IEIS2021

Final Program

8th International Conference on Industrial Economics System and

Industrial Security Engineering

23-26 July, 2021

Hosted by
IEEE SMC Technical Committee on Logistics, Informatics and Industrial Security Systems
National Academy of Economic Security of Beijing Jiaotong University, China
The International Center for Informatics Research of Beijing Jiaotong University, China
China Center for Industrial Security Research of Beijing Jiaotong University, China
School of Economics and Management of Beijing Jiaotong University, China

In cooperation with
Shandong University, China
Budapest University of Technology and Economics, Hungary
Informatics Research Centre, University of Reading, UK

Supported by
IEEE Systems, Man, and Cybernetics Society
K. C. Wong Education Foundation (Hong Kong)
Sino-EU Doctoral School for Sustainability Engineering (Program in Logistics, Information, Management and Service Science)
Beijing Logistics Informatics Research Base
Key Laboratory of Logistics Management and Technology of Beijing

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Foreword

Welcome to participate in the virtual conference of the 8th International Conference on Industrial Economics System and Industrial Security Engineering (IEIS2021). The conference is hosted by IEEE SMC Technical Committee on Logistics Informatics and Industrial Security Systems, China National Academy of Economic Security of Beijing Jiaotong University, The International Center for Informatics Research of Beijing Jiaotong University (ICIR), China Center for Industrial Security Research of Beijing Jiaotong University (CCISR), and School of Economics and Management of Beijing Jiaotong University (SEM), in cooperation with Shandong University, Budapest University of Technology and Economics, Hungary, Informatics Research Centre, University of Reading, United Kingdom, and supported by IEEE SMC, K. C. Wong Education Foundation (Hong Kong), Sino-EU Doctoral School for Sustainability Engineering (Program in Logistics, Information, Management and Service Science), Beijing Logistics Informatics Research Base, Beijing Laboratory of National Economic Security Early-warning Engineering and Key Laboratory of Logistics Management and Technology of Beijing.

This conference is to provide a forum for scholars and practitioners in the world to discuss the problems in industrial economics and industrial security theories and practices. It aims to provide insights in solving the problems in national economy, social development and economic security. The conference has two simultaneous tracks, which cover different aspects and include: "*industrial economics*" and "*industrial security*". Papers in each track describe state-of-art research works that are often oriented towards real world applications and highlight the benefits of related methods and techniques for the emerging field of industries. The conference theme is "industrial development, industrial security and national economic security under the background of globalization"

Many people have made dedicated efforts for the conference, we would like to take this opportunity to give our grateful thanks for them. First, we would like to thank the authors, whose research and development efforts are recorded here. Second, we thank the members of the program committee and the additional reviewers for their valuable help with their professiona reviewing of all submissions. Third, we thank the invited speakers for their invaluable contribution and the time for preparing their talks. Many thanks are given to the colleagues from Beijing Jiaotong University, Budapest University of Technology and Economics and Shandong University for their hard work in organizing this event.

Although being impacted by COVID-19, we wish you all enjoy an exciting conference online in this special period. We hope to meet you again next year for the IEIS2022 online, and the details will soon be available at http://icir.bjtu.edu.cn/ieis2022.

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Opening ceremony

July 24, 2021
Beijing Time
08:00 p.m.-08:30 p.m.
Budapest Time
02:00 p.m.-02:30 p.m
VooV Meeting ID: 439 287 970 (Password: 072401)
Backup VooV Meetiong ID: 165 978 331 (Password: 072401)

Keynote Lectures

Educating AI Talent as Part of Competitive Strategy

Kecheng Liu

Honorary Director, Informatics Research Centre
Professor, Henley Business School, University of Reading, UK

Artificial intelligence has convincingly brought significant value with profound impact in all aspects of our life, economic activity and society at large. To attract and educate AI talent is an important part of strategy of every major economy. In this keynote, educational models and curricula are examined and discussed to aim for cultivating high quality AI graduates.

Kecheng Liu is a full professor and holds a chair of Applied Informatics, Henley Business School, University of Reading, UK. He is Fellow of British Computer Society (FBCS), Fellow of Charted Management Institute (FCMI) and Senior Fellow of Higher Education Academy (SFHEA). He has published 25 books and over 200 papers in journals and conferences. His research interests span from organisational semiotics, informatics in business, alignment of business and IT strategies, digital leadership and transformation, and big data analytics and AI for healthcare. He is a long-serving member of Working Group 8.1 of the International Federation of Information Processing (IFIP WG8.1). As the principal investigator, he has led and been responsible for research projects supported by various sources in UK, EU and internationally.

Thick Data Analytics for Providing Focused Predictions

Jinan Fiaidhi

Professor, Department of Computer Science, Lakehead University, Canada

All sort of businesses, organizations and customers are now online, and they leave a trail of data on social media sites, blogs and portals, messages and conversations of all types, and lots of other traces on search engines and chatbots. Enterprises and other corporations cannot ignore the value behind such qualitative data as they provide easy source of heuristics and problem context that comes from the human in the loop. To succeed and grow, a business needs to be able to embed context, acquire, retain, satisfy, and engage their customers effectively. Relying on Big Data analytics proved to be problematic as it provides only the general quantitative view which does not focus of the intrinsic business context and the relevant needs of their consumers. Embracing new analytics that incorporate qualitative data relevant to the consumer need will provide that missing focus. Thick data analytics is about incorporating context and heuristics through integrating qualitative analytics through listening to consumers (i.e. observations, question answering, feelings, and reactions) as well as integrating the successful expert's heuristics. This invited speech will provide the techniques for incorporating Thick Data Analytics.

Dr. Jinan Fiaidhi is a full Professor of Computer Science and the Graduate Coordinator of the PhD program in Biotechnology at Lakehead University, Ontario, Canada since late 2001. She was the grad coordinator for the Lakehead University Computer Science MSc program for the period (2009-2018). She is also an Adjunct Research Professor with the University of Western Ontario. She received her graduate degrees in Computer Science from Essex University (PgD 1983) and Brunel University (PhD, 1986). During the period (1986-2001), Dr. Fiaidhi served at many academic positions (e.g. University of Technology (Asso. Prof and Chairperson), Philadelphia University (Asso. Prof), Applied Science University (Professor), Sultan Qaboos University (Asso. Prof.). Dr. Fiaidhi research is focused on collaborative learning utilizing the emerging technologies (e.g. Thick Data, Deep Learning, Cloud Computing, Calm Computing, Mobile Learning, Learning Analytics, Social Networking, Croudsourcing, OpenData, Extreme Automation and Semantic Web). Dr. Fiaidhi research is supported by the major research granting associations in Canada (e.g. NSERC, MITACS, ONCAT, CFI). Dr. Fiaidhi is a Professional Software Engineer of Ontario (PEng), Senior Member of IEEE, member of the British Computer Society (MBCS) and member of the Canadian Information Society (CIPS) holding the designate of ISP. Dr.Fiaidhi is the chair of Big Data for eHealth special interest research group withe IEEE ComSoc eHealth TC. Moreover Dr. Fiaidhi is the Editor in Chief of the IGI Global International Journal of Extreme Automation and Connectivity in Healthcare (IJEACH). More information on her publications and news can be found at her institution web page https://www.lakeheadu.ca/users/F/jfiaidhi/node/17390

Innovations for Intelligent Computing: Trends and Open Problems

Aboul Ella Hassanein

Professor at Cairo University

Faculty of Computers & Artificial Intelligence

Founder and Chair of the Scientific Research Group in Egypt

https://scholar.google.com/citations?user=aZ6bcngAAAAJ&hl=en

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Intelligent computing (IC) is being rapidly integrated into many areas of computer engineering in particular by exploiting new developments in machine learning. Areas such as drones, IoT, computational imaging, biomedical engineering, bioinformatics, and chemo informatics are greatly benefit from recent advances in deep learning. AI and big data are work together to achieve more. This talk will discuss the basics of the intelligent computing and its connection with the big data. It explores the applications in different areas and highlights the current research.   Discuss also some recent research problems in different applications including heritage, medical imaging, drones-based applications, chemo-informatics, agriculture, and Energy.

