles by a fertility function (multiplied by a fertility rate), which depends on the distance travelled since going through the origin. The equations of motion can be solved in the Laplace domain. We work out the large-time growth rate of the total number of particles in terms of the fertility function and fertility rate.

180

DIFFERENT TYPES OF DISEASE ANALYSIS BASED ON REAL MEDICAL DATA

Yan LI (PhD)

SUPERVISORS: Fei Ma (XJTLU)
Linglong Yuan (UoL)

SCHOOL: School of Science

In this research, we use real medical data from Clinical Testing Centre, SUTH to achieve disease analysis work. The main target is to detect the associations between different types of diseases with indicators. We try to build mathematical models and machine learning algorithms to construct the impact of pathogens on disease processes, and further predict more susceptible pathogens based on detected indicator parameters. Through our work, we can assist doctors in making the initial diagnosis of a patient and determining the possible pathogens of infection.

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SOME SUBGROUPS OF THE AMALGAM OF TWO GROUPS

Yanxin ZHAO (PhD)

SUPERVISORS: Li Cai, Alastair Darby (XJTLU)
Victor Goryunov (UoL)
Shengkui Ye (NYU)

SCHOOL: School of Science

Let G,H be two groups. We proved that a free group and a semi-direct product of this free group and G are two subgroups of the free product of G,H. Some examples are given to verify the results. We are interested in whether the amalgam of two groups G,H over a group A contains a free group as a subgroup. If G,H,A are cyclic groups, the above above is true.

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HIGHER ORDER RANDOMLY WEIGHTED SUM TAIL ASYMPTOTIC ANALYSIS OF HEAVY-TAILED RANDOM VARIABLES

Yingling WANG (PhD)

SUPERVISORS: Jiajun Liu (XJTLU)

SCHOOL: School of Science

Our project considers the model of randomly weighted sum of $\theta i X i$, in which $\theta 1$, $\theta 2 \ldots \theta n$ are randomly dependent random variables while $X1$, $X2$ … Xn are independent and all belong to different subclasses of heavy-tailed, like dominatedly varying function and long-tailed distribution. We are interested in the higher order tail behavior of these randomly weighted sums via an asymptotic approach. We reviewed the big-jump principle and some other useful conclusions from other papers. Under such a model, it establishes applications like Value-at-risk and conditional tail expectation. Some simulation graphs about Haezendonck–Goovaerts risks measure are presented as well.

183 WAITING STRATEGIES FOR THE DYNAMIC MOBILE PRODUCTION VEHICLE ROUTING PROBLEM

Yu WANG (PhD)

SUPERVISORS: Min Wen, Zili Wu (XJTLU)
Takis Konstantopoulos, Dongping Song (UoL)

SCHOOL: School of Science

In this work, we introduce the Dynamic Mobile Production Vehicle Routing Problem (DMoP-VRP) which is the dynamic version for the MoP-VRP. In this problem, in addition to the already known customers, we also receive new customers within the planning horizon. The target of this work is to find a suitable strategy to obtain a good-quality delivery schedule plan for both the already known and new customers. We propose four waiting strategies and test them on real life based instances . We also compare the mobile production with the central production to show the benefit of this simultaneous production and delivery.

184 MetaTX: DECIPHERING THE DISTRIBUTION OF MRNA-RELATED FEATURES IN THE PRESENCE OF ISOFORM AMBIGUITY, WITH APPLICATIONS IN EPITRANSCRIPTOME ANALYSIS

Yue WANG (PhD)

SUPERVISORS: Jionglong Su, Jia Meng (XJTLU)
Frans Coenen (UoL)

