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11 21	18:00-18:10			
				Lu Liu
	18:10-18:50		Interpreting Deep Neural Networks	
	18:50-19:30		Online Anomaly Prediction and Detection in Future Intelligent Internet	
	19:30-20:10		On the design and correction of ceramic colors: a mathematical perspective	
	20:10-20:20			
	20:20-21:00		Dynamic data visualisation and information theory	
21:00-21:40		A Self-organized Architecture for Efficient Service Discovery in Future Peer-to-Peer Online Social Networks		

## **Interpreting Deep Neural Networks**

**Professor Maozhen Li (Brunel University London)**

Deep Neural Networks (DNNs) have been successfully applied in many areas. This talk presents a recent research work on human re-identification using a deep convolutional neural network (CNN) which is empowered with an attention mechanism. It has been widely accepted that tuning the performance of DNNs is notably hard due to the large number of hyperparameters involved in the training process. As a result, DNNs are normally considered as black-boxes. For this purpose, this talk introduces the work of employing gene expression programming to interpret the performance (i.e. accuracy and training time) of a CNN by analyzing the correlation of the major hyperparameters. Further challenges on DNN interpretability are also discussed in this talk.

Professor Maozhen Li received his PhD from the Institute of Software, Chinese Academy of Sciences in 1997. He completed his Post-Doc research in the School of Computer Science and Informatics at Cardiff University, UK in 1999-2002. He is a Professor in the Department of Electronic and Computer Engineering at Brunel University London UK, and also a Visiting Professor of Tongji University. His research interests are in the areas of high-performance computing including cloud computing and edge computing, big data analytics, and intelligent systems with applications in smart grid and smart cities. He has over 180 scientific publications in these areas including 4 books and 90 peer reviewed journal papers. He has served over 30 IEEE conferences. He was the Chair of the TPC of FSKD'16, FSKD'14 and FSKD'12 respectively and he is on the Editorial Boards of a number of journals. His collaborative research with Tongji University on Intelligent Transportation Systems was nominated by the Institution of Engineering and Technology (IET) for its Innovation Award in November 2015. He is a Fellow of the British Computer Society and the IET.

## **Online Anomaly Prediction and Detection in Future Intelligent Internet**

**Professor Geyong Min (University of Exeter)**

Future Internet will integrate heterogeneous wireless access technologies and effective artificial intelligence tools to provide smart, high-speed, reliable, and ubiquitous wireless communications. A grand challenge in such a complex system is: a single failure of devices or malicious attack can trigger a large number of alarms, leading to massive and redundant alarm information with high complexity and correlations. To address this challenge, this talk will present a new method for data modelling and processing, namely Support Vector Data Description (SVDD), aiming to find a hypersphere (closed boundary) around the known dataset that can enclose all the training data with the minimum volume. The ultimate objective is to accurately predict and quickly detect anomaly behaviors from massive alarm information, which is very important for reducing the network operational expenditure and enhancing the intelligence and Quality-of-Service of future Internet. An open and distributed platform for network big data processing will then be presented to demonstrate its application for anomaly prediction and fault detection.

Professor Geyong Min is a Chair in High Performance Computing and Networking. His research interests include Computer Networks, Cloud and Edge Computing, Mobile and Ubiquitous Computing, Systems Modelling and Performance Engineering. His recent research has been supported by European Horizon-2020, UK EPSRC, Royal Society, Royal Academy of Engineering, and industrial partners. He has published more than 200 research papers in leading international journals including IEEE/ACM Transactions on Networking, IEEE Journal on Selected Areas in Communications, IEEE Transactions on Computers, IEEE Transactions on Parallel and Distributed Systems, and IEEE Transactions on Wireless Communications, and at reputable international conferences, such as SIGCOMM-IMC, INFOCOM, and ICDCS. He is an Associated Editor of several international journals, e.g., IEEE Transactions on

Computers, and IEEE Transactions on Cloud Computing. He served as the General Chair or Program Chair of a number of international conferences in the area of Information and Communications Technologies.