Aboul Ella Hassanein is the Founder and Head of the Egyptian Scientific Research Group (SRGE) and a Professor of Information Technology at the Faculty of Computer and AI, Cairo University. Professor Hassanien has more than 1000 scientific research papers published in prestigious international journals and over 60 books covering such diverse topics as data mining, medical images, intelligent systems, social networks and smart environment. His other research areas include computational intelligence, medical image analysis, security, animal identification, space sciences and telemetry mining and multimedia data mining.

What Happened to the Hand Sanitizer? Retail Operations in an Uncertain World

Martin Dresner

Professor, Chair of the Logistics, Business and Public Policy Department
R.H. Smith School of Business, University of Maryland, USA

We use panel data to examine consumer purchasing and retail management of an essential product, hand sanitizer, during eight seasonal flu epidemics and the 2009-2010 swine flu pandemic. Data are gathered on the severity and spread of flu symptoms across the United States and on sales, assortment, and prices of hand sanitizer sold at 30,000 U.S.-based stores across five retail formats. Major insights include the following: (1) The severity and spread of flu activity are good predictors of hand sanitizer purchases; (2) Stocking, pricing, and assortment strategies of hand sanitizer varied significantly among store formats. Consumer sanitizer purchases gravitated to two formats with distinct strategies – warehouse clubs that stocked large pack sizes at low per-unit prices and drug stores that carried wide assortments of sanitizer products; (3) Retailers appeared to learn from their pandemic experiences. During the first pandemic wave, assortments declined, indicating widespread stockouts. During the second wave, retailers were prepared with greater assortments of sanitizer products, including large pack-sizes favored by consumers; and (4) Retailers did not appear to engage in price gouging after the onset of the pandemic emergency, although prices were slightly (but significantly) lower in states with the laws compared to states without the laws. Finally, the paper draws parallels between the swine flu pandemic and the Covid-19 pandemic. Sanitizer sales patterns were similar during the two pandemics, although surges were more pronounced during Covid-19. This similarity in sales patterns provides an indication that lessons learned from previous pandemics may be applied to future pandemics.

Martin Dresner is Professor of Logistics and Transportation at the R.H. Smith School of Business, University of Maryland. He received his Ph.D. in Policy Analysis from the University of British Columbia. Dresner has published over 80 papers in refereed journals, with research focusing on two broad areas, air transport economics and supply chain management. Professionally, he is President of the Air Transport Research Society (ATRS) and former president of the Transportation and Public Utilities Group (TPUG) of the Allied Social Sciences Association, and of the Transportation Research Forum (TRF).

Multi-criteria Chance-Constrained Facility Location: A tool for Humanitarian Logistics Planning

Francisco Saldanha da Gama

Professor, Departamento de Estatística e Investigação Operacional,
Centro de Matemática, Aplicações Fundamentais e Investigação Operacional,
Faculty of Science, University of Lisbon, Portugal

This presentation focuses on multi-criteria modeling frameworks for stochastic discrete single-allocation facility location problems. Demand is assumed to be stochastic with a minimum service level imposed by means of a set of probabilistic constraints. A minimum throughput at the facilities is also assumed to to justify opening them. Two multicriteria paradigms are discussed: vectorial optimization and goal programming. Several objective functions of interest in the context of humanitarian logistics are discussed. The general modeling frameworks proposed are then applied to the so-called stochastic shelter site location problem, which is a problem emerging in the context of preventive disaster management. The adopted objective functions include the average distance traveled to a shelter site as well as the average and minimum quality of the selected shelter sites. The models are assessed using two real benchmark data sets. The results show that considering uncertainty and multiple objectives in the type of facility location problems investigated leads to solutions that may better support decision making by better hedging against the uncertainty underlying a disastrous event such as an earthquake or a flood.

Francisco Saldanha da Gama is professor of Operations Research in the Department of Statistics and Operations Research at the Faculty of Science, University of Lisbon, Portugal, where he received his PhD in 2002. He has taught undergraduate and post-graduate courses focusing on Operations Research, Mathematical Programming, Discrete Optimization, Stochastic Optimization, and Logistics. He has co-supervised several PhD students and has been in more than 20 PhD committees worldwide. He has regularly published in reputed scientific international journals mostly in the areas of location analysis, supply chain management, logistics and combinatorial optimization. Recently, he co-edited the second edition of the volume "Location Science" published by Springer International Publishing (26 chapters, 767 pages). He has presented hundreds of contributed talks in scientific events being invited to innumerable scientific events as a plenary/semi-plenary/keynote speaker. He has been awarded several prizes and honors. Among those, the EURO prize for the best EJOR review paper (2012) and the Elsevier prize for the EJOR top cited article 2007–2011 (2012), both with the co-authored paper entitled

"Facility location and supply chain management—A review". Member of innumerable scientific committees of international conferences and other scientific events. Member of various international scientific organizations such as INFORMS—Institute for the Operations Research and Management Science, USA, CMAFcIO—Centro de Matemática Aplicações Fundamentais e Investigação Operacional da Fundação da Faculdade de Ciências, University of Lisbon, ECCO—European Chapter on Combinatorial Optimization, EWGSO—Working Group on Stochastic Optimization, SOLA—INFORMS Section on Location Analysis, and EWGLA－EURO Working Group on Locational Analysis, of which he is one of the past coordinators. Currently he is the Editor-in-Chief of Computers & Operations Research as well as member of the Editorial Advisory Board of the Journal of the Operational Research Society (UK), Operations Research Perspectives, and the Journal of Algorithms. His research interests include stochastic mixed-integer optimization, location theory and project scheduling.

Carbon Neutrality and Life Cycle Thinking

Ming Xu

Professor, School for Environment and Sustainability
Department of Civil and Environmental Engineering
University of Michigan, Ann Arbor

Carbon neutrality has become mainstream worldwide. Many countries have established timeline to achieve carbon neutrality, mostly around 2050. Life cycle thinking considers the entire supply chain of a product when evaluating its environmental impacts including impacts on the climate caused by greenhouse gas (GHG) emissions, also known as carbon footprint. Specifically, life cycle thinking can help achieve carbon neutrality by 1) identifying critical processes with great contributions to the carbon footprint to guide emission reduction, 2) assessing the true GHG emissions from all processes of the product's supply chain to avoid emission shift among these processes, and 3) informing consumers to help make climate conscious purchase decisions.

Ming Xu is a Professor in School for Environment and Sustainability and a Professor in Department of Civil and Environmental Engineering at University of Michigan, Ann Arbor. He is also the inaugural Director of China Programs in School of Environment and Sustainability and Co-Director of the Graduate Certificate Program in Industrial Ecology at University of Michigan. He received the 2015 Robert A. Laudise Medal from International Society for Industrial Ecology (ISIE), the National Science Foundation Faculty Early Career Development (CAREER) Award in 2016, and the Walter L. Huber Civil Engineering Research Prize from American Society of Civil Engineers (ASCE) in 2021. He serves on the Editorial Board of the journal Engineering for its Environment & Light and Textile Industries Engineering Section. He has been serving as the Editor-in-Chief of the journal Resources, Conservation & Recycling since 2015 (2020 Impact Factor: 10.204). He founded the International Conference on Resource Sustainability (icRS) series in 2018 and has served as the conference General Chair. He was elected Chair of the 2024 Gordon Research Conference on Industrial Ecology and President of International Society for Industrial Ecology for 2023-2024.

