



香港城市大學
City University of Hong Kong

HK TECH | 2022 FORUM

EMPOWERING SOCIETY
FOR A BETTER FUTURE



FORUM ON RELIABILITY AND SAFETY OF INTELLIGENT SYSTEMS

20 - 21 August 2022

PROGRAMME BOOKLET



香港城市大學
City University of Hong Kong



Hong Kong
Institute for
Advanced Study



Department of Advanced Design
and Systems Engineering

香港城市大學
City University of Hong Kong



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WELCOME MESSAGE

Welcome Message from the Chairs

Welcome to HK Tech Forum – “Reliability and Safety of Intelligent Systems”.

This event is part of the inaugural HK Tech Forum series, which covers a wide range of hot topics. At this particular conference, some of the brightest researchers and leading experts as well as young and active researchers will gather in hybrid mode to discuss their research on AI-related issues in complex systems.

Among the keynote speakers are Professor Joseph Sifakis, recipient of the Turing Award (2007), and Professor Jim McDonald, President, UK Royal Academy of Engineering, and Principal and Vice-Chancellor, University of Strathclyde. We also have Professor Zhihua Zhong, Vice-President, Chinese Academy of Engineering, Professor Xiaohong Guan, Xi’an Jiaotong University, and Professor Nancy Leveson of MIT. Professor Leveson will deliver the opening keynote at the event.



In addition, there will be industry speakers and talks by young scientists plus a roundtable featuring the editors-in-chief of almost all major reliability and safety journals.

In conjunction with the HK Tech Forum, two other events need highlighting: an international conference on reliability, maintainability and safety supported by IEEE and Tsinghua University’s annual conference on quality and reliability.

CityU is committed to educating leaders and professionals who will be involved in shaping the future. Therefore, it is an honour for us to host such a conference. It will allow us to engage with delegates on topics of great interest and potential.

We hope all participants will find the discussions stimulating and will be inspired to pursue even more profound research on reliability and safety of intelligent systems. Wish all of you enjoy the conference. Thank you!

Way Kuo and Min Xie
City University of Hong Kong

FORUM PROGRAMME

Day-1 (20 August 2022, Saturday)

Time	Speaker and Presentation Title
Opening Ceremony Chair: Prof. Min XIE (City University of Hong Kong)	
9:00 – 9:25	Opening and Welcome speech by Prof. Way KUO (President of City University of Hong Kong, China) Prof. Li ZHENG (Vice-President of Tsinghua University, China)
Keynote Talks Chair: Dr. Lishuai LI (City University of Hong Kong)	
9:25 – 10:10	Keynote talk by Prof. Nancy LEVESON (Massachusetts Institute of Technology, USA) Safety of Software-Intensive Systems
10:10 – 10:30	Break
Keynote Talks Chair: Prof. Yanfu LI (Tsinghua University)	
10:30 – 11:15	Prof. Zhihua ZHONG (Vice-President, Chinese Academy of Engineering, China) Some Safety Issues on Intelligent Vehicles
11:15 – 12:00	Prof. Xiaohong GUAN (Xi'an Jiaotong University, China) Safety and Security of Power Systems
12:00 – 14:00	Lunch break
Invited Industry Talks Chair: Prof. Jianping WANG (City University of Hong Kong)	
14:00 – 14:30	Dr. Tony LEE (Operations Director at MTR Corporation Limited, Hong Kong) Artificial Intelligence Enabled Applications Towards Intelligent Railway Transportation to Be More Customer-Centric, Reliable, and Safer
14:30 – 15:00	Dr. Matthew HU (Senior Vice President Engineering and Quality at HAYLION Technologies) Robustness Thinking: A Best Practice in Design for Reliability
15:00 – 15:30	Dr. Zheng HU (Director of Reliability Technology Lab, HUAWEI) Explorations and Practices towards a Reliable Intelligent System
15:30 – 15:45	Break
Keynote Talks Chair: Prof. Matthew LEE (City University of Hong Kong)	
15:45 – 16:30	Prof. Sir Jim MCDONALD (President, Royal Academy of Engineering, UK; Principal and vice-chancellor, University of Strathclyde, UK) Intelligent Systems and Data Centric Engineering Applications
16:30 – 17:15	Prof. Joseph SIFAKIS (Turing Award (2007) ; Verimag Laboratory, France) Why is it so Hard to Make Self-driving Cars?

