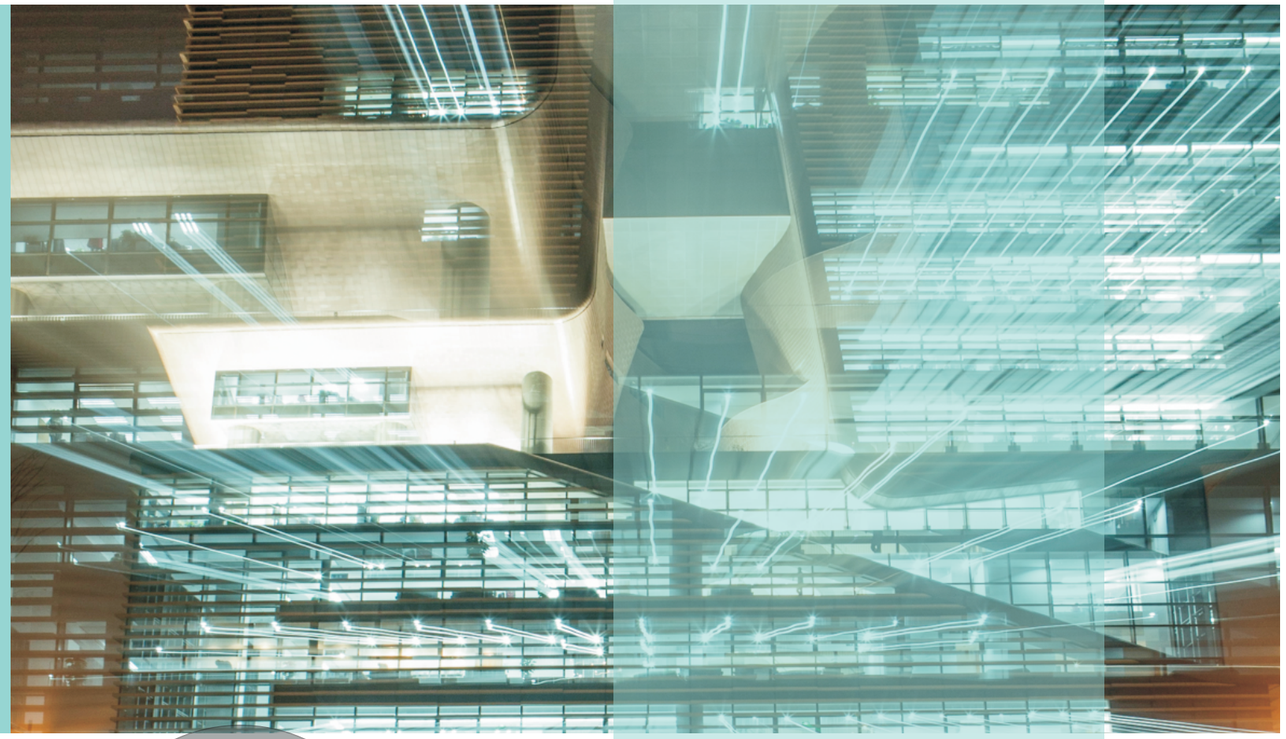

2016 SURF POSTER DAY

Summer Undergraduate Research Fellowship

Wednesday, September 7th, 2016
Location: G23W, Central Building

Academic Enhancement Centre
Xi'an Jiaotong-Liverpool University

SURF
Summer Undergraduate Research Fellowship

Welcome to the 2016 Summer Undergraduate Research Fellowship (SURF) Poster Day

At the end of each SURF period usually early September, a SURF Poster Day is held to mark the end of the period and to allow students to come together to showcase the results of their research. This event embodies the best of XJTLU's "research-led" tradition. More than 60 posters on display are the results of the summer-long research collaboration between XJTLU academic staff and Year 1, 2 and 3 undergraduate students.

Given the competitive nature of the SURF grants, these posters represent the work of talented and passionate students. The SURF programme provides these students with the opportunity to acquire practical research skills related to knowledge they have acquired in class. The event is also a celebration of both student research at XJTLU, and the strong student-staff bond that makes it possible.

This year SURF piloted an international student scheme accepting a non-XJTLU international student to come to the University and participate in a research project. This summer, Francesco Saettone, a Year 3 student from the University of Turin, Italy collaborated with XJTLU students on a Mathematics project.

Event Programme

12.45 – 1.15pm	**Welcome Desk Open**
1.15 – 1.25pm	**Welcome Address** [Prof. Youmin Xi, Executive President, Xi'an Jiaotong-Liverpool University]
1.25 –1.40pm	**SURFer's Story** ［Chenxia Gu, 2015 SURF student, 2016 Master student, Department of Applied Mathematics and Theoretical Physics, University of Cambridge. SURF Supervisor: Alejandro Vidal-Lopez（Mathematics)]
1.40 - 3.00pm	**Academic Judging**
1.40 - 4.00pm	**Peer/Students Judging** [All SURF students and attending students may view, judge and then nominate a winning SURF poster. This will be the Student-nominated Prize].
4.30 - 5pm	**Awards Ceremony** [Prof. David O'Connor, Dean, Research and Graduate Studies]
5pm onwards	Awards Reception

SURF Projects

No.	Cluster	Dept.	SURF Poster Title	SURF Code
1	Built Environment	ARC	Challenges to the Adoption of BIM in Chinese Architecture, Engineering and Construction	201601
2	Built Environment	ARC	Suzhou Densities	201602
3	Built Environment	ARC	Typologies of contemporary heritage conservation practice in rural villages of China	201603
4	Built Environment	CEN	Flexureal, shear and tensile strengthening of RC beams with basalt textile reinforced mortar- Experimental, numerical and experiential study	201604
5	Built Environment	CEN	Embodied Energy in Delivering Building Products	201605
6	Built Environment	CEN	Instrumentation and testing of UHPFRC composite slab containing recycled aggregates	201606
7	Built Environment	CEN	Standard Test Method for Drying Shrinkage of Mortar Containing Hydraulic cement	201607
8	Built Environment	CEN	Repair and strengthening of Reinforced concrete beams with the use of composite materials	201608
9	Built Environment	UPD	Redesigning and Retrofitting Existing Communities in Suzhou to allow for Ageing-in-place	201609
10	Built Environment	UPD	‘Recycling Suzhou’. Exploring the geographies of informal waste recycling in a growing Chinese city.	201610
11	Built Environment	UPD	Sense of Place in the Digital Age: analyzing social media for tourism planning	201611
12	Built Environment	UPD	An exploration of collaborative community planning in SIP	201612
13	Humanities and Social Sciences	CS	Changing selves – Chinese people and the presence of foreigners	201613
14	Humanities and Social Sciences	ECC	Between Propaganda and Entertainment: The Marketing of the Chinese 'Main Melody' Films	201614
15	Humanities and Social Sciences	ECC	New Citizens: The Rural Middle Class in Urban China	201615
16	Humanities and Social Sciences	LC	Language Learner Autonomy in EAP Programs — A XJTLU Case Study	201644
17	Business School	ACF	Culture profile and performance management: an integrative model in higher education	201616
18	Business School	ACF	Manipulating artificial stock market in China	201617
19	Business School	ACF	Do Speculators Play Roles in VIX Futures Market?	201618
20	Business School	MAN	The Impact of Big Data Analytics on Cutomers’Online Behaviour	201619
21	Business School	MAN	How Chinese Innovative Enterprises are digitalizing their value chain ?	201620
22	Business School	MAN	Political Connection and Corporate Social Responsibility	201621
23	Business School	MAN	A comparative study of expatriate cross-cultural adjustment in China	201622
24	Business School	MAN	An investigation on the creativity of the Chinese animation industry	201623
25	Industrial Technology	CSSE	Hand Detection by Deep Convolutional Neural Network	201624
26	Industrial Technology	CSSE	Traffic Detection Resilient Virtual Private Networks	201625
27	Industrial Technology	CSSE	A comparison of input devices for virtual reality interaction	201626
28	Industrial Technology	CSSE	The effects of real time passenger information on public transport travel behaviour	201627
29	Industrial Technology	CSSE	Design and Development of Data Mining Methodology and Effective Algorithms for Audit Process	201628
30	Industrial Technology	CSSE	A Task Based Evaluation of Fisheye Maps for Mobile Navigation	201629
31	Industrial Technology	CSSE	Distribution-trend based classification algorithm	201630
32	Industrial Technology	CSSE	Estimate missing sensor values based on regression analysis	201631