Smart Building Service Systems, Operations, and Management

Robin Qiu

Professor of Information Science, Penn State, USA

This talk has two parts. Part 1: Buildings account for roughly 40% of the total energy consumption in the world, out of which heating, ventilation, and air conditioning are the major contributors. Traditional heating controllers are inefficient due to lack of adaptability to dynamic conditions such as changing user preferences and outside temperature patterns. Therefore, it is necessary to design smart energy-efficient controllers that can improvise occupant thermal comfort (deviation from setpoint temperature) while reducing energy consumption. A Deep Reinforcement Learning (DRL)-based heating controller to improve thermal comfort and minimize energy costs in smart buildings will be presented. Part 2: By focusing on smart and improved building operations with a focus on building energy efficiency, I will discuss a binary programming optimization model that incorporates actual occupancy patterns for different zones in a building as well as equipment interdependence to systematically determine the optimal schedule for each equipment while maintaining a minimum required service level to meet occupant needs. By leveraging IoT and AI/ML, we promote smart service in building operations and management, meeting the sustainability needs.

Robin Qiu holds a Ph.D. in Industrial Engineering and a Ph.D. (minor) in Computer Science both from The Pennsylvania State University (graduated in 1996), where he is currently Director of Big Data Lab and Professor of Information Science. He is the Editor-in-chief of SpringerBriefs in Service Science. He has had over 180 peer-reviewed publications, including 3 books. He is on the advisory board of Service Science and serves as an associate editor of IEEE Transactions on Systems, Man and Cybernetics and IEEE Transactions on Industrial Informatics. He was the Editor-in-Chief of Service Science and the Editor-in-Chief of International Journal of Services Operations and Informatics. He founded and served as General co-Chair of the 2009 INFORMS International Conference on Service Science. He founded the annual IEEE International Conference on Service Operations and Logistics, and Informatics (SOLI) and served as its General co-Chair from 2005 to 2008. He also co-founded the bi-annual IEEE International Conference on Grey Systems and Intelligent Service in 2007. He was also the founding chair of the Logistics and Services Technical Committee, IEEE Intelligent Transportation Systems Society and the founding chair of Service Science Section of the INFORMS. His research interests include Big Data, Data Analytics, Smart Service Systems, Service Science, Service Operations and Management, Information Systems, and Manufacturing and Supply Chain Management.

Healthcare Planning under Climate Crisis

Yannis A. Phillis

A member of the Greek PEN Club, and Poets and Writers, USA
Fellow of the American Association for the Advancement of Science (AAAS)
Fellow of the European Academy of Sciences (EurASc)
Member of the European Academy of Sciences and Arts

The impact of climate crisis on the environment, the economy, human health and, by consequence, on healthcare systems has become obvious. Extreme weather events, air pollution, aeroallergens, reduced food production, and vector-borne and water-borne infectious diseases affect healthcare negatively. These stresses are expected to worsen with time. Several reports estimate that life expectancy could be reduced by about 2% by 2050 in countries having difficulties to adapt to climate change.

In this talk, an empirical dynamic model is proposed for national healthcare systems, whereby resources such as budget, hospital beds, doctors, and advanced equipment are dynamically allocated within the system. The aim is to compensate for life expectancy reductions due to climate change over the period 2020-2050. First a set of equations is developed describing the dynamic evolution of healthcare resources. Then a nonlinear programming model finds the optimal allocation of healthcare resources that compensate for life expectancy reductions, under several resource constraints found empirically from international statistical data. Three scenarios of life expectancy reductions are considered and the additional budget and healthcare resources are computed. Specific results are provided for Greece, China, and the Philippines, representing high, middle, and low income countries respectively. The results show that the necessary healthcare budget grows disproportionately for lower income countries. Additionally, the necessary healthcare investments should be made sooner as climate impacts become heavier. Finally, the total budget of a healthcare system grows nonlinearly with respect to life expectancy reductions caused by climate change.

Yannis A. Phillis received his diploma in electrical and mechanical engineering from the National Technical University of Athens, Greece, in 1973 and his Ph.D. from the University of California, Los Angeles(UCLA), in control systems in 1980. He has held academic positions at UCLA, Boston University, Escuela Superior Politecnica de Chimborazo in Ecuador, and the Technical University of Crete, Greece, where he is professor emeritus and was Rector for more than 12 years. In 2008 he was Onassis Foundation Senior Visiting Fellow in the US. He is recipient of numerous awards from Boston University, the Academy of Athens, and the Municipalities of Chania and Assini, Greece, for his service to society, science, and letters; recipient of a "Lifetime Achievement Award," at the World Automation Congress, Kobe, Japan, 2010; Alumni Achievement

Award in Academia from UCLA, 2013. He is an award winning poet and novelist in Greece and the US. He is a member of the Greek PEN Club, and Poets and Writers, USA; Fellow of the American Association for the Advancement of Science (AAAS); Fellow of the European Academy of Sciences (EurASc); member of the European Academy of Sciences and Arts. Website: www.phillis.tuc.gr

Conference Organisers

National Academy of Economic Security, Beijing Jiaotong University

National Academy of Economic Security（NAES）is a non-profit research institution, focusing on the integrated social scientific research. Based on the 12-year great achievements of China Center for Industrial Security Research, NAES is established to safeguard national economic security under the guidance of constructing "overall National Security", a proposal from Chinese President Xi Jinping.

As an adherer to "rigorousness in academics and strictness in requirements", an academic tradition of Beijing Jiaotong University (BJTU)，NAES serves both as a defender to the supreme strategy of the national security and as a new national high-end think tank that conducts comprehensive and systematic research on major issues to the national economic security and provides visionary and practicable advice for scientific research, industrial practices and national security decisions.

Co-construction Mechanism:

Under the support of BJTU, NAES is constructed on the joint efforts of more than thirty scientific research institutes in university and enterprises, aiming to achieve the synergic innovation by the integration of advantage disciplines resources from all sides involved and work together to build a high-end think tank in the national economic security field.

NAES Council:

To ensure NAES's daily operation and management, a strong leading body, NAES council, has been founded accordingly. Under its leadership, the director accountability system is adopted. A vice national-level scholar-type leader, former Vice Chairman of CPPCC Mr. Qi Xuchun, is currently the head of the Council.

Chief Expert System:

To ensure a bellwether's position in predominant disciplines, NAES creates "Chief Scientist" and "Chief Economist" systems. NAES plans to employ ten academicians as chief scientists in cross-disciplinary fields, ten famous economists and counsellors of the State Council as chief economists in research fields of humanities and social sciences.

Ministerial and Provincial Platforms:

NAES has two ministerial provincial platforms: "Beijing Philosophy and Social Sciences Beijing Industrial Security and Development Research Base" and "Beijing Laboratory of National Economic Security Early-warning Engineering".

Research Centers:

With all research proceeding orderly in China Center for Industrial Security Research, NAES strives to set up "Research Center for Credit Rating", "Research Center for China Listed Company Development", "Research Center for Big Data and Cloud Computing", "Research Center for Regional Economic", "Research Center for Economic Security Simulation", "Research Center for Environmental Science and Water Security" and "Research Center for Carbon Capital and New Energy Security", some of which have been established.

Postdoctoral Research Station:

NAES owns an independent postdoctoral station: China Center for Industrial Security Research Postdoctoral Research Station, with an accumulation of 509 postdoctoral researchers.

Talents Cultivation:

NAES adheres to the cultivation idea of "cultivating the brilliant and integrating the high-end", adopting "learning plus practice" and "individual plus platform" innovative master-doctor cultivation models to develop comprehensive innovative management talents. Under the guidance of "integrating the high-end", NAES strives to build a training brand of "BJTU Leaders" and promote the "Post-EMBA" training.

NAES is committed to safeguard the national economic security, conducting innovative research on the theoretical system construction in economic security fields such as, monitoring, prediction, simulation, prewarning and prevention, countermeasures and solutions. NAES targets to gradually become a national security think tank and a new national high-end think tank at last by leading in theories and serving to the decision-making.