SCHOOL: School of Science

Motivation: The distribution of biological features strongly indicates their functional relevance. Compared to DNA-related features, deciphering the distribution of mRNA-related features is non-trivial due to the existence of isoform ambiguity and compositional diversity of mRNAs.
Results: We propose here a rigorous statistical framework, MetaTX, for deciphering the distribution of mRNA-related features. Through a standardized mRNA model, MetaTX firstly unifies various mRNA transcripts of diverse compositions, and then corrects the isoform ambiguity by incorporating the overall distribution pattern of the features through an EM algorithm. MetaTX was tested on both simulated and real data. Results suggested that MetaTX substantially outperformed existing direct methods on simulated datasets, and that a more informative distribution pattern was produced for all the three datasets tested, which contain *N*6-Methyladenosine sites generated by different technologies. MetaTX should make a useful tool for studying the distribution and functions of mRNA-related biological features, especially for mRNA modifications such as *N*6-Methyladenosine.
Availability: The MetaTX R package is freely available at GitHub: https://github.com/yue-wang-biomath/MetaTX.1.0.

185 AEDNet: ADAPTIVE EDGE-DELETING NETWORK FOR SUBGRAPH MATCHING

Zixun LAN (PhD)

SUPERVISORS: Fei Ma, Zili Wu (XJTLU)
Linglong Yuan (UoL)

SCHOOL: School of Science

Subgraph matching is to find subgraphs in a data graph that is isomorphic to an existing query graph. It is a well- known NP-complete problem, yet has found its applications in numerous fields. Traditional exact methods face great challenge in matching largescale graphs. Learning-based methods have been developed to match large size graphs with certain efficiency. Most these methods assume that corresponding nodes in matching graphs are mapped to the similar points in the representation space, which is problematic since corresponding nodes between the data graph and query graph are often distinct objects due to existence of extra edges connecting to the matched nodes in the data graph. This study proposes a novel Adaptive Edge-Deleting Network (AEDNet) for general subgraph matching. In the method a novel sample-wise adaptive edge-deleting mechanism removes extra edges to ensure the consistency of adjacency structure of matched nodes, while a unidirectional cross-propagation mechanism is used to ensure consistency of features of matched nodes. The model is trained in an end-to-end fashion. We applied the proposed method on six datasets with sizes of graphs varying from 20 to 2300. Our proposed method obtained an average F1 score of 0.97 on six datasets and outperformed the other SOTAs on four datasets in terms of F1 score. On the left two datasets, our proposed method obtained F1 scores that are close to the best results obtained by G-Finder which is a learning-free method. In terms of running time, AEDNet uses about 0.35s averagely while three learning-free methods require at least 36s. We also verified the effectiveness of the proposed sample-wise adaptive edge-deleting mechanism both mathematically and experimentally. Compared with other learning-based methods, AEDNet is flexible on the size of both data graph and query graph. AEDNet can accept new graph pairs, with sizes of query or data graphs that were not appeared in the training stage, while many learning-based methods can only accept fix sized graphs after deployed.

186 PREDICTION OF THE USD-RMB EXCHANGE RATES WITH MACHINE LEARNING

Zizhu WANG (PhD)

SUPERVISORS: Ahmet Goncu (XJTLU)
Hirbod Assa (UoL)

SCHOOL: School of Science

In recent years, against the backdrop of the China-US trade war, the global financial economic landscape has undergone significant changes. How these changes will affect the price volatility of RMB-USD exchange rate and how to find influential factors and make effective predictions using machine learning methods become the focus of our research. Therefore, we selected more than 100 factors (including macro, news, public opinion and classical technical factors) as the research object of generalization. After algorithm scoring, the top 20 important factors were selected as the input of Decision Tree, SVM and Random Forest model for research, analysis and comparison.

187 GEOGRAPHICAL PATTERN OF MINERALS AND LIFE EXPECTANCY: A NATIONAL ANALYSIS ACROSS CONTERMINOUS USA

Bingjie QU (PhD)

SUPERVISORS: Ying Chen, Linxi Yuan, Zheng Feei Ma (XJTLU)
Roy Goodacre (UoL)

SCHOOL: XJTLU Wisdom Lake Academy of Pharmacy

It is an ecological study investigating the geographical association of levels of minerals (in stream sediments or surface soils) with life expectancy across conterminous USA at the county level (n=3085). Minerals associated with life expectancy were Na, Ca, Zn, As and Se. Using latent class analysis, three geochemical patterns of these minerals were determined, the "Common" (n=2058), "Infertile" (n=739) and "Plentiful" (n=288) clusters. Life expectancy of population in counties with "infertile" profile was found to be 2-3 years shorter, compared with that in the other two clusters. This study showed the real-world collective effects of geochemical minerals on health.