No.	Cluster	Dept.	SURF Poster Title	SURF Code
33	Industrial Technology	CSSE	Scene recognition by Deep Convolutional Neural Network	201632
34	Industrial Technology	CSSE	Security Mechanisms for Software Defined Internet of Things	201633
35	Industrial Technology	CSSE	Visualisation and pollution prediction for a remote monitoring network of water quality	201634
36	Industrial Technology	EEE	Passivation and deposition of high-k materials on germanium substrates	201635
37	Industrial Technology	EEE	Modeling and Control of Solid State Transformer in the Smart Grid Power System	201637
38	Industrial Technology	EEE	Development of Electronic Gaseous Formaldehyde Detection & Monitoring Systems	201638
39	Industrial Technology	EEE	Smart gird and energy saving technology: Fuzzy C-Means Clustering Method	201639
40	Industrial Technology	EEE	Nature-inspired Molecular Diffusion Communication Test-bed	201640
41	Industrial Technology	EEE	Rectenna design of Radio frequency (RF) energy harvesting system	201641
42	Industrial Technology	IND	Biomimetic Scaffold Fabrication	201642
43	Industrial Technology	IND	Mobile payment conversion strategies in highly developed areas with alternative payment methods	201643
44	Mathematics	MS	Raman scattering spectrum measurements of different types of InPBi alloys	201644
45	Mathematics	MS	A simple force-based mesh generator in MATLAB	201645
46	Mathematics	MS	Feynman-Kac Formula and Valuation of Options	201646
47	Mathematics	MS	Active contour based on automatic tongue image segmentation	201647
48	Mathematics	MS	Distributions of knots formed by threads tangled in spinning fluid	201648

No.	Cluster	Dept.	SURF Poster Title	SURF Code
49	Mathematics	MS	Completing prime numbers	201649
50	Mathematics	MS	Algorithmic Crytocurrency Portfolio Management with Convolution Neural Networks	201650
51	Mathematics	MS	An Intelligent System for Tongue Diagnosis in Traditional Chinese Medicine	201651
52	Mathematics	MS	Spectral methods in pricing American Call options	201652
53	Science	BIO	Antibiotic resistance in environmental mycobacteria isolated in the Suzhou area.	201653
54	Science	BIO	TREW: epitranscriptomic targets of RNA modification reader, eraser and writer.	201654
55	Science	BIO	Physiological characterization of fire ant HsTRPA channel	201655
56	Science	CHE	Controlled Silver Nanoparticle Synthesis on TiNT-dopamine: Surfaced Enhanced Raman Scattering	201656
57	Science	CHE	Length dependence of molecular wires on graphene-gold hybrid single molecule junctions	201657
58	Science	CHE	Lithium-doped COF Impregnated with Lithium-coated Fullerenes for Methane Storage	201658
59	Science	CHE	A New Approach to Prepare BDT Based Polymer	201659
60	Science	ENV	How Sustainable is XJTLU? The Gap and Cogent Design of a Sustainable University	201660
61	Science	ENV	Understanding of climate change health risks by elderly Chinese	201661
62	Science	ENV	The impact of land use change on leaf litter breakdown rate: Comparison between Suzhou and Huangshan	201662
63	Science	ENV	The Electricity Production of Constructed Wetland - Microbial Fuel Cells Fed by Kitchen Waste.	201663
				201664

Title 01

Challenges to the Adoption of BIM in Chinese Architecture, Engineering and Construction

Cluster | Built Environment | Supervisor | Christiane Margerita Herr (ARC) Thomas Fischer(ARC)

Students

Jiaqi Zhang 、Shihao Yang、Yixuan Gao(ARC,Y3)

Abstract

The separation of architecture, engineering and construction (AEC) professions has been criticised for stifling design quality, innovation and building performance. BIM* (Building Information Modelling) offers the AEC professions means to cooperate using shared digital project representations, and thus a potential to bridge professional separations. Despite high awareness of BIM strategies, BIM adoption rates in the Chinese construction industry are still relatively low. Besides some high profile projects, Chinese AEC practices also tend to maintain professional separations, implementing separate project models and defeating the potentials listed above. This project investigates challenges to the adoption of BIM specific to the Chinese AEC practices, with a view to formulating strategies for increased BIM adoption.

Title 02

Suzhou Densities

Cluster | Built Environment | Supervisor | Theodoros Dounas(ARC)

Students

Hao Wu、Shiyu Qian(ARC,Y3)

Abstract

To increase the density of a three-dimensional city without losing quality of those 2d public spaces and without expanding the footprint of the city, a parametric system is designed based on cellular automata and evolutionary algorithms. Firstly, social condensers become the initial point to grow housing units. Random numbers control which kind of housing unit is generated. Other different housing are generated surrounding those housing units based on neighbourhood rules. Finally, an evolutionary algorithm will evaluate the results of housing blocks and reruns the process to improve on the next generation. Thus an optimised, high density housing block, with social spaces is generated.

Title 03

Typologies of contemporary heritage conservation practice in rural villages of China

Cluster | Built Environment | Supervisor | Yiping Dong(ARC)

Students

Xiao Ding、Jialiang Sheng、Yingda Sui(ARC, Y3)

Abstract

This research focuses on the conservation on village level in China. Vernacular architecture is the main body for the traditional built environment in China; however it is facing tragic deterioration by rapid urbanization. The conservation of rural heritage has been considered as an effective method to revitalize the villages, and different approaches of conservations have been undertaken recently. Through field works and data collection in historical villages of Yunnan, Heibei, Shandong, Zhejiang and Jiangsu Provinces, the research tries to map the different typologies of contemporary heritage practices in rural context, which will be a foundation for further research.

2016 SURF
Poster Day

Title 04

Flexureal, shear and tensile strengthening of RC beams with basalt textile reinforced mortar-Experimental, numerical and experiential study

Cluster | Built Environment | Supervisor | Charles Loo(CEN)

Students

Geyu Dong、Mengzhen Du、Minyi Zhu(CEN, Y1)

Abstract

Innovative composite materials for reinforcing the weakness part of beams have been recently investigated by research institutions. This poster presents three experimental studies on flexure strength, shear strength and tensile strength of rectangular reinforced concrete (RC) beams with basalt fibers. In total, 28 RC beams were constructed and tested (4 of them served as control beams). The basalt textile-reinforced fibers, applied on the beams, were divided into two types (5mm and 10mm offset). It is summarized that the capacities of concrete both depend on the strengthening configuration (including the types of fibers) and the number of layers.

Title 05

Embodied Energy in Delivering Building Products

Cluster | Built Environment | Supervisor | Cheng Zhang (CEN)

Students

Liu Yuelong(ARC,Y2)、Yue Xiao(CEN,Y2)、Tongpo Zhang(CSSE, Y2)

Abstract

This project investigated the total energy consumption of a building when delivered to the owner. Material quantities were retrieved from the BIM model and embodied energy in materials was obtained from energy consumption databases, based on which the energy embodied in materials were calculated. In addition, distances between the construction site and different manufacturers/suppliers are used to calculate the energy consumption of transportation for materials and equipment. Energy consumption of construction activities are calculated based on work breakdown structure, construction equipment working hours, on-site activity energy consumption. Plug-ins are developed in BIM software to facilitate automatic data retrieving and integration.

Title 06

Instrumentation and testing of UHPFRC composite slab containing recycled aggregates

Cluster | Built Environment | Supervisor | Jun Xia(CEN)

Students

Hong Huang、Yan Li(CEN,Y2)

Abstract

This project aims to investigate the performance of the composite deck with the thin ultra-high performance fiber reinforcement concrete (UHPFRC) bottom layer as the permeant form work and the recycled coarse aggregate concrete (RAC) as the top layer. This composite deck is environmentally friendly and can remarkably reduce the dependence on the woods and natural aggregates' utilization. The properties of recycled coarse aggregates, such as water absorption, crushing index, and density were measured. The structural behavior of the small scale composite deck is investigated with the help of advanced data acquisition system.