International Center for Informatics Research, Beijing Jiaotong University

The International Center for Informatics Research (ICIR) of Beijing Jiaotong University was jointly founded in March 2009 by Beijing Jiaotong University and University of Reading (UK). Taking talent training, scientific research, serving our society and cultural inheritance as the responsibilities, ICIR is established as a respected international teaching and research base, in information technology, logistics management and other related areas, through international cooperation and communication. International partners of ICIR include Liverpool University, UC Berkeley, The Pennsylvania State University, University of Maryland, Universitat Politècnica de Catalunya. BarcelonaTech, Université Paris VI, University of Macau as well as more than ten other famous universities in the world. Domestically, ICIR has established cooperation with many research institutes such as Development Research Center of the State Council, Academy of China, Xinhua News Agency etc.

The research areas of ICIR target information management, service science and logistics management and engineering in IT environment. The information management and service science includes topics of information industry theories and policies, E-Business and enterprise informatization, smart space and smart city, cloud computing technologies and applications. The logistics management and engineering includes topics of logistics economy and policies, design and optimization of regional and industrial logistics systems, internet of things (IoT) technology and logistics informatization, logistics planning and architecture design.

The key members of ICIR are Prof. Zhenji Zhang, Prof. Runtong Zhang, Prof. Shifeng Liu, Prof. Xianliang Shi, Prof. Juliang Zhang, Prof. Yisong Li, Prof. Hongjie Lan, Prof. Dan Chang, Prof. Guowei Hua, Prof. Xiaochun Lu and others, in total 15 full professors and associate professors form China. Prof. Gerhard Wäscher, Prof. James M. Tien, Prof. Kecheng Liu, Prof. Lida Xu, Prof. C. L. Philip Chen, Prof. Martin Dresner, Prof. T. C. Edwin Cheng, Prof. Therese Libourel, Prof. Vicenc Fernandez Alacon, Prof. Zuojun Max Shen, Prof. Yannis A. Phillis, Prof. Jiuh-Biing Sheu, Prof. Tae Hoon OUM as well as other more than 20 professors from overseas.

The platforms of research and international collaborations include
- IEEE Technical Committee on Logistics Informatics and Industrial Security Systems
- Sino-EU Doctoral School for Sustainability Engineering (Program in Logistics, Information, Management and Service Science)
- Beijing Planning Base of Philosophy and Social Science--Beijing Research Base for Logistics and Informatics
- Beijing Key Lab for Logistics Management and Technology
- LISS/IEIS International Conferences
- Over 15 Cooperative SCI/SSCI/EI Journals

Up to now, ICIR has been undertaking over 160 projects, including those supported by EU seventh framework, Critical and Major Program of National Natural Science Foundation of China (NSFC), National High Technology Research and Development Program of China (863 Program), Major State Basic Research Development Program of China (973 Program), National Key Technology Research and Development Program of the Ministry of Science and Technology of China, Major Program of Social Science Foundation of Beijing,

with a total grant of over 34 Million CNY (5.5 Million US dollar). In addition, the members of ICIR published more than 600 papers in refereed journals and conferences, such as IEEE Trans. Systems, Man and Cybernetics, IEEE Trans. Fuzzy Systems, International Journal of Production Economics, European Journal of Operations Research, Naval Research Logistics, as well as 10 scientific monographs. ICIR has been granted 1 Science and Technology Progress Award at national level and 2 Science and Technology Progress Awards at provincial and ministerial level, 2 Teaching Achievement Awards at national level and 4 Teaching Achievement Awards at provincial and ministerial level, 2 Best Courses Awards and 9 Best Textbook Awards at the national level. There are 23 post-doctorals and 41 Ph.D. candidates at ICIR.

Shandong University

Shandong University, under the direct jurisdiction of the Ministry of Education, is a key comprehensive university with a long history, a variety of disciplines, strong academic strength, and distinctive characteristics, which has great influence both at home and abroad. In 2017, SDU was chosen as one of the 36 Class A universities on the list of Double First Class University Plan released by the central government of China.

Shandong University is one of the initiative universities of modern Chinese higher education. Its medical school, established in 1864, signified the beginning of modern Chinese higher education. Its main body, Shandong Imperial College (Shandong Da Xue Tang) established in 1901, was the second national university in China, only after the Imperial University of Peking. Moreover, it was the first university to be established and run in accordance with a chartered constitution.

Since its birth, Shandong University has gone through several stages of significant growth and change: starting as the Shandong Imperial College, it was then reborn as the National Qingdao University, the National Shandong University, Shandong University, and the Shandong University in its present form, which is the result of the merger of Shandong University, Shandong Medical University and Shandong Industrial University. For more than 100 years, Shandong University has been following the mission of "Reserve talents for the world, and seek prosperity for the nation" and the motto of "Noble in spirit, endless in knowledge." For this aim, it has cultivated over 600,000 talented young people of various specialties, and has been making significant contributions for the country and the regional economic and social development.

Shandong University has been developing by leaps and bounds in recent years, and each of its undertakings has reached unprecedented levels. The educational quality and competitiveness of the university have been remarkably improved.

At present, 18 disciplines have reached the top 1% of ESI in terms of academic influence and contribution ability, and we have signed collaboration agreements with nearly 200 universities in more than 30 countries and regions.

Shandong University comprises 8 campuses (Jinan Central Campus, Hongjialou Campus, Baotuquan Campus, Qianfoshan Campus, Software Park Campus, Xinglongshan Campus, Qingdao Campus and Weihai Campus) in three different cities (Jinan, Qingdao and Weihai), covering an area of over 533 hectares (including 200 hectares of the Qingdao campus).

The university currently has 4 affiliated hospitals, 15 non-subordinate affiliated hospitals. Its full-time student population totals up to 70,000, of which 42,268 are full-time undergraduates, 26,818 are postgraduates and 1,560

are international students. It also has an excellent faculty team of 1,246 professors, including 897 doctoral supervisors.

And now there are 19 academicians of the Chinese Academy of Sciences or the Academy of Engineering(double-hired academicians included), 40 Chair Professors of Cheung Kong Scholars Programme, 5 winners of the Youth Project, 53 winners of the "National Outstanding Youth Foundation" award，and 29 winners of the "Outstanding Youth Science Foundation" award.The university boasts 12 state scientific research platforms, four key social science research bases approved by the Ministry of Education, and a large number of provincial key laboratories and provincial engineering technology research centers.

Shandong University is a comprehensive university in China with full-fledged academic disciplines. There are at present 12 general disciplines for undergraduates and postgraduates, namely philosophy, economics, law, education, literature, history, science, engineering, agriculture, medicine, management, and fine arts. There are 44 first-level doctoral programs, 51 first-level master degree programs, 93 programs for undergraduates and 42 post-doctoral research programs, forming a complete system for cultivation of talent. 18 disciplines are ranked in the top 1% of ESI Global Ranking in terms of academic influence and contribution capacity. Moreover, inter-school partnership has been forged with more than 200 schools in over 30 countries and regions.

The growth of the university over the years has seen SDU rise to the forefront of many fields in China. In the 1930s and 1950s, when Shandong University was located in Qingdao, it was the home to many nationally famous scholars who paved the way for great success especially in the fields of literature and history.　Up to this day, Shandong University is well-known for its strong liberal arts programs, and published the highly reputable academic journal Literature, History & Philosophy. These two periods also laid a good foundation for the university in natural sciences, enabling it to find itself among the noted institutions in China. In August 2015, SDU successfully held the 22nd International Congress of Historical Sciences, reputed as the "Olympics of Historiography". This is the first time that the Congress was introduced to Asian, African and Latin American countries since its establishment. Another record high was also made in terms of its numbers of participating registered countries, historians from developing countries and young scholars.Since the merger at the end of the last century, the university's newly-developed disciplines of financial mathematics, crystal materials, condensed matter physics, colloid and surface chemistry, micro-biology, machinery, material science, cardiovascular functional recovery, new drug manufacturing, and classical Chinese philosophy have all risen to the first-class level within the country, and some are even known abroad.