188 EFFECTS OF A CROWDSOURCED HEALTH PROMOTION INTERVENTION ON CONDOM USE AMONG COLLEGE STUDENTS IN SUZHOU, CHINA

Etienne JAIME HINOJOSA (PhD)

SUPERVISORS: Stephen Pan, Elmer Villanueva (XJTLU)
Andrew Jones (UoL)

SCHOOL: School of Science

College students are a population of public health interest because many become sexually active during this time. Studies show approximately 48% of sexually active Chinese college students do not use condoms during intercourse. We developed a crowdsourced health intervention on sexual health behaviors among freshman college students in Suzhou, China. Data after 6 months of implementation show an increase from 50% at baseline (N=30) to 75% (N=33) on consistent condom use during sexual encounter in the past 3 months among sexually active participants (p-value<0.01). The results after 6 months of intervention implementation show promise for future public health interventions.

189 DEPRESSIVE MOOD AMONG THE ELDERLY CHINESE

Jining LI (PhD)

SUPERVISORS: Elmer Villanueva (XJTLU)
Benjamin Barr (UoL)

SCHOOL: School of Science

Mental health has become a major challenge in China's elderly population. Depression appears to be a particularly strong predictor of mortality among the elderly. Thus, it is necessary to understand their mental health needs. The researcher employed a mixed method research and will talk about the 1) semi-structured interviews on investigating how social activities, marriage status and living status are linked with depressive mood in this population; 2) analysis of CHARLS of how different risk factors are linked with depression in Chinese elderly.

190 REMINDERS IMPROVE ORAL HYGIENE AND ADHERENCE TO APPOINTMENTS IN ORTHODONTIC PATIENTS: A SYSTEMATIC REVIEW AND META-ANALYSIS

Khaled Mohamed Wafaie MORSI MOHAMED (PhD)

SUPERVISORS: Yiqiang Qiao, David R. Bearn

UNIVERSITY/ INSTITUTES: Zhengzhou University (First affiliated hospital), University of Dundee.

Objectives: The main objectives of this review were to assess the effectiveness of reminder systems in improving oral hygiene (OH) and adherence to appointments in orthodontic patients.
Search and selection: An unrestricted search was conducted in six electronic databases plus manual search. Only randomized controlled trials (RCTs) were included.
Data collection and analysis: Two authors were independently involved in study selection, data extraction, and bias assessment. A random-effects model with its corresponding 95% confidence interval (CI) was generated for comparable outcomes. Periodontal parameters were evaluated in the short term (1–3 months) and in the long term (>3 months). Cochrane risk of bias tool was utilized for bias assessment and the quality of the resultant evidence was graded. Additional subgroup and sensitivity analyses were implemented.
Results: Fourteen RCTs involving 2078 participants met the inclusion criteria. Small but statistically significant standardized mean differences in the plaque index scores were recorded favoring patients receiving reminders in the short-term (–0.38; 95% CI: –0.65 to –0.10) and in the long-term (–1.51;95% CI: –2.72 to –0.30). Patients receiving reminders were less likely to miss their appointments with a relative risk of (0.39; 95% CI: 0.22 to 0.70) and less likely to develop white spot lesions (0.45;95% CI: 0.31 to 0.65).
Conclusions: There is moderate-to-high quality of evidence that reminders have a positive effect on OH and adherence to appointments in orthodontic patients.