## **Towards sustainable datacentres by leveraging the power of knowledge**

**Dr. John Panneerselvam (University of Leicester)**

Cloud datacentres are addressed to as massive energy consumers. Cloud service providers usually tend to over-provision the resource requirements of task execution, which leaves most of the provisioned resources unutilised. An increased proportion of active server resources in the datacentres not only requires more input power but also leaves high level of carbon footprints in the environment. While it is imperative for providers to reduce such energy consequences, this is an extremely challenging task due to the heterogeneous nature of task behaviours at the datacentres. Herein, an understanding of the behavioural characteristics of the tasks at the datacentre and their energy implications are still required to drive sustainability in datacentre execution. Addressing this issue, our research in recent years has a primary focus on studying the task behaviours by deeply investigating the execution trace logs of various datacentres such as Google, Alibaba etc. This talk presents some of our recent findings about the intrinsic task behaviours during datacentre execution, which urges a strategic shift in the way tasks are being treated so far at the datacentres. As well as we identified the hidden yet unknown ‘energy-aware straggling’ behaviours of tasks, we also developed a few notable prediction models to reliably predict the behaviours of tasks in terms of their resource consuming behaviours. This talk also presents some of our prediction models in this context, and opens up new challenges as we move towards sustainable datacentres.

Dr John Panneerselvam is a Lecturer in Informatics at the University of Leicester, United Kingdom. John received his PhD in computing from the University of Derby in 2018 and an MSc in advanced computer networks in 2013. His PhD thesis has been nominated to the BCS distinguished dissertation award by his supervisor Prof Lu Liu. He is an active member of IEEE and British Computer Society, and a HEA fellow. John holds more than 50 publications in reputed international journals such as IEEE Transactions on Sustainable Computing, IEEE Transactions on

Emerging Topics in Computing, IEEE Transactions on Industrial Informatics, IEEE Systems Journal, Future Generation Computer Systems etc. His research interests include cloud computing, fog computing, Internet of Things, big data analytics, inter-disciplinary analytics, and P2P computing. He also serves as a reviewer for a number of reputed journals including IEEE transactions on cloud computing, IEEE transactions on Sustainable Computing, Future Generation Computer Systems etc.



**Dynamic data visualisation and information theory****Dr. Minsi Chen (University of Huddersfield UK)**

Large scale simulations and visualisation in medicine and physics are often used to help understand and predict diseases and complex physical phenomenon. These simulations are often run on HPCs in batches which impose limitations on our ability to interactively interrogate their visualisation in-situ. This talk first discusses a heterogeneous compute platform for generating data visualisation in-situ. This is followed by a discussion on the use of information theory to automatically generate “important views” of time varying data.

Dr Minsi Chen is currently a senior lecturer in the Department of Computer Science at the University of Huddersfield UK. He read computer science at the University of East Anglia (UEA) UK. He was awarded a BSc (Hons) in 2000, Msc in 2002, and completed his PhD in 2006, all from UEA. He worked as a software engineer before

**Dr. Bo Yuan (University of Derby)**

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Bo Yuan is currently a Lecturer in Computing and academic in Data Science Research Centre, with School of Electronics, Computing and Mathematics, University of Derby, UK. He received the B.Sc. degree in computer science and technology and the Ph.D. degree in computer science from Tongji University, Shanghai, China, in 2011 and 2018, respectively. He completed his Postdoctoral research on big data analytics in the field of retail industry and designed AI products for world-renown retailers to cut IT costs, provide forecast capability and speed up decision-making.

With his team in the data science centre, he explores applied machine learning techniques and business-oriented data science to help industrial companies establish cost-effective IT infrastructures and the state-of-the-art AI solutions. He is specialising in helping executives and managers use analytics to make data-driven decisions and gain competitive advantage. He is an active member of Institute of Electrical and Electronics Engineers (IEEE). His areas of expertise include Industrial Internet of things, data science for business, Cloud computing architecture design, and AI-driven advanced engineering.