Shandong University has already set a grand educational objective: initially becoming a world-class university with Chinese characteristics by its 120th anniversary, and all institutions are standing at a new historic starting point. Facing the unprecedented opportunity, all faculty members, students and medical staff, racing against time in a pioneering and enterprising manner, will focus on the fundamental task of moral education by advancing its comprehensive reform and improving the modern university system. With an already strong academic foundation and even more untapped potential, we are sure to achieve the goal of becoming one of the world's highest ranking universities.

Budapest University of Technology and Economics

The Budapest University of Technology and Economics was founded in 1782 by Emperor Joseph II, under the name of Institutum Geometrico-Hydrotechnicum. It has been the top higher education institution of Hungary and it has well-established international reputation. Students are allowed to join several scientific research and technical development projects during their university years. The institution also has various running research and technological developments led by professors. Also all students wanting to continue their studies on Master or PhD level are supported to become excellent development and research engineers. All these opportunities ensure that the University of Technologies has become one of the leading research universities of Hungary and is well-known for its scientific results abroad.

Past years have proven that degrees from the University of Technology are valuable on the work market. In our institute, there is an opportunity for students to study in foreign languages as well – mainly in English. Our students also can join international exchange programmes.

The University of Technology has eight faculties and they all aim at outstanding educational results. The faculties are carefully built up therefore; they cover the right size of the scientific areas for the timeframes of the courses. The faculties are the following in order of foundation: Civil Engineering, Mechanical Engineering, Architecture, Chemical Technology and Biotechnology, Electrical Engineering and Informatics, Transportation Engineering and Vehicle Engineering, Natural Sciences, Economic and Social Sciences.

We are working with the faculty of Transportation Engineering and Vehicle Engineering's department called Material Handling and Logistics Systems. Therefore, we take a deeper insight into this scientific area of the university.

The faculty of Transportation Engineering and Vehicle Engineering is an accredited source of engineering studies since 1951. It transfers knowledge in the field of transportation processes, modelling and optimization, vehicle operation, automation, planning and control, manufacturing and services. The Faculty's mission defines the undertaking of high level professional training and high quality scientific activity, research and development, offering expertise and consultation to transport operators, vehicle industry companies and logistics providers.

BSc programmes in Hungarian:

- *Transportation Engineering BSc:* we focus on the creation, operation, analysis and control of transportation related processes.
- *Vehicle Engineering BSc:* students will acquire knowledge on the construction, manufacturing and handling transportation vehicles and materials.

- *Logistics Engineering BSc:* the programme offers insights and knowledge in corporate logistics systems and supply chains, building a complex analytical view.

MSc programmes in Hungarian:
- Vehicle Engineering MSc
- Transportation Engineering MSc
- Logistics Engineering MSc

MSc programmes in English:
- Vehicle Engineering MSc
- Transportation Engineering MSc
- Logistics Engineering MSc
- **Autonomous Vehicle Control Engineer MSc**

The most related education programs to the conference are the Logistics studies

BSc in Logistics Engineering:

Length of study: 7 semesters

Program objectives: The aim of the study is to train logistics engineers, who will be able to maintain and operate corporate logistics and good transportation systems. They will know modern supply chains and networks, their management and organizational basics, and transport control processes and workflows. Related logistics control and IT systems basics are also acquired. The gained knowledge is sufficient to continue their education in the MSc programmes of the Faculty.

MSc in Logistics Engineering:

Length of study: 4 semesters

Program objectives: The MSc study is a continuation of the BSc studies. Our aim is to train graduates, who will be able to plan, organize and control corporate logistics systems, good transport systems and supply and distribution networks. Furthermore, they will be able to join to developing logistics systems related machines and tools. The students will also be able to deal with complex logistics system modelling and optimization; they understand operation and planning principles of corporate logistics systems, distribution networks and supply chains. The students will also be prepared to manage leading tasks, to creatively participate in R&D related problem, and continue their studies later on our PhD programme.

PhD studies

The Kandó Kálmán Doctoral School, where the PhD students are being prepared for scientific research and a possible career as a professor and researcher, represents the highest level of the faculty's education. The 4-year program lets the students take part in professional subjects and courses, teaching activities and individual scientific research tasks. A professional supervisor is leading research activity, and the PhD students will show their results through their publications and later in their dissertation.

Departments of the Faculty of Transportation Engineering and Vehicle Engineering are:

Department of Material Handling and Logistics Systems

Department of Automotive Technologies

Department of Vehicle Elements and Vehicle Structure Analysis

Department of Control for Transportation and Vehicle Systems

Department of Transport Technology and Economics

Department of Aeronautics, Naval Architecture and Railway Vehicles

The professional competence of the department of Material Handling and Logistic Systems is very complex, we work in many fields which are extremely important in the point of view of the economic development of the

country. In addition to our specialties, we have one of the most comprehensive professional backgrounds in the field of logistics in Hungary.

Our activities can be divided into three groups:

Education for the engineers of the future,

Developing the competence with our research results,

Putting our research results into practice in industrial projects.

Henley Business School, University of Reading

Founded in 1945, by business for business, Henley was the first business school in the UK and is one of the oldest and most respected schools in Europe.

Our impressive full-service portfolio includes a range of undergraduate degrees and Postgraduate degrees in Accountancy, Business, Management, Finance, Real Estate, Planning, Informatics, and Coaching. We offer a world-class DBA and have a dynamic community of PhD students on postgraduate research degrees. Henley has an impressive track record of growing leaders and developing managers to make the right choices for their organisations and for the society they live in which are delivered through our executive education programme, the Henley Partnership and the Henley MBA.

One of the very few business schools worldwide to hold triple-accredited status from the major UK, European and US awarding bodies (AMBA, EQUIS, AACSB), we are also the world's third largest provider of MBA education and home to the world-ranked Henley MBA.

The School represents the largest unit within the University of Reading, rated among the UK's most research-intensive institutions and ranked among the world's top 200 universities (The Times, 2008).

School of Economics and Management, Beijing Jiaotong University

Beijing Jiaotong University (BJTU) was born with its specialty in railway and developed along with its management disciplines. As early as 1909, the Qing government established Beijing Railway Management Training Institute, the predecessor of BJTU, proclaiming the first institute of higher education that cultivated management talents in the history of China.

The disciplines of economics and management, having started at the very beginning of BJTU, are naturally the most long standing disciplines on campus. Over more than one century, the growths of disciplines have been closely connected to the country's destiny, overlapping endlessly with the university's development, and rising more distinctive through the years of time. In 1996, BJTU integrated School of Economics, Department of Industrial and Construction Management Engineering, and Department of Materials Management Engineering to form School of Economics and Management (SEM). Hence the school has stepped into a new stage growing even stronger. In 2011, SEM was approved by the Ministry of Education as one of the first group of 17 pilot schools. In 2019, SEM was awarded 3 PALMS in the World Best Business Schools Ranking by Eduniversal, being prominent in its 10th position in the best business schools ranking in mainland China. December 28th in 2017, China Academic Degrees and Graduate Education Development Center, the Ministry of Education announced the results of the fourth round of China Discipline Ranking, and the participating disciplines of our school obtained gratifying outcome with three first-level disciplines came up top. Among the list, our discipline of Business Administration ranks top 10% and stands in the A- Rating; Applied Economics, top 20% and B+; and coincidentally, Management Science and Engineering, top 20% and B+. This marks a significant milestone in our school's discipline construction. The economics and management of the School have been ranked in the "Academic Ranking of World Universities", showing a strong comprehensive strength of disciplines.

As the earliest institute of higher education that provides business education in modern China, for over a century SEM has cultivated a large number of top talents and management elites. For example, Xu Jing, pioneer of China's railway transportation economics discipline in China, Yang Rumei, one of China's first four accountants, and Zhao Chuanyun, national reputed expert of railway transportation economics, they are all outstanding figures. At present, SEM has more than 5100 students, including more than 700 doctoral students, more than 2500 master students, nearly 1900 undergraduates (458 of them in Weihai Campus) and nearly 300 international students.