191 Cd DISTURBS GLUCOAE AND LIPID METABOLISM BY INHIBITING GLUCOSE UTILIZATION AND INDUCING LIPID REDISTRIBUTION IN RATS

Mengyang LI (PhD)

SUPERVISORS Zengli Zhang

UNIVERSITY/ INSTITUTES Soochow University

Cadmium (Cd) is a toxic heavy metal with widespread environmental distribution, effects and mechanism of Cd on metabolism are still controversial. This study identified links between Cd exposure and disorder of metabolism and explore possible mechanism. Firstly, Cd inhibited glucose transport, glycogenolysis and gluconeogenesis, blocked the oxidation of glucose and fatty acid, decreased the ATP level in liver. Secondly, Cd decreased the serum lipids levels yet increased the hepatic lipids levels, it may be related with the promoted lipids uptake and transport. Thus, Cd induced the dysfunction of glucose and lipid metabolism by inhibiting glucose utilization and promoting lipid redistribution.

192 THE LIVED EXPERIENCE OF CHRONIC FATIGUE IN CHINA

Qingtian MIAO (PhD)

SUPERVISORS Marius Wamsiedel, Elmer Villanueva (XJTLU)
Paula Byrne (UoL)

SCHOOL School of Science

Chronic fatigue syndrome (CFS) is a condition that is rarely diagnosed in China. Based on 18 qualitative in-depth interviews with people diagnosed with CFS, this presentation examines the lived experience of the disease and the impact of the diagnosis on patients' identity and relationship with others. The preliminary findings suggest that CFS patients are experiencing physical, social, and emotional difficulties. The stigma of mental illness in China made the patients cautiously communicating about their situations with families or friends. This study demonstrates how patients' lives are affected after getting the diagnosis including their experiences at work and in their social context.

193 BREAST MILK IODINE CONCENTRATION AS A POTENTIAL BIOMARKER OF IODINE STATUS IN LACTATING WOMEN AND INFANTS: A SYSTEMATIC REVIEW PROTOCOL

Shuchang LIU (PhD)

SUPERVISORS Zheng Feei Ma, Elmer Villanueva (XJTLU)
Andrew Sharp (UoL)

SCHOOL School of Science

Urinary iodine concentration (UIC) is commonly used as a biomarker to assess iodine status in populations. Since breast milk is the only source of iodine for breastfed infants, adequate iodine status is important for both the mothers and their infants to maintain normal thyroid function. However, there is an inconsistent relationship between breast milk iodine concentration (BMIC) and UIC. Thus, this systematic review aims to explore whether BMIC can be used as a biomarker of maternal and infant iodine status.

194 SOCIAL LANDSCAPE PERFORMANCE EVALUATION OF COAL MINING SUBSIDENCE WETLAND PARK——TAKING PAN'AN LAKE IN XUZHOU AS AN EXAMPLE

Cankun LI (PhD)

SUPERVISORS Jiang Chang, Shanshan Feng

UNIVERSITY/ INSTITUTES China University of Mining and Technology

With the construction of the coal mining subsidence wetland park, exploring the effect of the park and evaluating the benefits after ecological restoration has gradually become a hotspot. This paper built a social landscape performance evaluation framework of the coal mining subsidence wetland park composed of 28 evaluation indicators. Taking Pan'an Lake National Wetland Park in Xuzhou as an example, using the fuzzy comprehensive evaluation method to obtain the evaluation results and based on the surrounding residents and tourists' perceptions to improve satisfaction of the evaluation subject. This evaluation index system can provide a reference for the evaluation of social landscape performance of other coal mining subsidence wetland parks.

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HEALING LANDSCAPE THAT CAN SUPPORT HEALTHY AGEING-IN-PLACE IN SUZHOU AT A COMMUNITY LEVEL

Da HUO (PhD)

SUPERVISORS	Bing Chen (XJTLU) Fei Chen (UoL)
SCHOOL	Design School

This research aims to explore whether and how healing landscape can support healthy ageing-in-place at a community level in Suzhou. Current research in this field mainly concentrates on the retrofit of existing communities, with a focus on the built environment to support healthy ageing-in-place, while often overlooks the space between buildings.