Title 07

Standard Test Method for Drying Shrinkage of Mortar Containing Hydraulic cement

Cluster	Built Environment	Supervisor	Ominda Nanayakkara(CEN)

Students

Xiaoyang Jiao(CEN, Y3)

Abstract

The thematic objective of this project is on researching the drying shrinkage of mortar under different environmental conditions (saturated lime water, controlled temperature and humidity and wind affect) and with polypropylene fibre. The study is to obtain the drying shrinkage of standard mortar specimens weekly for 28 days. The results shows that mortar specimens shrink continuously under drying environment and slightly expand under saturated environment. It also shows that the addition of polypropylene fibres can limit the expansion of mortar specimens under saturated environment however with no significant effect on the shrinkage.

Title 08

Repair and strengthening of Reinforced concrete beams with the use of composite materials

Cluster	Built Environment	Supervisor	Theofanis Krevaikas(CEN)

Students

Tong Hu(CEN,Y2)

Abstract

A total of seven reinforced concrete beams were subjected to flexural failure to simulate extreme load conditions. In this project, the failed concrete beams were repaired and subsequently strengthened with the use of Textile Reinforced Mortars using basalt fibers (TRM's), Epoxy Resins and patch repair mortars. All beams after being repaired and strengthened were again loaded up to failure. From the experiments it was obvious that the beams regain a large percentage of their original strength and exhibit a very ductile behavior especially in the post-peak region.

Title 09

Redesigning and Retrofitting Existing Communities in Suzhou to allow for Ageing-in-place

Cluster	Built Environment	Supervisor	Bing Chen(UPD) Yu Liu(UPD)

Students

Yixuan Yang(UPD,Y2)、Huazhen Ji(UPD,Y3)、Zaozao Wang(UPD, Y3)

Abstract

China has the largest number of the elderly among the worldwide ageing countries. However, little attempt has been made to accommodate the growing need for the elderly. This project aims to provide an insight into this, focusing on issues relating to the built environment. Based on the mode of 'ageing-in-place', it intends to provide a critical view on the re-design and retrofits of existing communities, using projects located in Suzhou as examples. Findings from this pilot study (e.g. evidence on ageing-friendly communities) will be incorporated into the redesign/retrofit guidance for existing communities and thereby inform the transformation to ageing-friendly communities.

Title 10

'Recycling Suzhou'. Exploring the geographies of informal waste recycling in a growing Chinese city.

Cluster	Built Environment	Supervisor	Christian Nolf(UPD) Bing Chen(UPD)

Students

Chunyi Zou、Yingxuan Mou(UPD, Y3)

Abstract

Who are the people collecting recyclable waste in the street? Is this a personal or organised activity? Where are the materials collected, stored and sold? Based on literature review and fieldwork, we use micro-stories, mapping and other instruments to explore how such activity has been organised spatially and socially in Suzhou, and to analyse the way it supplements the local formal waste management. It is found that scavengers, informal recycling sites and processing centres play an important role during the middle stages of informal waste recycling, while the re-use of the waste would still rely on formal factories.

Title 11

Sense of Place in the Digital Age: analyzing social media for tourism planning

Cluster	Built Environment	Supervisor	Joon Sik Kim(UPD) Yiwen Wang(UPD)

Students

Shaohua Hu、Xuanyu Wu、Tin Than(UPD, Y3)

Abstract

In the context of urban planning and design, there is a wider acknowledgement that the investigation on sense of place must go beyond the aspects of geographical space. There have been opportunities in late modern society for relating sense of 'spatial' place with 'digitally-presented' sense of place. The aim of this research is to investigate possible uses of social media research in urban planning practice, particularly for tourism planning. The research found that there would be a great potential for using social media research in tourism development, as the current tourism strategy of the city might not fully address visitor's perceptions and subjective views on the tourism designations in Suzhou.

Title 12

An exploration of collaborative community planning in SIP

Cluster	Built Environment	Supervisor	Ying Chang(UPD) Xuanwei Cao(IBSS)

Students

Rong Zhu(UPD,Y2)、Zhao Wu(UPD,Y3)、Jiacheng Wang(IBSS, Y2)

Abstract

Based on enterprise corporate social responsibility (CSR), our research aims to provide evidence on local enterprises' social obligation to make contribution to local resettlement neighbourhoods and their residents. This research focuses on the demand from resettlement neighbourhoods, demand from factory workers, and attitude of enterprises. The main research methods include observation, interview, stakeholder analysis and questionnaire survey. It is found that there is a possibility of local entrepreneurs to contribute to local community development in SIP, which will reduce the burden of local government and also can mediate the tension between local residents and migrant workers. Furthermore, a model of collaborative community planning between enterprises and related communities in SIP has been suggested.

Title 13

Changing selves – Chinese people and the presence of foreigners

Cluster: Humanities and Social Sciences | Supervisor: Pawel Zygadlo(CS)

Students

Ruocheng Gong(CS,Y2)、Yuhan Qiu、Mina Zhang(ECC, Y2)

Abstract

This SURF project aims for finding out whether Chinese people change their behaviour in the presence of foreigners and the reasons behind such a phenomenon. The data collected in Suzhou, Chengdu and Xi'an, has proven our preliminary supposition. The result shows foreigners in China often attract more attention from Chinese people and some behavioural patterns had been identified. For instance, it has been noticed that the presence of foreigners has a greater impact on people of preassembly lower social status. These behavioural patterns often bare more profound implications, that might be a subject of further investigation.

Title 14

Between Propaganda and Entertainment: The Marketing of the Chinese 'Main Melody' Films

Cluster: Humanities and Social Sciences | Supervisor: Laura Sava(ECC)

Students

Laihua Yang、Xiao Yang、Wenjing Xue(ECC, Y3)

Abstract

The 'main melody' films, first proposed in 1987, are propaganda films, commissioned and subsidised by the Chinese government, in an effort to curtail the Hollywood influence in the Chinese film market but also to celebrate the history of the Chinese Communist Party, as it is articulated by official discourse. This research project examines the range of promotional strategies used to encourage the theatrical attendance of these films and their subsequent performance in the other windows of exhibition (home video, video-on-demand and TV). The project also explores the impact that the increased commercialization of Chinese cinema has had on the marketing of the main melody films.

Title 15

New Citizens: The Rural Middle Class in Urban China

Cluster: Humanities and Social Sciences | Supervisor: Paul Cheung(ECC) Ying Chang(UPD)

Students

Huan Zheng(ECC,Y2)、Randy Rizal(UPD,Y2)、Danli Zhang(IBSS, Y3)

Abstract

For many, the Chinese migrant worker is essentially an itinerant labourer who aspires, but fails, to become the apartment-owning middle class. Such a perception is not merely rooted in historical factors defining the rural-urban divide. In this project, policy influences upon the perception was examined. Policy documents made available by officials and internet commentary posted by the populace were examined for changes to the imagery of rural-to-urban residency. Preliminary analyses suggest a developing discourse of rural-to-urban residency in which economic participation is emphasised considerably more so than social integration. Potential explanations of such a discourse are outlined on the poster.

Title 16

Language Learner Autonomy in EAP Programs — A XJTLU Case Study

Cluster: Humanities and Social Sciences | Supervisor: Ling Xia(LC)

Students

Minkun Liu、Yue Wang(ECC,Y2)、Yiqiang Lu(MTH, Y2)

Abstract

This SURF project aims to examine how autonomous XJTLU students are in their EAP studies. A tailored survey instrument was developed for the context of XJTLU and 276 Year 1 and Year 2 students were surveyed. Preliminary analysis suggested that Year 1 and Year 2 students, as well as students from different class levels have shown different behavioral patterns in terms of their autonomous learning style in EAP studies.