In recent years, the college has been awarded 1 national excellent teaching team, 3 Beijing excellent teaching teams, 1 national-renown teacher, 7 Beijing-renown teachers, 24 national and Beijing teaching achievement awards, 4 national first-class undergraduate specialty construction points, 2 national characteristic specialties, 2 national "comprehensive professional reform pilot project" major, 1 key construction specialty in Beijing. Through the evaluation of the Ministry of housing and urban rural development, there are 1 major, 2 national quality teaching materials, 42 Beijing excellent teaching materials, 9 12th Five Year Plan teaching materials, 2 national quality open video courses, 5 national excellent resource sharing courses, and 1 National virtual teaching experimental center. It has been approved 69 National University Students' innovation experiment projects and 68 Beijing Municipal University Students' innovation experiment projects. Undergraduate students have won 14 national first prizes and 25 provincial first prizes.

Since the establishment of Economics and Management disciplines, the University have gathered a large group of talented scholars and accomplished experts. Zeng Kunhua, founder of the University and the first railway management expert in modern China, Ma Yinchu, famous Chinese Economist and demographer, Hu Liyou, chief professor of Beiping Railway Management School of Chiao Tung University and many other experts have taught here. At present, SEM has 292 members of faculty and staff, with 215 faculty members including 57 professors, 97 associate professors and 51 lecturers. The School recruited faculty members with high-level talents that include academician of Chinese Academy of Engineering, counselor of the State Council, National Renowned Teachers, Discipline Review Group of State Council members, "Ten Thousand Talents Plan", "New Century Excellent Talents Supporting Program" of the Ministry of Education, etc.

After years of development, the School now has four first-class disciplines: Applied Economics, Business Administration, Management Science and Engineering, and Public Management. Among them, Applied Economics, Business Administration and Management Science and Engineering have first-class doctoral programs and postdoctoral mobile stations. In each discipline there are professors who are selected as members of the discipline evaluation group of the State Council. It has one national key discipline industrial economics, three Beijing key disciplines: applied economics, management science and engineering, and enterprise management. It has three key research bases of philosophy and Social Sciences in Beijing: "Beijing Transportation Development Research Base", "Beijing Industrial Security Research Base", "Beijing Logistics Informatization Research Base", and one Beijing Social Science and Natural Science Collaborative Innovation Research Base "Beijing Humanities Transportation, Scientific Transportation and Green Transportation Research Base" (all four bases are listed in the index of China Think Tank Index (CTTI)), 1 national and regional research center of the Ministry of Education, "Central and Eastern Europe Research Center of Beijing Jiaotong University", 1 Beijing Laboratory "National Economic Security Early Warning Project Beijing Laboratory", 1 Beijing Key Laboratory "logistics Management And Technology Laboratory", 1 capital high-end think tank "Beijing Comprehensive Transportation Development Research Institute". 11 university level scientific research

institutions are engaged in scientific research and social services.

The School has always been aiming at the needs of national strategy and industrial development, giving full play to the advantages of comprehensive disciplines in the field of economics and management. Through intellectual support, talent guarantee and professional services, the college actively serves the development of national transportation, modern logistics, capital finance, information technology, construction and real estate, tourism and health, and has become an important force to support and lead China's industrial development.

In the past five years, the annual average research funding of the School has exceeded 59 million yuan, with more than 1200 scientific research projects, ranking among the top among similar colleges in China. The college has been approved by 28 national social science funds, 39 National Natural Science Funds, 1 national key R & D project, 17 humanities and social sciences projects of the Ministry of Education, 80 projects of Beijing Philosophy and Social Affairs Office, as well as a number of international projects such as the seventh framework of EU and the world bank. He has published more than 2400 academic papers (including 10 highly cited papers, 151 SCI retrieval papers, 66 SSCI retrieval papers and 214 EI retrieval papers). 238 monographs, textbooks and translations were published. 49 expert suggestions have been selected into the Beijing social Science Fund Achievement Report, the National Social Science Fund Achievement Report, the Ministry of Education University Think Tank Special Issue or People's Daily for internal reference, and 25 of them were approved by the central or local leaders. SEM has won 9 awards above the provincial and ministerial level.

As an important part of social service, SEM has long carried out various professional business training including degree education class and course refresher class, enterprise internal training class, high-end development class, staff continuing education and other professional business training. It has established partnership with more than 200 enterprises and institutions, and signed strategic cooperation agreements with more than 100 local governments, enterprises and institutions.

SEM has established more than 90 cooperative projects with more than 60 internationally renowned universities such as the University of Illinois at Urbana Champaign, Monash University, National University of Singapore and Waseda University. SEM has entered the AACSB and EQUIS accreditation process, and completed the submission of the self-assessment reports of the two major accreditations, and will welcome peer review team's visit in 2020. At the same time, the School is also actively promoting the process of MBA program CAMEA accreditation. In 2013, the School established an International Advisory Committee, comparably earlier than the rest of domestic secondary colleges of higher education. By learning from first-class business schools worldwide, SEM is in full speed for pursuing internationalization of the School.

Beijing Jiaotong University

Beijing Jiaotong University, a national key university under the direct administration of the Ministry of Education, jointly supported by the Ministry of Education, Ministry of Transport, Beijing Municipal Government and China Railway Corporation, is also an active contributor to the development of the "National 211 Project" and the "985 Innovative Platforms for Key Disciplines Project". The Collaborative Innovation Centre for Rail Transit Safety, established by BJTU, is one of the first 14 collaborative centers recognized by the Chinese government as part of the "National 2011 Projects". BJTU was one of the first universities selected into the 'Double First-Class' National Initiative and has already accomplished its first set of development tasks. The university's achievements in world-class 'Smart Transportation' discipline in particular has gained wide recognition among examining experts and authorities.

As one of the three founding bodies of the Jiaotong University, the history of BJTU can be dated back to 1896. BJTU originated from Beijing Railway Management Institute, China's first higher education institution committed to fostering railway management talents and was created by the Qing dynasty government. It is regarded as the birthplace of modern China's education in railway management and telecommunication. In 1917, it transformed into Beijing Railway Management School and Beijing Post and Telecommunication School. In 1921, the school merged with Shanghai Industrial College, Tangshan Industrial College and thusly formed the original Jiaotong University. After the restructuring of Jiaotong University in 1923, the Beijing campus was renamed Beijing Jiaotong University. In 1950, the school was again renamed Northern Jiaotong University with leading bridge expert and scholar Prof. Mao Yisheng as president. In 1952, Northern Jiaotong University was cancelled, the campuses at Beijing and Tangshan therefore became independent and the school was renamed

Beijing Railway Institute. In 1970, the name Northern Jiaotong University was re-adopted. In 2000, the school merged with the Beijing Electric Power College and the administration was transferred from the Ministry of Railways to the Ministry of Education. In 2003, the name Beijing Jiaotong University was resumed. Numerous renowned scholars and inventors in Chinese history received education in BJTU, including LIU Han, founder of China's first radio station; YING Shangcai, inventor of China's first high-power steam engine; JIN Shixuan, author of China's first railway management monograph; XU Jing, pioneer of railway transport economics in China; YANG Rumei, one of the earliest four major accountants in China, and ZHENG Zhenduo, famous writer, literary critic and historian. Certain famous academics also taught at the University, including HSIANG Che-chun, Prosecutor of the Tokyo Trial and MA Yinchu, famous demographer and economist in China.