Day-2 (21 August 2022, Sunday)

Time	Speaker and Presentation Title
Young Researcher Forum	
Chair: Prof. Kaibo WANG (Tsinghua University)	
9:00 – 9:30	Dr. Long WANG (Tsinghua University, China) Designing and Assessing Reliability for Enterprise-Class Clouds
9:30 – 10:00	Dr. Gerhard Petrus HANCKE (City University of Hong Kong, China) Reliability and Security for Intelligent Wireless Sensing and Control Systems
10:00 – 10:15	Break
Young Researcher Forum	
Chair: Dr. Huadong MO (University of New South Wales)	
10:15 – 10:45	Dr. Lishuai LI (City University of Hong Kong, China) Proactive Flight Operations Monitoring and Safety Management
10:45 – 11:15	Dr. Zijun ZHANG (City University of Hong Kong, China) Let Machine Visually Auto-Plot System Performance Curves from Data
11:15 – 12:00	Dr. Zhenglin LIANG (Tsinghua University, China) Smart Facility Asset Management for Network Services
12:00 – 14:00	Lunch break
Editor's Roundtable	
Chair: Prof. Min XIE (City University of Hong Kong)	
14: 00-15:15	Prof. Terje AVEN (Editor-in-Chief of <i>Proceedings of the Institution of Mechanical Engineers, Part O: Journal of Risk and Reliability</i>)
	Prof. Anna BORUCKA (Editor-in-Chief of <i>Eksplatacja i Niezawodnosc - Maintenance and Reliability</i>)
	Prof. George BOUSTRAS (Editor-in-Chief of <i>Safety Science</i>)
	Prof. Paolo GARDONI (Editor-in-Chief of <i>Reliability Engineering and Systems Safety</i>)
	Prof. Loon Ching TANG (Editor-in-Chief of <i>Quality and Reliability Engineering International</i>)
	Prof. Eric WONG (Former Editor-in-Chief of IEEE Transactions on Reliability and Vice-President for Publication, IEEE Reliability Society)
	Prof. Tao XIE (Editor-in-Chief of <i>Software Testing, Verification and Reliability</i>)
15:15 – 15:30	Break
Editor's Roundtable	
Chair: Prof. Way KUO (President, City University of Hong Kong) and Prof. Min XIE (City University of Hong Kong)	
15:30 – 16:30	Roundtable discussion Questions and answers
16:30 – 16:45	Closing Ceremony

PROGRAMME DETAILS

20 August 2022

Safety of Software-Intensive Systems

Speaker: Prof. Nancy LEVESON
Massachusetts Institute of Technology, USA

Time: 9:25 – 10:10

Chair: Prof. Min XIE
City University of Hong Kong



Biography: Nancy Leveson is Professor of Aeronautics and Astronautics and also Professor of Engineering Systems at MIT. She is an elected member of the National Academy of Engineering (NAE). Prof. Leveson conducts research on the topics of system safety, software safety, software and system engineering, and human-computer interaction. She consults extensively in for industries on ways to prevent accidents. In 1999, she received the ACM Allen Newell Award for outstanding computer science research and in 1995 the AIAA Information Systems Award for “developing the field of software safety and for promoting responsible software and system engineering practices where life and property are at stake.” In 2005 she received the ACM Sigsoft Outstanding Research Award. She has published over 400 research papers and is author of “Safeware: System Safety and Computers,” published by Addison-Wesley (1995), Engineering a Safer World, published by MIT Press (2012) and also “An Introduction to System Safety Engineering” to be published soon.