Title 17

Culture profile and performance management: an integrative model in higher education

Cluster: Business School | Supervisor: JeanYves LeCorre (ACF)

Students

Yuwen Wang 、Chunjing Zhang(IBSS, Y2)

Abstract

A large number of institutions in higher education sector have designed performance management systems. However, there is a large diversity in those measures and great variability in the way those measures are used to monitor performance. Performance measures can differ greatly on a number of attributes like long-term versus short-term orientation of indicators, future versus external orientation, or linking indicators to individual or team performance. By demonstrating that cultural orientations can determine the attitudes of participants towards performance management, the research will provide guidance to administrators in the higher education worldwide in successfully designing and implementing performance management systems.

Title 18

Manipulating artificial stock market in China

Cluster: Business School | Supervisor: Jie Zhang(ACF) Qing Ye(ACF)

Students

Yihao Li(IBSS, Y3)

Abstract

In this summer, we manipulated an artificial stock market using Netlogo, in which investors could response to market information and make adjustment to their strategies according to their past return. We defined four types of strategies, which are contrarian strategy, momentum strategy, noise strategy and rational strategy. We found that traders conducting contrarian strategy seemed to achieve highest return among all the investment strategies.

Title 19

Do Speculators Play Roles in VIX Futures Market?

Cluster	Business School	Supervisor	Yi Hong(ACF)

Students

Jinglan Li、Yu Jing(MTH, Y3)

Abstract

The participants in futures markets usually consist of hedgers who are trying to avoid risks and speculators who instead prefer to take risks and provide liquidity to promote price discovery. Due to the nature of speculation, unexpected high price variations in futures markets can often be observed, and even market crashes may occur. Therefore, the role of speculators in futures markets is always a key concern for regulator to stabilize markets and improve market efficiency. In this project, we investigate the role of speculators in the VIX futures market and study the causality relationship among the market speculation, the volatility and returns of futures contracts, and find that speculators do play a substantial role in the fluctuations of VIX futures daily prices across various time-to-maturity categories.

Title 20

The Impact of Big Data Analytics on Cutomers'Online Behaviour

Cluster	Business School	Supervisor	Owen Liu(MAN) Woon Kian Chong(MAN) Yan Sun(MAN)

Students

Jinkun Xing(MTH,Y2)、Qiuchen Li(IBSS, Y2)

Abstract

Nowadays, the world is becoming a digital world. Huge amounts of data are exchanged and collected in the business world. For e-commerce firms, data come from different sources (e.g. online transactions, search history and social media). As many e-commerce companies claimed, Big Data Analytics (BDA) that is used to analyze the big data is the most efficient method to develop more specific strategy of the company so far. Therefore, this project aims at exploring the effects of BDA brought on customers' online behavior to examine whether the BDA is as successful as firms stated.

Title 21

How Chinese Innovative Enterprises are digitalizing their value chain ?

Cluster	Business School	Supervisor	Roberto Dona(MAN)

Students

Yutong Wu(IBSS,Y2)、Ruiying Chen(MTH,Y3)、Xiaomeng Wang(IBSS, Y3)

Abstract

A more connected world enabled by digital technologies is the promise offered by waves of innovative enterprises. This project aims to analyze a few real cases to determine if there are common factors in the transformation and to deduct a prescriptive model. In total we had 1 onsite visit, 1 exhibition visit and 5 interviews with companies in Suzhou and Shanghai. Combining the previous literature review, we have concluded some inter-linked hypothetic frameworks trying to describe the transformative process. The materials collected from the real cases were then analyzed to contribute to the building of a final model.

Title 22

Political Connection and Corporate Social Responsibility

Cluster	Business School	Supervisor	Xuanwei Cao(MAN) Tao Bai(MAN)

Students

Yang gongyingxue、Qian Zhou、Lin Xiao(IBSS, Y3)

Abstract

The instructive significance of political connection to international business has attracted considerable research interest in recent years. In this study, we move beyond previous studies by introducing the concept of corporate social responsibility (CSR) to the study of political connection. We propose that political connection may play a positive role on companies' CSR performance, which means stronger political connection can possibly result in better CSR performance and vice versa. The moderating effects of firm size are also included. These propositions are generally demonstrated by analyzing data of Chinese listed firms from 2011 to 2014.

Title 23

A comparative study of expatriate cross-cultural adjustment in China

Cluster	Business School	Supervisor	Ying Guo(MAN)

Students

Zhongyu Tong(IBSS,Y2)、Yuqin Shi(MTH,Y2)、Weihang Shi(IBSS, Y3)

Abstract

International assignments can be a challenge for expatriates when they work in a different social, economic, cultural and institutional context compared to their home countries. The importance of cross-cultural adjustment is highlighted in the international human resource literature, which helps expatriates reduce the level of uncertainties and engage with local environment. This project investigates expatriate cross-cultural adjustment in China by comparing expatriates from different countries and on different global staffing patterns. In-depth, semi-structured interviews were conducted with expatriates and their local colleagues who work in multinational enterprises (MNEs) in China and Leximancer 4.5 was used to analyse the interview data.

Title 24

An investigation on the creativity of the Chinese animation industry

Cluster	Business School	Supervisor	Zheng Liu((MAN))

Students

Huiming Wang、Wentao Xu(IBSS, Y3)

Abstract

Driven by the market demand and government policies, China has experienced a rapid growth in the creative industry recently. Among the business sectors is the animation industry, which requires huge input of technology and creativity. Some Chinese firms such as the Creative Power Entertaining have successfully launched products with original design, however many others are seeking for ways to upgrade along the value chain. Thus this research aims to provide better understanding of the creative activities in the Chinese animation industry. Based on industry report, case study and survey, it will also offer improvement suggestions to companies.

Title 25

Hand Detection by Deep Convolutional Neural Network

Cluster | Industrial Technology | Supervisor | Bailing Zhang(CSSE)

Students

Yueqing Sun、Fangyu Wu(CSSE, Y3)

Abstract

Computer vision is an interdisciplinary field that deals with how computers can gain high-level understanding from digital images or videos. Our SURF project is under this field called Hand detection. This technology normally applied in human and computer interaction scenario, which involves hand detecting and tracking as well as feature recognition. The project is mainly focus on familiarizing MatConvnet, which is a Matlab toolbox used for convolutional neural network (CNN).

Title 26

Traffic Detection Resilient Virtual Private Networks

Cluster | Industrial Technology | Supervisor | Charles Fleming(CSSE)

Students

Cheng-Kai Yu(CSSE, Y2)

Abstract

Virtual private networks (VPNs) provides a secure connection for user to communicate on the public and insecure internet without allowing intermediates to eavesdrop or modify the communication. VPNs, however, have traditionally been designed for corporate environments, for example to allow secure communication between two branches of a company office. Because of this, while they are secure, they are detectable by anyone who is examining network traffic and are easy to be blocked by simply discarding the packets. Therefore, a VPN protocol that is both secure and detection resilient is in demand.

Title 27

A comparison of input devices for virtual reality interaction

Cluster | Industrial Technology | Supervisor | Hai-Ning Liang(CSSE)

Students

Feiyu Lu(CSSE,Y2)、Yuwei Shi(CSSE, Y3)

Abstract

Virtual reality is developing rapidly but it is still an emergent technology. The way people interact with VR content via input devices still remains a big challenge. This research is about exploring different types of input devices. Three such devices are selected for this research: a regular game console controller, the HTC Vive controller, and a touch-enabled mobile tablet. Each represents a different generation of input devices and each has a specific form factor and capabilities. In this project, we have tested these input devices and accessed their suitability for navigation tasks within virtual reality systems.

Title 28

The effects of real time passenger information on public transport travel behaviour

Cluster | Industrial Technology | Supervisor | Konstantinos Papangelis(CSSE)

Students

Yunxi Li(EEE,Y3)、Wenya Ma(CSSE,Y1)

Abstract

Mobile real time passenger information (RTPI) systems are becoming ubiquitous in public transport and a plethora of studies have explored the effects they have on passengers. In this study we look into the effects that mobile RTPI has on passengers in urban China. The results indicate that the participants primarily used the mobile RTPI system to gain situation and geospatial awareness and to adapt their travel behaviour in disrupted circumstances. Furthermore, we have identified that mobile RTPI significantly affects the everyday public transport travel of individuals. The outcomes of this study provide an initial understanding of the effects of a mobile RTPI system on rural users.