BJTU has two campuses, the East and the West, in the renowned education district Haidian with a total area of nearly 67 hectares and building floorage of more than 1 million square meters. The Weihai International Campus in Shandong Province covers more than 67 hectares. All campuses are equipped with complete teaching and research facilities and enjoys beautiful scenery. In Huangye, Hebei Province, the BJTU Haibin Rail Transit Comprehensive Research and Development Base was set up with an overall area of approximately 15.5 hectares. The Tangshan Research Institute of Beijing Jiaotong University, established in Tangshan, Hebei Province, is dedicated to developing a demonstration zone of international education for R&D and commercialization of scientific findings.

Through the past 120 years, the university has developed a comprehensive and coordinated education system with strength disciplines in information and management, characteristic disciplines in transportation and other diversified disciplines such as engineering, management, economics, science, liberal arts, law and philosophy. The university is home to 16 schools, including School of Electronic and Information Engineering, School of Computer and Information, School of Economics and Management, School of Traffic and Transportation, School of Civil Engineering, School of Mechanical, Electronic and Control Engineering, School of Electrical Engineering, School of Sciences, School of Languages and Communication Studies, School of Software Engineering, School of Humanities and Social Sciences Marxism, School of Architecture and Design, Law School, School of Information Secret and Security Technology, Weihai International Campus, Zhan Tianyou Emerging Technology College, etc. The university also set up Graduate School, College of International Education and School of Distance Learning and Continuing Education.

BJTU's position in international rankings of world leading universities and disciplines are steadily on the rise. The university has already entered the top 500 list of the ARWU Ranking and for 3 years in a row, BJTU's Transportation Engineering discipline has crowned the world leading discipline ranking and 15 disciplines in total were qualified. 10 disciplines have been selected for U.S News world leading discipline ranking, 7 entered the same ranking of QS, 5 were nominated for the Times ranking. Engineering studies maintained a steady placing in the top 1% of ESI and 5 disciplines in total entered the top 1% list. The System Science discipline remained top 1 for four consecutive years in the National Discipline Evaluation, 5 disciplines were among the top 10% (Category A) in the fourth round of the evaluation, 7 were among the top 20% (Category B+). The university has 17 Post-doc Research Centers, 21 Level-1 Discipline Doctoral Programs and 3 Professional Doctoral Degree Programs. On the graduate level, BJTU is in charge of 33 Level-1 Discipline Master Programs, 2 Level-2 Discipline Master Programs and 19 Professional Master Degree Programs.

The university always sees high quality faculty development as the key to strengthening the school operation

efficiency and has thusly adopted a 'talent cultivation' strategy. The university employs 3040 staff, including 1,965 full-time teachers (1,374 with vice-senior or higher professional technical titles, 1,908 with master degree or higher academic qualifications.). The university is home to 4 academicians of Chinese Academy of Science, 9 academicians of Chinese Academy of Engineering, 1foreign academician of Chinese Academy of Engineering, 5 National Renowned Teachers, 6 Members of State Council Disciplinary Evaluation Committee, 15 experts of National Ten-thousand Talent Plan, 8 state candidates of the National Hundred-Thousand-Thousands of Talents Project, 12 Winners of National Outstanding Youth Funds, 20 winners of Distinguished Young Scholars and 2 talents of the Publicity Department of the CPC Central Committee's 'Four First Batch' project.

BJTU has always attached high importance to talent cultivation, the core of the university's operation and mission, raising innumerable talents for the country and the industry. Currently, the university has 16,153 undergraduate students, 2,908 doctoral students, 10,014 master students and 5,270 adult college students. The total amount of international exchange students amounts to 1,363. In the teaching achievement award evaluation for latest three years, BJTU has won 3 First Prizes, 8 Second Prizes on the national level. The university employs 5 national level renowned teachers, 2 national 'Ten Thousand Talent Project' renowned teachers, 34 Beijing municipal level renowned teachers and 8 Beijing young renowned teachers. 32 teachers were selected into the 2018-2022 Teaching Steering Committee of Higher Education Institutions of the Ministry of Education. BJTU has 34 National Level First Class Program Development Sites, 11 National Level Characteristic Specialties, 7 National Level Comprehensive Reform Pilot Programs, and 8 National Level Outstanding Engineering Education Plan Majors, among which 12 were certified by the National Engineering Education Evaluation and 2 passed the National Civil Engineering Major Assessment. The University has established 6 National Experimental Demonstration Centers, 3 National Centers of Virtual Simulation Experiment Teaching, 3 National University Student Extracurricular Practice Bases, 7 National Engineering Practical Education Centers and 1 National Teaching Development and Demonstration Centre. BJTU offers 32 Nationally-Certified First Class Undergraduate Courses, 19 National Excellent Resource Sharing Courses, and 6 National Excellent Online Video Public Courses. 42 textbooks of 34 categories were qualified as the 'Twelfth Five-Year Plan' Normal Higher Education Undergraduate National Teaching Materials. The university insists on creating synergy between its undergraduate and master programs, integration and fusion between disciplines, close relationship between industry and university and international connectivity. By implementing the 'Highland Project' and the 'Peak Project', the Zhan Tianyou Emerging Technology College was established, further exploring 3+5 integrated undergraduate and master talent cultivation model to a fundamental disciplines' outstanding student education base. The student quality and education capability continue to improve yearly with a steady employment rate of undergraduate and post-graduate student around 97%, while 56% bachelor graduates continue to pursue higher academic degrees. BJTU was recognized by MOE as one of the first National Entrepreneurship and Innovation Example Universities, and Beijing Municipal Entrepreneurship and Innovation Educational Reform Demonstration University. The "Suite of Songs on the Long March" stage play and the original theatre play "Mao Yisheng" portrayed by BJTU Student Art Troupe was an innovative fusion of artistic expression and teaching that developed into an embodiment of the university patriotism education. BJTU also places great emphasis on the students' physical education, high level athletes teams and common students teams all earned great results in various competitions. In 2020, the university took home 4 national championships and 23 municipal championships.

BJTU has always targeted the frontier of scientific and technological development and the demands of major national strategies. BJTU actively participated in major historic events of China's rail transit development

including the Major Railway Speed-up Project, the construction of Qinghai-Tibet Railway, the heavy-haul transportation of Daqin Railway, the construction of high-speed railway and the independent research and development of core technologies regarding urban rail transit. The university has made significant scientific and technological achievements at international leading level with complete intellectual property rights. BJTU has made positive contribution to the development of various industries such as transportation, logistic, information engineering, new energy, etc. Reaping great benefits for Beijing's social and economic development, the university has become a major force for support and leadership of the national, industrial and regional scientific innovation development.

In the past five years, the university received 10 national level awards, 142 provincial level technological awards and hosted 11 first or higher prize winning projects of key academies and societies, among which there were 1 first prize National Science and Technology Progress Award, 2 second prize National Science and Technology Progress Awards, 2 second prize State Technological Invention Awards, 21 Beijing Municipal Philosophy and Social Sciences Research Awards. BJTU undertook major state R&D projects and other research tasks from The National Social Science Fund and the National Natural Science Foundation, total research funds attributed to the university rose above 1 thousand million Yuan. The university was approbated by the National Intellectual Property Administration and Ministry of Education as one of the first National Intellectual Property Demonstration Universities. BJTU boasts more than 70 provincial and ministerial-level research platforms, including 1 Collaborative Innovation Center for Rail Transit Safety, 1 Smart High-speed Railway System Frontier Science Center, 1 National Key Laboratory, 1 National Engineering Research Centre, 6 National Engineering Laboratories (5 of which BJTU is closely involved in), 2 National Base of International Science and Technology Cooperation, 8 Key Laboratories/Education and Engineering Research Centers of the Ministry of Education, 1 National Energy Research Centre, 2 Key Laboratories of Traffic and Transportation Industry, 2 Beijing municipal laboratories, 17 Beijing Key Laboratories/Engineering Technology Research Centers, 3 Railway Industry Key Laboratories, 8 Oversea Expertise Introduction Centers, 1 of the first Capital Advanced Think-Tanks, 1 New Traffic and Transportation Think-Tank of the Ministry of Transport, 1 Beijing Municipal Research Center on Xi Jinping's New Age Socialism with Distinctive Chinese Characteristics Theories, 4 Beijing Municipal Research Bases of Philosophy and Social Sciences, 1 National and Regional Research Center of the Ministry of Education. BJTU holds annually the Advanced Forum on Transportation of China, Lecture Hall of Jiaotong University and the Capital Advanced Think-Tank Forum on Beijing Transportation Development. The university provides kilo mega internet coverage for both cable and wireless connections throughout the campus. Thorough application of innovative high-technologies such as High Performance Computing, Big Data and Artificial Intelligence offers strong boost and support to the university's reform and development. Nowadays, the institution possesses teaching and research equipment of 1.35 billion Yuan worth. The university library stocks paperback monographs, electronic books and online resources of nearly 14.62 million copies. BJTU established a characteristic database of transportation and traffic studies, as well as an Inspection and Research Work Station of Innovative Technologies of the Ministry of Education. It was approbated as one of the first Higher Education Institution National Intellectual Property Information Service Centers.