Some Safety Issues on Intelligent Vehicles

Speaker: Prof. Zhihua ZHONG
Vice-President, Chinese Academy of Engineering,
China

Time: 10:30 – 11:15

Chair: Prof. Yanfu LI
Tsinghua University



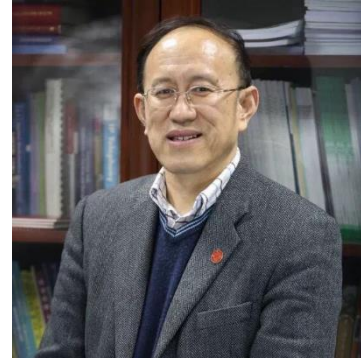
Biography: Zhong Zhihua is an expert in vehicle engineering. He graduated from Linköping University in Sweden in 1988 with a doctorate in engineering. He is currently Vice President of the Chinese Academy of Engineering. He served as president of Hunan University from 2005 to 2011 and president of Tongji University from 2016 to 2018. He also served as secretary-general of the Chinese Academy of Engineering. Dr Zhong has long been engaged in the research and applications in automobile design and manufacturing technology. His research mainly focuses on automobile collision safety technology, body forming technology, modular lightweight automobile technology and innovation technologies for intelligent new energy vehicles.

Safety and Security of Power Systems

Speaker: Prof. Xiaohong GUAN
Xi'an Jiaotong University, China

Time: 11:15 – 12:00

Chair: Prof. Yanfu LI
Tsinghua University



Biography: Xiaohong Guan received the Ph.D. in electrical engineering from the University of Connecticut, Storrs, in 1993. Since 1995, he has been with the Department of Automation, Tsinghua National Laboratory for Information Science and Technology, and the Center for Intelligent and Networked Systems, Tsinghua University. He is currently with the MOE Key Laboratory for Intelligent Networks and Network Security, Faculty of Electronic and Information Engineering, Xi'an Jiaotong University, Xi'an, China, where he is also the Dean of the Faculty of Electronic and Information Engineering. He is an Academician of Chinese Academy of Sciences and Fellow of IEEE.

Artificial Intelligence Enabled Applications Towards Intelligent Railway Transportation to Be More Customer-Centric, Reliable, and Safer

Speaker: Dr Tony LEE
Operations Director
MTR Corporation Limited, Hong Kong

Time: : 14:00 – 14:30

Chair: Prof. Jianping WANG
City University of Hong Kong



Biography: Dr Lee joined the Company in 1991 and has held various management positions related to the design, construction, operations and maintenance of the Company's railway system in Hong Kong. He has been the Operations Director and a Member of the Executive Directorate since 1 January 2020. Before his appointment as Operations Director, Dr Lee took up the position of Chief of Operations Engineering in September 2013 and was appointed as Deputy Operations Director in November 2019.

Dr Lee is responsible for managing the Company's railway related operations in Hong Kong.

Dr Lee is a Chartered Engineer and is a Member of The Hong Kong Institution of Engineers, The Institution of Engineering and Technology and The Hong Kong Institute of Directors. He is also a Member of the Advisory Committee of the Department of Electrical and Electronic Engineering of The University of Hong Kong, the Engineering Discipline Advisory Board of the Hong Kong Institute of Vocational Education and a Member of the Technical Committee of National Rail Transit Electrification and Automation Engineering Technology Research Center (Hong Kong Branch). Dr Lee holds a Doctoral degree in Engineering and a Master degree in Philosophy both from The Hong Kong Polytechnic University and a Master of Business Administration degree from The Open University of Hong Kong (now known as Hong Kong Metropolitan University).