Title 29

Design and Development of Data Mining Methodology and Effective Algorithms for Audit Process

Cluster | Industrial Technology | Supervisor | Ka Lok Man(CSSE)
JeanYves LeCorre (IBSS)

Students

Jun Chen(CSSE, Y2)

Abstract

This SURF focuses on designing an effective algorithm to monitor the performance management process. This project selects ACL software to performe the task, because ACL software has several advatanges such as directly access huge amount of data, guarantee the integrity of data and continuous auditing. The results show that ACL software can provide an effective algorithm to continuous monitor performance, which can hugely improve work efficiency.

Title 30

A Task Based Evaluation of Fisheye Maps for Mobile Navigation

Cluster | Industrial Technology | Supervisor | Paul Craig(CSSE)
Xin Huang(CSSE)
Chris Trathen(CSSE)

Students

Fidaly Houssen(CSSE,Y2)、Huayue Chen(CSSE, Y3)

Abstract

This project evaluates the utility of fisheye distortion for mobile map interfaces using a task based study where users play a location based game requiring them to visit different sites in and around a university campus. Users were asked to evaluate each type of map according to nine usability criteria and provide some general comments related to each map's usability and general usefulness. Overall results showed us that users found the fisheye map easier to use. The users also preferred the fisheye map for general navigation and interaction.

Title 31

Distribution-trend based classification algorithm

Cluster: Industrial Technology | Supervisor: Steven Guan(CSSE)

Students

Yi Xu(CSSE,Y2)、Xiao Yue、Bingzhang Wu(CSSE, Y3)

Abstract

This project worked on the traditional classification algorithm, k-Nearest Neighbor algorithm (KNN) to improve the accuracy when density is uneven at the border between classes. In KNN, the k nearest neighbor of the test point are used to vote, but in this project, boundary points are found and used to vote only. In the voting process, the weight of point is changed according to the density. The project is implemented in MATLAb and the results are compared to KNN.

Title 32

Estimate missing sensor values based on regression analysis

Cluster: Industrial Technology | Supervisor: Wei Wang(CSSE)

Students

Jie Deng、Yang Zhang、Weikai Zeng(CSSE, Y3)

Abstract

A promising direction for big smart city data analysis is to process data generated by millions of physical world devices based on the concept of “distributed intelligence”, specifically, to distribute part of the intelligent computation to the much smaller while autonomous computational units (e.g., mobile phones or sensor network gateways) in smart cities. However, a significant problem is that data collected from those devices is often incomplete, which negatively impacts the trustworthiness and faithfulness of the data analysis. This project utilises locally weighted regression to estimate the missing values to provide a solid basis for accurate data analysis in smart city applications.

Title 33

Scene recognition by Deep Convolutional Neural Network

Cluster: Industrial Technology | Supervisor: Wenjin Lu(CSSE)

Students

Xiang Li(CSSE,Y3)、Suhaila Mohamed(EEE, Y3)

Abstract

Convolutional Neural Networks have been used in the achievement of numerous ground breaking vision exemplars. The network improves with more data rather than better algorithms. Scene recognition, one of the pinnacle tasks of computer vision, is our main focus. The activations of an intermediate layer in a trained network when revealed to new data sources operate extraordinarily as generic image features, even when there are differences between the original training data of the network and the new domain. An introduction and explanation of CNN’s trained on object recognition data that can successfully be used for feature extraction will be highlighted.

Title 34

Security Mechanisms for Software Defined Internet of Things

Cluster: Industrial Technology | Supervisor: Xin Huang(CSSE), Dawei Liu, (CSSE), Paul Craig(CSSE)

Students

ANDI XU、Sihan Wu、Mi Li(CSSE, Y3)

Abstract

To manage the large number of devices in intelligent buildings, we proposed a platform named as SBuilding, which allows administrators to reconfigure smart devices remotely using software-defined Internet of things (SDI) technologies. However, its security mechanisms are still lacking, because processors in smart devices are generally not powerful enough to run advance cryptographic algorithms. In this project, we will firstly study several cryptographic co-processors. Also, security protocols with the help of these co-processors will be demostrated.

Title 35

Visualisation and pollution prediction for a remote monitoring network of water quality

Cluster: Industrial Technology | Supervisor: Yong Yue(CSSE)

Students

Jin Zhang(CSSE,Y2)、Xuan Chen(EEE,Y3)

Abstract

Water quality is affected by complex anthropogenic activities and natural environmental factors. Remote sensor-based networks can provide effective monitoring of water quality and predict pollution events. The cost of such systems is very high whilst computer simulation and visualisation can be utilised in the network deployment and data analysis before a real system is built. This project investigates computer simulations and visualisation for the analysis of water quality data with two functional modules: visualisation of a remote monitoring network of water quality, and prediction and modelling of water pollution events. Encouraging initial results have been achieved.

Title 36

Passivation and deposition of high-k materials on germanium substrates

Cluster: Industrial Technology | Supervisor: Cezhou Zhao(EEE)

Students

Mi Chenchao、Qihan Liu(EEE,Y3)、Ran Shi (Y1)

Abstract

Germanium based metal-oxide-semiconductor (MOS) is a promising candidate to replace silicon based MOS capacitor due to higher electron and hole mobility of Germanium. Here we demonstrate and present detailed fabrication process and electrical characteristics of a MOS capacitor based on high-k material grown on Ge substrate.

Title 37

Modeling and Control of Solid State Transformer in the Smart Grid Power System

Cluster | Industrial Technology | Supervisor | Huiqing Wen(EEE)

Students

Zhenyan Cao、Lin Zheng、Qinglei Bu(EEE, Y3)

Abstract

Due to limited resources, Dual-Active-Bridge (DAB) DC-DC converter contributes to store more energy in storage devices. Our project aims to reduce power losses and improve the efficiency. Specifically, backflow power is minimized under Dual-Phase-Shift (DPS) control and Zero-Voltage-Switch (ZVS) condition is achieved under Triple-Phase-Shift (TPS) control. In DPS control, minimum backflow power realized by a typical pair of phase-shift. By analyzing the dynamic response and the ZVS condition, the relationship between resistance, inductance, snubber capacitance, switching frequency, phase-shift and the dead time is obtained respectively.

Title 38

Development of Electronic Gaseous Formaldehyde Detection & Monitoring Systems

Cluster | Industrial Technology | Supervisor | Sang Lam(EEE)
Kim K. T. Lau(CHE)

Students

Aizhen Zhang、Chenyun Qian、Huimin Zhang(EEE, Y3)

Abstract

Formaldehyde is pervasively used in manufacturing and building construction. Exposure to formaldehyde gas (HCHO) can result in various symptoms such as headaches. This project aims to develop a detector consisting of optical detection, an amplifier circuit and Arduino programming to measure the formaldehyde gas concentration. Experimental results show that 1ppm HCHO could result in 5-kΩ change in the detecting photoresistor's resistance. The amplifier circuit outputs voltages within 1V according to various gaseous concentrations. Then programming of the Arduino board can determine the corresponding gas concentration by processing the voltage data. This detector is proved to be feasible in everyday use.

Title 39

Smart grid and energy saving technology: Fuzzy C-Means Clustering Method.

Cluster | Industrial Technology | Supervisor | Sanghyuk Lee(EEE)

Students

Yu Duan、Yuanjin Liu、Yushan Guo(EEE, Y3)

Abstract

The related research of smart grid has many challenging issues associated with big data. One very important issue is the high-dimensional data analysis. Currently, the renewable energy sources can replace as major source of energy generation in near future, main challenge is to develop more useful supporting device, improve its efficiency, and reduce the sustainable cost. THe Fuzzy Clustering Method (FCM) is a powerful unsupervised method for the analysis of data and construction of models. Therefore, the results are obtained by a FCM clustering algorithm which is based on location information and locational electricity costs. This poster will show you the details of the FCM results.