In order to fill in the current research gap, based on literature review and best practices worldwide, the interrelationship between landscape and elders' physical and psychological needs is identified. Case studies will be conducted in Suzhou to verify the theoretical design framework afterwards. Then, based on such early findings, prototypes will be built.

To test the effectiveness of the design guidance, the elderly's response to the healing landscape will be collected and analysed to validate the healthcare effect. At last, a design guidance that is based on evidence-based design and with a focus on plant configuration that can support healthy ageing-in-place in communities is expected to be established.

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MEASURING THE ATTRACTIVITY OF URBAN PARKS BASED ON POI MIXED DEGREE IN SUZHOU, CHINA

Geng MA (PhD)

SUPERVISORS	Paola Pellegrini (XJTLU) Stephen Jay (UoL)
SCHOOL	Design School

Urban parks play a relevant role in defining the liveability of cities and several researches have studied them, but the relationship between the built environment and parks in attracting visitors has received little attention. This research studied the urban parks in Suzhou and explored whether and how the POI mixed degree of the built environment around the parks affects the intensity of visitors flow in the parks. Based on the social media data and Hill number index, this research clarifies the relation between the attractivity of parks in Suzhou and the land uses around the same parks.

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TOWARDS HIGH-QUALITY DESIGN OUTCOMES THROUGH DESIGN REGULATORY FRAMEWORK-- A CASE STUDY OF SHANGHAI WATERFRONTS

Jiayi LI (PhD)

SUPERVISORS	Yiwen Wang, Joon Sik Kim (XJTLU) Sebastian Dembski (UoL)
SCHOOL	Design School

The Chinese central government has emphasised strengthening urban design practice by improving the quality of the built environment to achieve more human-oriented design outcomes. Urban design management systems have been established by introducing a series of normative documents and practical innovations. However, the current planning and design thinking addressing spatial experience is not well practised in practice. Therefore, this research is to understand the driving forces within the design process that impact the urban design practice and quality of the built environment. It aims to explore the role of the regulatory framework play in delivering urban design quality in Shanghai.

198

DENSIFY THE HIGH-DENSITY CHINA TOWARD SUSTAINABLE COMMUNITY REGENERATION – RESEARCH BASED ON SUZHOU OLD COMMUNITIES

Jinliu CHEN (PhD)

SUPERVISORS	Paola Pellegrini (XJTLU) Gareth Abrahams (UoL)
SCHOOL	Design School

The "urban regeneration movement" is mentioned for the first time in the Chinese 14th five-year plan, and its major content is the old communities built before 2000. This research studies the role of densification in regenerating old communities and promoting sustainable development by means of design guidelines for regeneration. Previous research in this field focused on policymaking and multiple planning method, and were less concerned about an integrated "assessment – design" approach. The research method is mixed with comprehensive measurements of spatial and social aspects of the case studies. The results can provide a reference for the top-level policy of transformation of old communities. and form a practical assessment frame and sustainable regeneration implementation guidelines.

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UNIVERSITY CAMPUS ENVIRONMENT DESIGN TO PROMOTE STUDENTS' MENTAL HEALTH - TAKING XJTLU AS AN EXAMPLE

Kunlun REN (PhD)

SUPERVISORS: Bing Chen (XJTLU)
Junjie Xi, Manuela Madeddu (UoL)

SCHOOL: Design School

This study aims to explore how the university campus environment affects students' mental health and how it can be designed to reduce students' mental-health risks. The current related research mainly focuses on verifying the psychological effects of specific natural or urban environments on human mental health while lacking an exploration to guide design practice in the university campus settings. Based on literature review, this study analyzed the correlationship between the campus environmental settings and the perceived mental health of students from a theoretical perspective. Taking Xi'an Jiaotong-Liverpool University (XJTLU) as an example, a mental-health campus map consisting of students' perceptions of the campus environment will be produced through a pilot study. Finally, a theoretical design guidance will be proposed to support the campus environment design to promote students' mental health.