Robustness Thinking: A Best Practices towards a Reliable Intelligent System

Speaker: Dr Matthew HU
Senior Vice President Engineering and Quality
HAYLION Technologies

Time: 14:30 – 15:00

Chair: Prof. Jianping WANG
City University of Hong Kong



Abstract: Reliability is one of the most important characteristics of an engineering system. Reliability can be measured as robustness over time as a leading key performance indicator (KPI). Product Development has a huge impact on revenue stream and reliability. It is most cost-effective and less time-consuming to make design insensitive to uncontrollable user environments in upfront design phase. Robustness thinking is essential to improve quality and reliability proactively by factoring the activities of design for reliability. Robustness development in manufacturing can reduce the variability of those processes with valuable benefits to manufacturing yields, reduction of cycle time and costs. Robustness development in Design for Reliability (DFR) process provides benefits in reduction of early-on physical testing and traditional test-fix-test cycles. Robustness achieved early in product development enables shorter cycle times in the later design phases. Robust design bridges gap between product development, performance measurements in manufacturing and field tracking and PHM strategy by identifying, selecting and verifying health indicators in earlier design phase therefore improved the effectiveness of PHM modeling and application.

Biography: Dr. Matthew Hu, a Senior Vice President Engineering and Quality at HAYLION Technologies, has been a recognized exceptional industrial expert and leader in robust engineering, quality, reliability, Design for Six Sigma (DFSS) and Robust Design for Reliability. Dr. Hu is an adjunct professor at University of Houston and leading Supply Chain Innovation Lab initiative. Dr. Hu has made significant contributions as an engineer, specialist, six sigma master black belt, program manager, and executive during a long career in technology and product development, manufacturing, supply chain, commercialization and operation. He held numerous leadership positions in automotive, aerospace, oil & gas, technology, medical device and consulting. He helped and saved companies over \$19 million cost savings, including over \$5.5 million cost savings for Ford Motor Company. He received numerous awards, including Ford Motor Company Global Customer Satisfaction Gold Winner Award.

He holds a Ph.D. degree in Industrial and System Engineering at Wayne State University. He also holds two master degrees, one MS in Statistics and another MS in Industrial and Manufacturing Engineering. Dr. Hu is a Certified Robust Design Expert, a Certified LSS Master Black Belt and also a certified DFSS Master Black Belt, a Certified Quality Engineer and a Certified Reliability Engineer.

Explorations and Practices towards a Reliable Intelligent System

Speaker: Dr Zheng HU
Director of Reliability Technology Lab
HUAWEI

Time: 15:00 – 15:30

Chair: Prof. Jianping WANG
City University of Hong Kong



Abstract: Over the past two decades, Huawei has always regarded reliability as a very important quality attribute of its products. Huawei has made continuous investment on reliability research and accumulated valuable experience in traditional ICT products. In recent years, AI is acceleratingly replacing the traditional software in various aspects due to its superb performance on CV, NLP, and optimization, etc. Due to its data-driven learning paradigm, these learning-enable intelligent systems are more likely to exhibit incorrect behaviors, leading to severe accidents and losses in safety- and reliability-critical scenarios, which brings new challenges. Reliability is a study against fault, error and failure, and we have defined these terminologies in intelligent system and summarized a comprehensive failure mode library. According to the library, a series of reliability strategies will be introduced, such as measurement, verification, testing techniques, and some practical case studies will be presented how it improved the reliability of Huawei' products and services, and manage failures.

Biography: Dr. Zheng Hu is the Director of Reliability Technology Lab, HUAWEI, a leading global provider of information and communications technology (ICT) infrastructure and smart devices. Dr Hu is also currently leading a corporate-level project, Trustworthy AI, in charge of the research and innovation of key technologies towards the reliable and safe AI system. Meanwhile his research also focuses on the software reliability, reliability theory and ac-hoc networks, etc. Zheng Hu received his PhD degree in Computer Science from Lyon University in Lyon France. Before joint Huawei, he was the senior researcher in Orange Labs (France Telecom), working on the self-configuration network of smart home/smart building.