Title 40

Nature-inspired Molecular Diffusion Communication Test-bed

Cluster | Industrial Technology | Supervisor | Siyi Wang(EEE)

Students

Bowen Zhang、Jin Xi(EEE,Y3)

Abstract

This project aims at constructing a platform that allows data to be transmitted through molecular diffusion. There are three main modules comprising of transmitter, channel and receiver which need to be designed and integrated. With the help of Raspberry Pi cooperating with calculated algorithm, this test-bed illustrates significant features of a fundamental communication system should have. Further optimization of not only the interior algorithm but also involved apparatuses will have great effect on its performance especially facing more harsh and mercurial propagating process. From nanotechnology to urban health monitoring, it provides potential in application areas where conventional EM performs poorly.

Title 41

Rectenna design of Radio frequency (RF) energy harvesting system

Cluster | Industrial Technology | Supervisor | Zhao Wang(EEE)

Students

Lanxiang Wang、Menglong He(EEE, Y3)

Abstract

Radio frequency (RF) energy harvesting is a promising technique to energize low power electronic devices by capturing energy from ambient environment. In this SURF project, antennas and multi-stage rectifiers, the two main components of rectennas were designed and simulated. As a result, a single band circular patch antenna with center frequency at 2.45 GHZ was designed. The input impendence is 50 Ω, and minimum value of S parameter is -9.2 dB. The maximum DC output voltage of the three-stage rectifier with 15 dBm input RF power is around 12 V, and the total efficiency of the rectifier is about 59%.

Title 42

Biomimetic Scaffold Fabrication

Cluster | Industrial Technology | Supervisor | Jie Sun(IND)

Students

wang yi、Yufeng Yao(EEE, Y3)

Abstract

The purpose of this project is to fabricate bio-mimic fibrous 3D scaffold for cell culture with electro-hydrodynamic jet (EHD-Jet) printing system. This kinetically controlled system can print diversified hierarchical Micro/Nano scaffold. In order to investigate the characteristics of scaffold, smooth straight and serpentine structures are direct-printed on silicon while they are predominantly controlled by different stage speed, the nozzle-to-substrate height, and the voltage. Furthermore, after using straight and serpentine scaffolds as carriers of cell culture, the performance of cell culture is observed by scanning electronic microscope (SEM) and confocal laser scanning microscope (CLSM).

Title 43

Mobile payment conversion strategies in highly developed areas with alternative payment methods

Cluster: Industrial Technology | Supervisor: Wing C. Lau(IND), Ka Lok Man (CSSE)

Students

Rui Lu(IND, Y3)

Abstract

The popularity of mobile (M) payment in Mainland China suggested that the current M-payment promotion and adoption strategies are highly effective. By reviewing these successful strategies from an ecosystem and multi-segment perspective in Suzhou and overseas contexts, our results demonstrated that the same strategies may be ineffective in highly populated cities (e.g. Hong Kong) with alternative wireless payment methods. The main obstacle is the competition with the credit card payment option. A survey was conducted to identify other potential adoption strategies. Although M-payment adoption is likely to be much slower due to competitions, we found that competitions can be the key to drive new functionality and utility development to consumers and merchants.

Title 44

Raman scattering spectrum measurements of different types of InPBi alloys

Cluster: Mathematics | Supervisor: Changcheng Zheng(MS)

Students

Jingwen Liu(EEE, Y3)

Abstract

Raman spectroscopy has been applied to a large number of fields. This technique is useful for exploring properties of samples. Raman Effect is one of scattering results after illuminating samples with laser light. The scattering light consists of Rayleigh, Stokes and Anti-stokes lines. Raman system is the experiment setup for testing Raman spectrums. This experiment mainly investigates Stokes frequency. In this SURF project, we investigate the lattice vibration behaviors in InP substrate and two Bi-doped InP layers on InP. Results are compared with previous work in literature and the polarization effects are also discussed.

Title 45

A simple force-based mesh generator in MATLAB

Cluster: Mathematics | Supervisor: Erfang Ma(MS)

Students

Yang Yu、Xu Gong(MTH, Y3)

Abstract

Mesh generator is a significant implement in many applications, for instance, the finite element method for the numerical solution of many boundary value problems. However, most mesh generator codes is too complex to control. This project attempts a refined mesh generator that can be accomplished in a few dozen lines of MATLAB, above all, it can be regarded as a basic implement for further works. Users can develop their own structures and control them more efficiently. Therefore, the universality and controllability of mesh generators is not inaccessible for common users, several complex meshes produced in our project do prove this.

Title 46

Feynman-Kac Formula and Valuation of Options

Cluster: Mathematics | Supervisor: Fajin Wei(MS)

Students

Renfei Huang(MTH,Y2)、Xiaochen Fan(MTH,Y3)

Abstract

Black-Scholes-Merton formula gives a deterministic solution of option prices that depend on the uncertain future of a random financial market. Feynman-Kac formula connects the deterministic equation satisfied by the option price to a virtual stochastic (random) equation, thus provides a way to derive the BSM formula explicitly and a Monte Carlo method to compute the solution numerically. In this project the FK formula is proved, by which the BSM formula is implied, and computer simulations are performed to compare the Monte Carlo solution and the exact solution for European options.

Title 47

Active contour based on automatic tongue image segmentation

Cluster: Mathematics | Supervisor: Fei Ma(MS)

Students

Jingwei Guo、Qingwei Wu(MTH, Y2)、Yikang Yang(MTH,Y3)

Abstract

For about 1800 years, tongue inspection has been one of the four major diagnostic methods in Traditional Chinese Medicine. Through that, it is believed that ailments could be identified for treatment. This study proposes a K-means clustering and active contour model based automatic tongue region segmentation algorithm from tongue images. The method was applied on a set of real tongue images. To quantitatively evaluate the segmentation results, the automatically extracted boundaries were compared to the tongue boundaries drawn by experts. An average coverage ratio of 92% was found, indicating the accuracy of the proposed algorithm.

Title 48

Distributions of knots formed by threads tangled in spinning fluid

Cluster: Mathematics | Supervisor: Hao Yu(MS)

Students

Kaifu Wang(MTH,Y2)、He Zhu(EEE,Y2)、Yiming Zhang(MTH, Y3)

Abstract

Motivated by profound applications of knot theory in entanglements in fluids phase, like protein folding, this SURF project is concerning the classification and distribution of knot types. Untied and folded hemp threads are dropped into spinning water driven by an electromagnetic blender to get tangled then projected as knots to be analyzed for invariants. In conclusion, an empirical distribution formula of knot complicity justifies that the distribution is linear under a log transformation and a numerically approached formula demonstrates that the least time for thread knotting is exponentially distributed.

Title 49

Completing prime numbers

Cluster: Mathematics | Supervisor: Ignazio Longhi(MS)

Students

Yunzhu Mu、Jiayi Du(MTH,Y2)、Francesco Saettone(MTH, Y3, University of Turin)

Abstract

This SURF project has examined a new, deep approach to prime numbers: but why are we interested in prime numbers? This is not only an abstract math problem, since this subset of the integers is also fundamental for a very important and current application: cryptography!
The study of primes comes from Ancient Greece, but we have used an innovative idea to improve our global understanding: the "completion" of the integers, that is a sophisticated and modern way that we hope is going to help more mathematicians to continue the work we have started this summer.

Title 50

Algorithmic Crytocurrency Portfolio Management with Convolution Neural Networks

Cluster: Mathematics | Supervisor: Jinjun Liang(MS)

Students

Qingzhu Hu、Zhengyao Jiang(CSSE,Y1)、Lu Le(CSSE, Y3)

Abstract

In this project, we have tried to generate money by buying and selling different cryptocurrencies. We usedthe Convolutional Neural Network (CNN) in our programme to perform these trading tasks automatically. The logics that determine what to buy/sell are some CNNs composed of three layers: one CNN layer, one Fully-Connected layer and a Softmax layer without pooling and peddling. We only consider assets with top 15 volumes to ensure fluidity and avoid loss by taking market orders. Results from backtests and paper trading are very encouraging.