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EXPLORING VILLAGE COLLECTIVE-LED RURAL DEVELOPMENT AS AN APPROACH FOR CHINA'S RURAL REVITALISATION

Mengchuan LIU (PhD)

SUPERVISORS: Yiwen Wang (XJTLU)
David Shaw (UoL)

SCHOOL: Design School

Since 2018, "rural revitalisation" has been proposed by the China central government as a vital national development strategy in the hope of relieving urban-rural dichotomy and addressing rural issues. Village collective-led development is considered as a promising model to achieve sustainable and endogenous rural development in China. This research aims to explore the potentials of village collectives for leading China's rural revitalisation and examine the economic, social, psychological and political impacts on rural community empowerment. The empirical study is conducted in Linghu village (Suzhou) by doing semi-structured in-depth interviews (with key actors) and questionnaire surveys (with villagers). The motives, behaviours and interactions of key actors of Linghu village have been investigated via the Actor-Network Theory to analyse the implementation of the national rural revitalisation strategy. Finally, the research offers policy recommendations for China's rural development regarding rural non-agriculture development and rural self-governance.

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MULTI-FACTORIAL DECISION-MAKING MODEL FOR THE DESIGN OF HEALTHCARE ENVIRONMENT

Puyue GONG (PhD)

SUPERVISORS: Bing Chen, Cheng Zhang (XJTLU)
Spyridon Stravoravdis (UoL)

SCHOOL: Design School

This research aims to propose a BIM-based tool to investigate the integrated influences of multiple physical environment factors on human in healthcare environment, so that it can improve the overall quality of healthcare environment. Previous research mainly focused on the built environment, while lacked information of human-subject related information. This project intends to fill in the gap by incorporating patients' healthcare outcome into the BIM platform. Explicitly, a machine learning based prediction model will be established by using data collected from case studies; thereby exploring the interrelationship of users' healthcare outcome with physical environment features by a sensitivity analysis. It is expected that research findings can be used to support the healthcare environment design in China.

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GETTING PUBLIC TRANSPORT NETWORKED: HOW TO IMPROVE THE IMPLEMENTATION AS A "WICKED" PROBLEM (IN CHINA)

Shaohua HU (PhD)

SUPERVISORS: Sophie Sturup (XJTLU)
Rhiannon Corcoran, Olivier Sykes (UoL)

SCHOOL: Design School

Getting public transport networked is seen as necessary to create a system which can be an alternative to private cars. Networked public transport system has been implemented in many cities but feedbacks from the public are not as expected, showing that implementation leading to public acceptance is complex. Thus, implementation of networked systems will be explored to determine ways to deal with this complexity. One element of the research explores whether habit formation based on the self-determination theory can help deal with this complexity.

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EXPLORE RESETTLEMENT NEIGHBOURHOOD ENVIRONMENT INFLUENCE ON ELDERLY RESIDENTS' HEALTH-RELATED QUALITY OF LIFE IN CHINA —A HEALTH NICHE MODEL APPROACH

Siyu CHEN (PhD)

SUPERVISORS Ying Chang, Bing Chen (XJTLU)
Fei Chen (UoL)

SCHOOL Design School

Extensive previous researches have shown the complex relationship between neighbourhood environment, behaviours, and health outcomes, but the role of small open space within the neighbourhood has been largely overlooked. Those 'soft edge' space between buildings and roads are indeed the most intimate space for elderly, as an extension from home place to public space, particularly for displaced farmers who used to live in countryside. This research aims to explore the interrelationship between small-scale open space within resettlement neighbourhoods and health outcomes of the landless elderly in China, enriches the concept of health niche (Sarkar et al., 2014) at meso-micro level.

Reference:

Sarkar, C., Webster, C. and Gallacher, J. (2014) Healthy cities: Public health through urban planning. Edward Elgar Publishing

204

QUALITY ASSURANCE IN HIGHER EDUCATION

Tianjie JIANG (PhD)

SUPERVISORS Bing Chen (XJTLU)
Thomas Moore (UoL)

SCHOOL Design School

This research aims to explore the development trend of quality assurance in Chinese higher education from the perspective of professional certification. Based on the literature review, the professional certification evolution of one discipline in China and the UK are reviewed according to certification standards reform. Based on the findings, some suggestions are given to ensure that the quality of talents training in higher education meets development needs.