Intelligent Systems and Data Centric Engineering Applications

Speaker: Prof. Sir Jim MCDONALD
President, Royal Academy of Engineering, UK
Principal and vice-chancellor, University of
Strathclyde, UK

Time: 15:45 – 16:30

Chair: Prof. Matthew LEE
City University of Hong Kong



Biography: Professor Sir Jim McDonald is Principal and Vice-Chancellor of the University of Strathclyde. He was elected President of the Royal Academy of Engineering in September 2019, through which he is a member of the UK Prime Minister’s Council for Science and Technology. He Co-chairs, with the First Minister of Scotland, the Scottish Government’s Energy Advisory Board. He is Co-Chair of the Independent Glasgow Economic Leadership Board. He currently holds several non-executive appointments with organisations including the Weir Group plc, Scottish Power plc, the UK National Physical Laboratory, and the UK Offshore Renewable Energy Catapult. Additionally, he Chairs or participates in several senior committees related to research, economic development, and education. In the Queen’s Jubilee Birthday Honours List 2012, Professor McDonald was awarded a Knighthood for services to education, engineering, and the economy. He has held the Rolls-Royce Chair in Electrical Power Systems since 1993. He is a Fellow of the Royal Academy of Engineering, the National Academy of Engineering (US), the Royal Society of Edinburgh, the Institution of Engineering and Technology, the Institute of Physics, the Energy Institute, a Foreign Fellow of the Chinese Society of Electrical Engineering and Honorary Professor at Peking University. Sir Jim is also an International Economic Adviser to the Province of Shandong, China. He is also a member of international advisory board in the Centre for Language Education and Cooperation, affiliated with the Chinese Ministry of Education.

Why is it so Hard to Make Self-driving Cars?

Speaker: Prof. Joseph SIFAKIS
Turing Award (2007)
Verimag Laboratory, France

Time: 16:30 – 17:15

Chair: Prof. Matthew LEE
City University of Hong Kong



Abstract: Why is self-driving so hard? Despite the enthusiastic involvement of big technological companies and the massive investment of many billions of dollars, all the optimistic predictions about self-driving cars “being around the corner” went utterly wrong.

I argue that these difficulties emblematically illustrate the challenges raised by the vision for trustworthy autonomous systems. These are critical systems intended to replace human operators in complex organizations, very different from other intelligent systems such as game-playing robots or intelligent personal assistants.

I discuss complexity limitations inherent to autonomic behavior but also to integration in complex cyber-physical and human environments. I argue that existing critical systems engineering techniques fall short of meeting the complexity challenge. I also argue that emerging end-to-end AI-enabled solutions currently developed by industry, fail to provide the required strong trustworthiness guarantees.

I advocate a hybrid design approach combining model-based and data-based techniques and seeking tradeoffs between performance and trustworthiness. I also discuss the validation problem emphasizing the need for rigorous simulation and testing techniques allowing technically sound safety evaluation.

I conclude that building trustworthy autonomous systems goes far beyond the current AI vision. To reach this vision, we need a new scientific foundation enriching and extending traditional systems engineering with data-based techniques.

Biography: Prof. Joseph Sifakis is Emeritus Research Director at Verimag laboratory. His current area of interest is trustworthy autonomous systems design with focus on self-driving cars.

In 2007, he received the Turing Award for his contribution to the theory and application of model checking. He is a member of the French Academy of Sciences, of the French National Academy of Engineering, of Academia Europea, of the American Academy of Arts and Sciences, of the National Academy of Engineering, and of the Chinese Academy of Sciences. He is a Grand Officer of the French National Order of Merit, a Commander of the French Legion of Honor. He has received the Leonardo da Vinci Medal in 2012.