Title 51

An Intelligent System for Tongue Diagnosis in Traditional Chinese Medicine

Cluster: Mathematics | Supervisor: Jionglong Su(MS)

Students

Hao Xue(MTH,Y1)、Shuhan Yang(MTH, Y3)

Abstract

Tongue features diagnosis is an integral aspect of Traditional Chinese Medicine to study the health of individuals. In this research, we propose an automatic approach for discerning the general tongue types based on the classification of salient tongue features in different color spaces. The Gray-Tone Spatial-Dependence Matrix is used to extract tone and texture information from each tongue photo. Methods such as the Support Vector Machine, Self Organizing Map, Back-Propagation Neural Networks and Naive Bayes classifiers are used for classification of the features obtained. Cross validation is also carried out to assess the efficacies of these methods.

Title 52

Spectral methods in pricing American Call options

Cluster: Mathematics | Supervisor: Qiang Niu(MS)

Students

Shengjie Sun(MTH,Y2)、Xuelin Wang(MTH, Y3)

Abstract

Black-Scholes Equation, a partial differential equation basically, holds for any option whose value depends only on the price of asset and time. For American options, there are no analytic solutions because of the impossibility of knowing a priori the location of the boundaries that demarcate the valid region where Black-Scholes Equation could be applied. In order to overcome this difficulty, several traditional numerical methods such as binomial tree method or difference method are not accurate and efficient enough. In this project, spectral method was applied to enhance the accuracy and the efficiency of relevant Matlab codes has also been studied.

Title 53

Antibiotic resistance in environmental mycobacteria isolated in the Suzhou area.

Cluster: Science | Supervisor: Boris Tefsen(BIO)

Students

Yuqian Wang、Shi Li(BIO, Y3)

Abstract

The mycobacterial genus contains several pathogenic species, which can cause serious diseases such as tuberculosis, treatment by antibiotics can cure tuberculosis, however the misuse of antibiotics may lead to increased antibiotic resistance. This project aimed to investigate whether antibiotic resistance in environmental mycobacteria could be used as a measurement for potential misuse of antibiotics. We have isolated three mycobacterial strains from the Suzhou area that display different phenotypes. The results of the antibiotic susceptibility experiments show that each strain has a different resistance to different antibiotics. Sequencing of 16S rRNA will confirm which species have been isolated.

Title 54

TREW: epitranscriptomic targets of RNA modification reader, eraser and writer.

Cluster: Science | Supervisor: Jia Meng(BIO) Zhen Wei(BIO)

Students

Hao Wu(BIO)

Abstract

Dynamic modifications are widely existed during post-transcriptional gene regulation of mRNA. Readers, erasers and writers take an important role in epitranscriptomics. The database, TREW, built with Mysql and carried by shiny web application based on R language, collects specific details of the RNA modification targets. With the concise and clear user interface and the precise data feedback, TREW would be a powerful tool for epigeneticists.

Title 55

Physiological characterization of fire ant HsTRPA channel

Cluster: Science | Supervisor: Tatsuhiko Kadowaki(BIO)

Students

Tianyang Yu、Wen Wang(BIO,Y1)、Ziyue Wang(BIO, Y1)

Abstract

Solenopsis invicta, a red imported fire ant, represents one of devastating invasive species. To understand the sensory physiology and develop the effective control method, we characterized the HsTRPA channel, SiHsTRPA. We found SiHsTRPA is highly expressed in the antennae and legs which contain many sensilla with various sensory functions. SiHsTRPA is activated by several plant-derived compounds and they repel fire ants. Knocking-down SiHsTRPA impairs the avoidance behavior, suggesting that SiHsTRPA functions as the sensor for noxious compounds. SiHsTRPA represents the first TRP channel characterized in ant and the activating compounds could be used to control fire ants.

Title 56

Controlled Silver Nanoparticle Synthesis on TiNT-dopamine: Surfaced Enhanced Raman Scattering

Cluster: Science | Supervisor: Graham Dawson(CHE)

Students

Baekman Kim(CHE, Y2)

Abstract

In this project, TiNT-dop-Ag was produced by using silver ammonia([Ag(NH3)2]+) and silver nitrate(AgNO3) which rendered different silver particle sizes and structures.
Silver ammonia had a direct control over size and direction which brought comparatively smaller silver particles. Silver nitrate had no direct control over position which caused larger Ag nanoparticles. Regarding Raman effect, huge increase in Raman intensity from both products was observed. Regarding procedures, TiNT first reacted with the dopamine in order to aid the attachment of silver particle to the nanotube.

Title 57

Length dependence of molecular wires on graphene-gold hybrid single molecule junctions

Cluster: Science | Supervisor: Li Yang(CHE), Cezhou Zhao (EEE)

Students

Chen Zhenyu、Ruochen Xie(CHE, Y3)

Abstract

By wiring a single molecule to two electrodes, direct measurement of charge transport through the molecule can be made with a scanning tunneling microscope (STM).
The STM measures the current which flows through the junction in the single molecule. This offers an exciting opportunity to understand charge transfer, a phenomenon that plays vital roles in many chemical and biological processes, on a single molecule basis. It is also directly relevant to the goal of building electronic devices using single molecules. The aim of this project is to measure single molecules conductance as a function of molecular wire length.

Title 58

Lithium-doped COF Impregnated with Lithium-coated Fullerenes for Methane Storage

Cluster: Science | Supervisor: Lifeng Ding(CHE)

Students

Yuxin Ge(CHE, Y2)

Abstract

We used molecular simulation approach to study methane storage in a novel nanoporous material: COF-108 and its newly modified derivatives with the impregnation of grafted aromatic rings, fullerene (C60) and Li-doping. Our results revealed that one of the modified COF-108s can achieve the APRA-E storage target.

Title 59

A New Approach to Prepare BDT Based Polymer

Cluster: Science | Supervisor: Yi Lin(CHE)

Students

Nerissa Arviana Tannuwidjaja、Ruoxuan Shi(CHE, Y2)

Abstract

This project aimed to investigate an approach to synthesize benzo[1,2-b:4,5-b']dithiophene BDT based polymer via Knoevenagel condensation between aldehyde and aryl acetonitrile. Small thiophene derivatives were used for the model reaction and the condition was exploited by varying equivalence of base, temperature and addition order. The optimized condition was then validated on a BDT derivative.

Title 60

How Sustainable is XJTLU? The Gap and Cogent Design of a Sustainable University

Cluster: Science | Supervisor: Mona Wells(ENV), Xuanwei Cao (IBSS)

Students

Ji Xian(IBSS,Y2)、Ziwen Qiu、Siheng Yan(ENV, Y2)

Abstract

Pioneering universities globally are contributing to Sustainable Development Goals. This project investigated faculty and students through interviews and a survey to identify the current position of XJTLU and areas for improvement. We find nearly 80% of students have a strong interest in sustainability, evidence that XJTLU should and could innovate through strengthening development of sustainability education. However, students lack sustainability literacy and are confused about how to participate. We also find that lack of discussion between departments and serious waste phenomenon are primary obstacles. Therefore, more efforts should be put into increasing students' sustainability literacy and XJTLU's environmental performance.

Title 61

Understanding of climate change health risks by elderly Chinese

Cluster	Science	Supervisor	Phil Staddon(ENV) Elmer Villanueva(ENV)

Students

Jingjing Liu、Shanzheng Zhang(ENV, Y3)

Abstract

Climate change increased the ranges of certain diseases and other health problems, especially for elderly people. We surveyed 300 elderly residents of Suzhou and Hefei about their knowledge, perceptions and practices regarding climate change and health. 79.0% of participants admitted that climate change affected their lifestyle. Participants were most concerned about storms (51.7%), food shortage (33.3%) and drought (26.0%). The main health risks cited included water contamination (32.0%), air pollution (38.3%) and lung disease (43.0%). Finally, a majority (68.3%) failed to receive assistance from government. These findings give us insight into potential mitigation strategies targeting elderly people.