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EVALUATION FRAMEWORK OF LOW-CARBON CITY'S SPATIAL PLANNING BASED ON GREENHOUSE GAS INVENTORY

Xiuli CAO (PhD)

SUPERVISORS Xiaoshun Li

UNIVERSITY/INSTITUTES China University of Mining and Technology

Greenhouse Gas Inventory helps to evaluate a city's carbon sources and sinks in a period, and then promotes its low-carbon spatial planning. In this paper, we study Framework for national greenhouse gas emission inventories ,2019 Refinement to the 2006 IPCC Guidelines for National Greenhouse Gas Inventories and current planning. Based on literature, expert consultation and analytic hierarchy process, we attempt to set up the low-carbon spatial planning evaluation indexes of 24 first-level land uses in natural ecological space, urban space and agricultural space. Finally, we form an evaluation system including low-carbon spatial planning objectives, indexes and constraint strategies.

Key words: low-carbon city, spatial planning, evaluation index, greenhouse gas inventory

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FOR A BETTER QUALITY OF LIFE IN CHINA: PLANNING INCENTIVISATION IN HOUSING DEVELOPMENT

Yang AN (PhD)

SUPERVISORS Yunqing Xu, Sheng Zhong (XJTLU)
Olivier Sykes (UoL)

SCHOOL Design School

Planning incentivisation has emerged as a more proactive mechanism to shape desired forms of development while minimizing their negative public impacts through leveraging developers' resources and motivations. However, effective implementation requires complex negotiations and interactions with different stakeholders and could be dampened by the enhanced role of property developers. This research will examine how planning incentivisations can be used in housing development to improve the quality of life with a detailed analysis and visualization of findings through comparative case studies incorporating cognitive mapping and institutional approach. It will reveal the mechanisms for designing viable developments, selecting instruments and motivations to change, and interacting between parties concerned that can reshape relations between public and private individuals under China's "new-type urbanization."

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POSSIBILITIES AND LIMITATIONS OF CHINESE ECO-CITY DEVELOPMENT: THE CASE STUDY OF SINO-SINGAPORE TIANJIN ECO-CITY (SSTEC)

Yani WU (PhD)

SUPERVISORS Li Yu

UNIVERSITY/INSTITUTES Cardiff University / School of Geography and Planning

By analysing the case study of SSTEC and using qualitative research methods (e.g. interviews and participant observation), this research aims to argue that Chinese eco-city planning should be deemed as one of the humanistic planning approaches, and its primary goal is to build sustainable and liveable habitat for people by taking their daily needs and behaviours into account. Therefore, it requires planning practitioners to create living environment that can 'communicate' with people. However, people's needs and their behaviours are diverse and are changing from one person to another, so in order to best meet people's needs, it is of great importance to be informed this changing and diversity during eco-city planning process. Based on the analysis of interdisciplinary research, this research aims to use the *Environmental Psychology* for illustrating why people's behaviours matter, and it also aims to introduce this psychological concept into urban planning discipline for creating a brand-new conceptual planning model which can better integrate the consideration of people's daily needs and their social behaviours into eco-city's planning process.

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DIGITAL INCLUSION AND SOCIAL INCLUSION: THE EXPERIENCE OF CONSTRUCTION MIGRANT WORKERS IN CHENGDU, CHINA

Yanru FENG (PhD)

SUPERVISORS Joon Sik Kim, Katia Attuyer, Hyungchul Chung (XJTLU)
David Shaw (UoL)

SCHOOL Design School

The issue of social exclusion has received considerable critical attention in China, and the migrant works in the construction industry are at the centre of this debate. Digital communication technology has emerged as a powerful platform for social relation inclusion. This research investigates the usefulness of instant message applications to improve social relation inclusion of the construction migrant workers in a real-life context by exploring the practical cases in Chengdu, China. By employing qualitative modes of enquiry, the study systematically reviews the nature of migrant workers' social relations. It generates fresh insight into the relationship between the use of instant message applications and social relations exclusion experience.