21 August 2022

Designing and Assessing Reliability for Enterprise-Class Clouds

Speaker: Dr Long WANG
Tsinghua University, China

Time: 9:00 – 9:30

Chair: Prof. Kaibo WANG
Tsinghua University



Abstract: Cloud computing provides convenient deployment, management and scalability of computing, storage, and network resources and services at a low cost. Enterprise-class clouds are hosting critical IT services for people's living and life. So it is extremely important to provide high reliability for enterprise cloud systems and services on top of them. This lecture will discuss requirements of and challenges in designing and assessing reliability for enterprise cloud systems and services, a reference architecture of cloud system reliability, and a few relevant technologies. In particular, we will introduce the technologies of disaster recovery of enterprise clouds, tracking and reconstruction of cloud service's request processing, and availability assessment of large-scale clouds at fine granularity.

Biography: Long Wang is a tenured associate professor of Tsinghua University leading the RELiability And Security Of Networks and Systems (REASONS) lab. Prior to that, he was a senior research staff member of IBM T. J. Watson Research Center leading the resiliency and security department of IBM Watson Cloud, and also an adjunct faculty of North Carolina State University. He got Ph.D. from University of Illinois at Urbana Champaign, and then spent more than 10 years in IBM T. J. Watson Research Center. He has published nearly 50 papers in international journals and conferences and has filed 30 patent disclosures on reliability and security, cloud computing, and relevant topics. His research interests include dependable and secure systems, cloud computing, distributed systems, system modeling, measurement and assessment, and analytics and machine learning. He has been in committees of top conferences such as IEEE DSN and ISSRE for years, and is the General Chair of IEEE PRDC 2022.

Reliability and Security for Intelligent Wireless Sensing and Control Systems

Speaker: Dr Gerhard Petrus HANCKE
City University of Hong Kong, China

Time: 9:30 – 10:00

Chair: Prof. Kaibo WANG
Tsinghua University



Abstract: Improvements in computational and communication ability are making edge devices ever smarter. This offers several potential benefits in intelligent wireless sensing and control, including timeliness of system decisions and efficient collection of large amounts of data. With use in security sensitive or critical applications, such as industrial networks, the security and reliability of these systems are rightly attracting growing interest. Building reliable and secure applications would often require different approaches to conventional network security and has led to several interesting research directions. This talk aims to provide an overview of reliability and security issues for intelligent wireless sensing and control systems, covering some ongoing research and technical challenges in this area.

Biography: Gerhard Hancke joined City University of Hong Kong in 2013 where he is currently an Associate Professor in the Department of Computer Science. He received B.Eng and M.Eng degrees in Computer Engineering from the University of Pretoria, South Africa, in 2002 and 2003, and a PhD in Computer Science from the University of Cambridge, United Kingdom, in 2009. Previously he worked as researcher with the Smart Card and IoT Security Centre and as teaching fellow with the Department of Information Security, both located at Royal Holloway, University of London. He received the J. David Irwin Early Career Award from the IEEE Industrial Electronics Society in 2019, and was elevated to IEEE Fellow in 2022.

Proactive Flight Operations Monitoring and Safety Management

Speaker: Dr Lishuai LI
City University of Hong Kong, China

Time: 10:15 – 10:45

Chair: Dr Huadong MO
University of New South Wales



Abstract: To improve pilot operations, airlines have begun an extensive monitoring of flight operations, thanks to an abundance of data recorded by digital flight data recorders, Quick Access Recorder (QAR). However, traditional data analytics methods are becoming obsolete for proactive safety management. For instance, Exceedance Detection, widely used by the airline industry, can only detect hazardous behaviors from a pre-defined list comprised of “known issues of safety concerns”; it cannot respond to emerging, previously unidentified issues.