Title 62

The impact of land use change on leaf litter breakdown rate:
Comparison between Suzhou and Huangshan

Cluster	Science	Supervisor	Yixin Zhang(ENV) Eduardo Medina-Roldan(ENV) Bailiang Li(ENV)

Students

Tianying Li、Xiang Li(ENV,Y2)、Danny Hartono (ENV, Y3)

Abstract

Accompanied with urbanization, land use changes dramatically and
therefore influence terrestrial and aquatic environment. In order to identify the effect of changing land use on aquatic ecosystem function, we selected nine streams in Suzhou and Huangshan. In each stream, apart from water quality
parameters, we analyzed the leaf litter breakdown rate. Fine and coarse leave bags were used to distinguish the breakdown rate with and without macro invertebrate. Results showed that benthic macro invertebrate have positive influences on the loss of detrital mass.

Title 63

The Electricity Production of Constructed Wetland - Microbial Fuel Cells Fed by Kitchen Waste.

Cluster	Science	Supervisor	Zheng Chen(ENV)

Students

Jiayan Liu(BIO,Y2)、Xi Mi(ENV, Y2)

Abstract

In this project, we built a biological battery emtitled a constructed wetland-microbial fuel cell (CW-MFC) that is a combination device of MCFs and CW, so microorganisms can use wastewater and root exudates as fuel to generate electricity. This surf study aimed at exploring whether adding carbon rod into the system could enhance the removal rate. Voltage and chemical oxygen demand were detected every day. In the result, there is no significant difference of voltage between systems with carbon rod and systems without carbon rod. Thus, it can be confirmed that the addition of a carbon rod cannot help to optimize the system.

Summer Undergraduate Research Fellowship (SURF)Policy

Background

The University is committed to enhancing the research activities of both academic staff and students. As part of this, through the Summer Undergraduate Research Fellowship (SURF) programme, departments can offer opportunities for a select group of undergraduate students to work on research projects during the summer. This programme provides students with the opportunity to develop practical research skills related to knowledge they have acquired in class. For this purpose the University has established a Summer Undergraduate Research Fellowship (SURF) Panel, operating under the auspices of the University's Research Committee, and administered by the University's Academic Enhancement Centre (AEC).

SURF Panel membership and Terms of Reference

- The Panel is drawn from members of academic staff who have no material interest in making submissions to the Fellowship, and who are approved by the Research Committee on an annual basis.
- Under normal circumstances, nomination to serve on the Panel will be reserved to staff who have a research profile and have an interest in the principles of the scheme.
- Nominations will be drawn up by the AEC and presented to the Chair of the Research Committee for approval at least three months before the start of the application process.
- The Panel must comprise at least three members, drawn from different discipline areas of the University.
- The Director of the AEC, (or nominee) will act as Secretary to the Panel
- Approved members of the Panel may not serve for more than two consecutive years.

Fellowship Objectives

- To stimulate active research interest and creativity of undergraduate students.
- To provide an opportunity for students to support academic staff in their research.
- To provide an opportunity for undergraduate students to develop their practical skills and to apply knowledge acquired in class.
- To provide an opportunity for undergraduate students to present their research findings internally and externally, and to develop their presentation skills.
- To boost the reputation of XJTLU's students and student research in the region.

Process Timeline

SURF begins at the beginning of Semester 2 of each academic year and goes through the following stages:

- Projects selected at Cluster level for SURF panel review.
- SURF projects announced.
- SURF students selected.
- SURF Project Implementation (5 to 10 weeks in the summer)
- SURF Poster Presentation (the Wednesday of week 1 or 2 of the new Semester).
- The Academic Enhancement Centre will publish detailed timeline in due course every academic year.

Student Eligibility

- Undergraduate students that are in years 1, 2 or 3 of study at XJTLU only are eligible to apply for a fellowship.
- All applicants must be currently registered at XJTLU on an undergraduate degree programme to apply for the SURF. Students who have suspended study or who have had their studies suspended by the University are not eligible to apply.
- Applications across disciplines are allowed: Staff can select students from other departments.
- All SURF students must attend the SURF Poster Fair: the Wednesday of week 1 or 2 of the new Semester. Failure to do so will result in removal of the wording “and poster competition” from participating certificate.

Requirements for projects

- This is an extracurricular non-credit bearing project. The project cannot be a substitute or count towards a Final Year Project.
- SURF can, in certain cases, be used to fulfill programme-level Work Placement requirements. It is the responsibility of the student to work separately with his/her department to obtain the appropriate approvals and complete all relevant requirements.
- The project must be innovative, have clear objectives, detailed content, operable methods, and a reasonable budget.
- Project proposals are encouraged to involve local industry and the local environment.
- The duration of a project is typically 10 weeks, although projects as short as five weeks will be considered. The project should be undertaken from after the final exams to late August. No stipend will be paid for research done after the end of August.
- For each project, a Principal Supervisor must be identified particularly when more than one supervisor is named on a project. The Principal Supervisor should be an XJTLU academic staff member with sufficient background in the relevant field.

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- Principal Supervisors must be on-site to supervise the project or make appropriate arrangements for student supervision. Principal Supervisors will be required to sign a declaration ensuring student supervision.
- Academic staff can be a Principal Supervisor on only one project.
- There can be no more than three research students per each project.
- Any results/products from the projects are the property of XJTLU and can be utilised in other areas of learning, teaching and research as seen appropriate by XJTLU.

Reporting

- All students are required to present results at a University-organised event in Semester 1 following the summer.
- After the successful completion of their research activity and the presentations of their findings, students will be given a certificate of participation.
- There will be cluster winners, an academic-rated winner, and a student-nominated winner from the SURF Poster Fair: the Wednesday of week 1 or 2 of the new Semester.
- Students who fail to complete or withdraw from a project and have received their stipend must return to total value of their stipend. The AEC will administer the process with the student in consultation with the Principal Supervisor. No certificate will be awarded.
- For students who fail to complete or withdraw from a project and have not received their stipend, no certificate will be awarded.

Funding

The Academic Enhancement Centre (AEC) administers the budget to support the SURF programme which is set on an annual basis.

Budget control

The Principal Supervisor is responsible for the managing the allotted project budget and controlling costs assigned to the project. Project funds can be used for the following:

- Student Stipends: Students selected for SURF will receive a stipend of 250 RMB/week. Normally, a project will be one student per supervisor; however, larger collaborative projects with multiple students and/or multiple supervisors will be considered. No more than 3 students per supervisor. A stipend can range from 5 weeks to 10 weeks.
- Consumables and Travel Costs: Project related consumables (e.g. Experimental fees, equipment, printing, photocopying) and project related travel costs (e.g. for Conference attendance by the student, project-related travel with the student) can normally not exceed 4000 RMB per project in total.

Selection Process

The SURF Panel will operate the following three-stage selection process:

- Stage one is the staff proposal stage. Academic staff will propose research projects to the Cluster Head who with support from Department Heads will rank each project in accordance with a set of criteria.
- Stage two is SURF panel review and selection. The Cluster Head submits the ranked projects to the SURF panel for review and selection. Selection will be based not only on the rankings provided but also on available funding distributed for each cluster.
- Stage three is the student application stage. Once the approved SURF projects are announced, students can then apply to be a SURF research fellow for specific projects. Departments are responsible for the selection of suitable students.

The ranking of stage-one staff proposals will be based on the following criteria:

- The project's ability to provide a beneficial learning experience for the SURF student(s);
- The project's feasibility, coherence and academic merit;
- Clarity in how students will be supervised throughout the entire project.

The Stage-two SURF Panel distribution of funding for each cluster will be based on the following criteria:

- Each cluster will receive a percentage weighting based on their respective full time staff numbers for the current academic year.
- Each cluster will receive a percentage weighting based on funded projects per cluster for each of the previous two SURF rounds.
- An average of the above weightings will be calculated and attributed to each cluster for the distribution of SURF funds.

NOTE

Where a cluster has not submitted sufficient projects to cover its allotted funding, the panel has the right to distribute this excess to other departments/clusters that have oversubscribed.

The decision of the SURF Panel will be final. There is no right of appeal. The Panel will endeavour, where possible, to provide feedback.

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Academic Enhancement Centre (AEC)

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Who we are:

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Ms. Yao Wu (Centre Administrator), Room 1160, Central Building, tel: -1013

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