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LONGITUDINAL ANALYSIS OF THE EFFECTS OF URBAN FORM ON AIR QUALITY IN CHINESE CITIES

Yanting FAN (PhD)

SUPERVISORS Joon Sik Kim, Hyung-chul Chung (XJTLU)
Alex Lord (UoL)

SCHOOL Design School

Over the last two decades, air pollution has posed a tremendous socio-economic challenge to the development of Chinese cities with rapid urbanization. Many cross-sectional studies suggest that urban form can reduce urban air quality deterioration sustainably. To date, there has been a little argument on the dynamic relationship between urban form metrics and air quality in different urban form pattern groups. This research aims to examine the association between changes in urban form and air quality and investigate the time-lag effect between urban form and air quality. The study will be conducted through panel data model drawn from 333 prefecture-level Chinese cities.

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TAKE-OUT FOOD AND OVERWEIGHT, OBESITY AND SUBJECTIVE WELLBEING OF ADULT URBAN RESIDENTS IN CHINA

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The high prevalence of online-ordered take-out food has dramatically changed Chinese urban residents' dietary behaviors in recent years. Meanwhile, the increase in overweight and obesity has become a major public health concern in China. However, few studies investigated the relationship between take-out consumption and overweight and obesity nor the impacts of take-out consumption on individual's subjective wellbeing. This study will fill the research gaps by integrating social-ecological model and theory of planned behavior and applying cross-sectional research design to collect residents' diet behaviors, BMI status, subjective wellbeing, as well as their neighborhood food environment.

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EXPLORING THE RELATIONSHIP BETWEEN SCHOOL DISTRICT AND HOUSING SUBMARKET IN CHINA

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Understanding housing market segmentation with school districts become a critical issue in China as it has brought about social and spatial change across school districts. Recent years saw spatially uneven monetization of the school district in Suzhou, China. The following research questions are set up: 1) What is the relationship between residents' school preferences and the existing residential housing market?, and 2) How does the school choice of residents in different submarkets affect their residential choices? The spatial clustering analysis and spatial econometrics are employed to answer these questions. The results will comprehensively show the complexity of the submarket structure and demonstrate how the school district embodies the residential choice.

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TOWARDS FLOOD RESILIENT DELTAS: LEARNING FROM ADAPTIVE URBAN FORMS IN JIANGNAN AREA (14TH -2035)

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Flooding is a significant problem in deltas due to their geographical vulnerability (natural perspective)and rapid urbanisation (human perspective). Urban form plays a critical role to enhance the resilience of urban systems for flooding mitigation and adaptation. Taking Jiangnan area as a case study, this research investigates how morphological approaches can be applied to long-term flood risk management by learning the adaption of urban forms for flooding mitigation in the history of delta development. The study employs temporal analysis of the changing nature of urban form in 600 years and the spatial comparisons of particular morphological changes. The research attempts to identify adaptive principles of resilient urban form and its application to contemporary regional planning strategies.

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HOW DID BUILT ENVIRONMENT AFFECT URBAN VITALITY IN URBAN WATERFRONTS? A CASE STUDY IN NANJING REACH OF YANGTZE RIVER

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This study takes advantage of emerging urban big data and adopts hourly Baidu heat map data as a proxy for portraying urban vitality along the Yangtze River in Nanjing. The impact of built environment on urban vitality is revealed with the OLS and GWR models. The results show that (1) the distribution of urban vitality in urban waterfronts shows similar agglomeration characteristics on weekdays and weekends; (2) the building density has the strongest positive associations with urban vitality in urban waterfronts; (3) the effects of the built environment on urban vitality in urban waterfronts have significant spatial variations.


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