This study proposes a new approach, cluster-based anomaly detection, to detect abnormal flights, which can support domain experts in detecting anomalies and associated risks from routine airline operations. The new approach, enabled by data from QAR, a heterogenous dataset collected by ubiquitous sensors on aircraft, applies clustering techniques, i.e. DBSCAN, GMM, to detect abnormal flights of unique data patterns. These flights may indicate an increased level of risks under the assumption that normal flights share common patterns, while anomalies do not. Safety experts can then review these flights in detail to identify risks, if any. Expert reviews and case studies are conducted to validate the proposed methods. Results show that the new breed of data driven approach can identify ‘common patterns’ as well as anomalies, allowing airlines to examine the consistency of current operations while focusing efforts on investigating unusual behaviors to look for latent risks.

Biography: Lishuai Li is an Associate Professor at the School of Data Science, City University of Hong Kong. Her research interest is the development of analytical methods for the design, management, and operation of air transportation systems. Her work has an emphasis on the use of large-scale operational data combined with methods of artificial intelligence and data mining. Dr. Li serves on the Editorial Advisory Board of Transportation Research Part C: Emerging Technologies, and the Editorial Board of Aerospace and International Journal of Reliability and Safety. She received a Ph.D. and a M.Sc. from the Department of Aeronautics and Astronautics at Massachusetts Institute of Technology, and a B.Eng. from Fudan University.

Let Machine Visually Auto-Plot System Performance Curves from Data

Speaker: Dr Zijun ZHANG
City University of Hong Kong, China

Time: 10:45 – 11:15

Chair: Dr Huadong MO
University of New South Wales



Abstract: Performance curve is an important measure for assessing conditions and efficiencies of systems. Yet, estimating high quality real performance curves for systems via traditional statistical aspect methods involve cumbersome data pre-processing and repeated model fitting. This talk introduces a data-synthesis-informed-training U-net (DITU-net) based method to realize the machine vision assisted automation of the system performance curve modeling without data pre-processing, which is the first time in the literature. The proposed DITU-net only needs to be trained once and does not require any data preprocessing in applications. We have tested the proposed DITU-net on a famous problem in the renewable energy system application, the power curve modeling of wind turbines. Numerical experiments based on 76 WTs are conducted to validate the superiority of the proposed method via benchmarking against classical WPC modeling methods.

Biography: Dr. Zijun Zhang received his B.Eng. degree in Systems Engineering and Engineering Management from the Chinese University of Hong Kong, Hong Kong, in 2008, and the M.S. and Ph.D. degrees in Industrial Engineering from the University of Iowa, Iowa City, USA, in 2009 and 2012, respectively.

His is currently an Associate Professor in the School of Data Science and Associate Director of Centre for Systems Informatics Engineering at City University of Hong Kong, Hong Kong, China. His research focuses on machine learning and computational intelligence methods as well as their applications in the renewable energy, facility energy management, rail transportation systems, and manufacturing processes. He is a senior member of IEEE. He is currently serving as an Associate Editor for IEEE Transactions on Sustainable Energy, IEEE Power Engineering Letters, and Journal of Intelligent Manufacturing, as well as the advisory board member of Patterns: Cell Press.

Smart Facility Asset Management for Network Services

Speaker: Dr Zhenglin LIANG
Tsinghua University, China

Time: 11:15 – 12:00

Chair: Dr Huadong MO
University of New South Wales



Abstract: Daily human activities are indispensable to the service provided by networks, such as infrastructure and telecommunication networks. Retaining the serviceability of such networks is essential for improving the quality of life, boosting the economy, and harmonizing society. In practice, such networks are often exposed to environmental risks and deteriorate stochastically. Thus, designing a smart facility asset management is a critical issue. How to effectively harvest the practically available data to deliver real value in the network? Could the benefit of predictive maintenance also scale up on asset management of the infrastructure network? Is ultra-reliability achievable for telecommunication networks? In this presentation, I will share some new findings and insights into these issues.

Biography: Dr. Zhenglin Liang received his Ph.D. at the University of Cambridge, St John's College. He is currently an Associate Professor in the System Engineering Department of Industrial Engineering at Tsinghua University. He also serves as the assistant for the head of the Institute of Quality and Reliability at Tsinghua University, deputy director of Tsinghua-Huawei Research Centre, and guest associate editor of IEEE Transactions on Reliability. He is working in areas of system reliability and network resilience and has published 14 journal papers in IEEE Transactions on Reliability, IISE Transactions, Reliability Engineering & System Safety, International Journal of Production Economics and etc.

ORGANIZING COMMITTEE

COMMITTEE CHAIRS

Way KUO
Min XIE

COMMITTEE MEMBERS

Andy CHOW
Lishuai LI
Yanfu LI
Zhenglin LIANG
Kaibo WANG
Lechang YANG
Aibo ZHANG
Zijun ZHANG
Inez ZWETSLOOT

PhD studies at CityU

Department of Advanced Design and Systems Engineering

Fellowship and Scholarships

- Hong Kong PhD Fellowship: an annual stipend of **HK\$325,200** (approximately US\$41,690) and a conference and **research-related travel allowance of HK\$13,600** (approximately US\$1,740) per year
- Postgraduate Studentship: **HK\$17,510** per month (~US\$2,245)
- Additional **different kinds of grants and awards** for application

Minimum Entrance Requirements

- a Bachelor's degree with first class honours or a Master's degree in relevant fields
- a minimum total score of 79 (internet-based test) in TOEFL OR an overall band score of 6.5 in IELTS (taken within two years of the application)

Our Research Areas include but not limited to:

- Intelligent Manufacturing
- Systems Engineering
- Semiconductor Manufacturing
- Automation and Control
- Operations Management
- Reliability Engineering
- Cyber-Physical Systems
- Quality Engineering
- Applied Optimization
- Data Analytics and Statistics



#54

QS

World University
Rankings 2023

#4

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"Top 50 under 50"
in 2021

#89

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Graduate
Employability
Rankings 2022

How to apply

Applicants are encouraged to contact a potential supervisor and get the consent to be his/her supervisor prior to applying to the University.

STEP
1

RGC's Application Deadline:

1 December 2022 (by noon Hong Kong time)

Obtain a RGC reference number by registering at RGC's Online Application System at www.rgc.edu.hk/hkphd

STEP
2

CityU's Application Deadline:

1 December 2022

Submit full application, together with supporting documents, to CityU's Online Admission System at www.cityu.edu.hk/sgs/oas quoting the RGC reference number

Contact Us

☎ 852 3442-9321

✉ adsego@cityu.edu.hk

🌐 <https://www.cityu.edu.hk/adse/>



Master of Science in Engineering Management (MSEM)

理學碩士(工程管理學)

Full-time (1 Year)/Part-time (2 Years)

Programme Code: P56

From Engineers to Engineering Managers

This programme aims to develop students' managerial skills, innovation and entrepreneurial spirit, and leadership capabilities in the context of engineering management and entrepreneurship.

Master of Science in Engineering Management (MSEM)

The Department of Advanced Design and Systems Engineering (ADSE) aims to help Hong Kong meet the technological and managerial challenges of the 21st century by engaging in industrially relevant research and development activities and by committing to foster closer research collaborations and more executive development and consultancy activities with Hong Kong and also the Greater Bay Area's industrial sectors.

Targeted Taught Postgraduate Programmes Fellowships Scheme 2022/23 (for local students)

Fellowship awards are supported by the HKSAR Government for local students admitted to this programme. The fellowship students are required to pay a minimum tuition fee of HK\$42,100, which is the prevailing rate of the UGC-funded programmes, and the differences will be subsidised by the fellowships subject to **a cap of HK\$120,000** (for the whole taught postgraduate programme, regardless of the actual study period) for the settlement of the tuition fee only. Local students admitted to the programme in full-time, part-time or combined study in the 2022/23 academic year will be invited to submit applications for the fellowships.

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www.cityu.edu.hk/adse/msem/



Department of Advanced Design
and Systems Engineering

香港城市大學
City University of Hong Kong