The university regards international cooperation and exchanges as an important way to improve education quality. Actively responding to the appeal of the "Belt and Road Initiative", BJTU established partnership with 289 universities and renowned cross-national enterprises from 49 countries, including the United States, the United Kingdom, Germany and France. With the purpose of promoting Chinese culture and language teaching,

the university has established 4 Confucius Institutes at Group T of KU Leuven in Belgium, Texas Southern University in the United States, University of Campinas in Brazil and Warsaw University of Technology. For the further improvement of academic influence and authority in the global railway sector, BJTU successively joined international organizations and alliances such as OSJD, UIC and China-CEEC Higher Education Institutions Consortium, and led the establishment of the latter two. In order to enhance international research cooperation, the university also led the creation of the China-US, China-Russia, China-UK and China-Indonesia High-speed Railway Research Centers. BJTU is also actively engaged in undergraduate, postgraduate level degree program cooperation. The university operates 5 Chinese-Foreign Cooperation in Running Schools Programs, 1 Chinese-Foreign Collaboratively Run School and 2 oversea educational institutions. Making full play of the alumni association, the foundation and the university board, BJTU established 53 alumni organizations home and abroad, partnered with 86 various departments and institutions, while setting up strategic partnerships with industries corporations and local government in areas such as transport, logistic, information and energy so as to deepen synergetic innovation between political, industrial, educational and research bodies, carrying out long-term, full-range cooperation in talent cultivation and scientific development. The university's education foundation was certified as a 4A charity group by the Ministry of Civil Affairs.

"Think of the source while drinking the water, love thy country and honor the alma mater." With 125 years of glorious history, Beijing Jiaotong University, adhering to the university motto of 'knowing and doing', is undertaking new missions and embracing a pioneering attitude for its stride towards the goal of world first-class university with distinctive characteristics.

China Center for Industrial Security Research

China Center for Industrial Security Research (CCISR) was founded in Beijing Jiaotong University (BJTU) in November, 2007. It is not only the first but also the only academic institute which specializes in the research on industrial security problems in domestic area. CCISR has achieved leapfrog development in such aspects as education, scientific research, talent cultivation and international cooperation and communication through the joint efforts made by all the staff since its foundation. CCISR aims at building the most authoritative academic institution for industrial security problems; takes the promotion of China's industrial security and development as its own duty; and will unremittingly devote itself to scientific creation, educational research, talent cultivation and international academic cooperation and communication.

In recent years, CCISR values highly on the research of industrial security theory and practice. It publishes series of industrial security and development report according to the development status of the first, the second and the third industries and key industries every year. Meanwhile, CCISR also makes monographic studies on the hot issues and difficult problems in current industrial development under the entrustment by governmental departments, international organizations and enterprises. As a result, it has obtained many provincial and ministerial-level projects and horizontal projects including key tender projects of National Social Science Fund, the significant research projects in the prophase of the 12th Five Year Planning of NDRC, the significant research projects of Ministry of Education, ministerial projects of Ministry of Commerce and the ministerial projects of National Insurance Regulatory Commission.

Technical Program

Technical Program at a Glance

July 24, 2021		
Beijing Time 08:00 p.m.-08:30 p.m. Budapest Time 02:00 p.m.-02:30 p.m.	Opening Ceremony	Prof. Zhongliang Guan Prof. Changqi Wu Prof. Gábor Bohács Prof. Runtong Zhang Chiar: Prof. Guowei Hua
Beijing Time 08:30 p.m.-10:30 p.m. Budapest Time 02:30 p.m.-04:30 p.m.	Keynote Speech	Prof..Kecheng Liu Prof. Jinan Fiaidhi Prof. Aboul Ella Hassanein Prof. Martin Dresner Chiar: Prof. Qingchun Meng
July 25, 2021		
Beijing Time 08:30 a.m.-12:00 p.m. Budapest Time 02:30 a.m.-06:00 a.m.	Parallel Sessions IE1	
Beijing Time 02:00 p.m.-05:30 p.m. Budapest Time 08:00a.m.-11:30 a.m.	Parallel Sessions IE2	
Beijing Time 08:00 p.m.-10:00 p.m. Budapest Time 02:00 p.m.-04:00 p.m.	Keynote Speech	Prof. Francisco Saldanha da Gama Prof. MingXu Prof. Robin Qiu Prof.Yannis A. Phillis Chair: Gábor Bohács
Beijing Time 10:00 p.m.-10:30 p.m. Budapest Time 04:00 p.m.-04:30 p.m.	Closing Speech	Prof. Runtong Zhang Prof. Gábor Bohács Chair: Prof. Runtong Zhang

Final Program

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Backup VooV Meetiong ID: 165 978 331 (Password: 072401)

Plenary Session 1 (Beijing Time 08:30 p.m.-09:00 p.m. Budapest Time 02:30 p.m.-03:00 p.m)
Title: Educating AI Talent as Part of Competitive Strategy
Speaker: *Kecheng Liu*
Chair: Prof. Qingchun Meng
VooV Meeting ID: 439 287 970 (Password: 072401)
Backup VooV Meetiong ID: 165 978 331 (Password: 072401)

Plenary Session 2 (Beijing Time 09:00 p.m.-09:30 p.m. Budapest Time 03:00 p.m.-03:30 p.m)
Title: Thick Data Analytics for Providing Focused Predictions
Speaker: *Jinan Fiaidhi*
Chair: Prof. Qingchun Meng
VooV Meeting ID: 439 287 970 (Password: 072401)
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Plenary Session 3 (Beijing Time 09:30 p.m.-10:00 p.m. Budapest Time 03:30 p.m.-04:00 p.m)
Title: Innovations for Intelligent Computing: Trends and Open Problems
Speaker: *Aboul Ella Hassanein*
Chair: Prof. Qingchun Meng
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Plenary Session 4 (Beijing Time 10:00 p.m.-10:30 p.m. Budapest Time 04:00 p.m.-04:30 p.m)
Title: What Happened to the Hand Sanitizer? Retail Operations in an Uncertain World
Speaker: *Martin Dresner*
Chair: Prof. Qingchun Meng
VooV Meeting ID: 439 287 970 (Password: 072401)
Backup VooV Meetiong ID: 165 978 331 (Password: 072401)

Plenary Session 1 (Beijing Time 08:00 p.m.-08:30 p.m. Budapest Time 02:00 p.m.-02:30 p.m)
Title: Multi-criteria Chance-Constrained Facility Location: A tool for Humanitarian Logistics Planning
Speaker: *Francisco Saldanha da Gama*
Chair: Prof. Gábor Bohács
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Plenary Session 2 (Beijing Time 08:30 p.m.-09:00 p.m. Budapest Time 02:30 p.m.-03:00 p.m)
Title: Carbon Neutrality and Life Cycle Thinking
Speaker: *Ming Xu*
Chair: Prof. Gábor Bohács
VooV Meeting ID: 151 810 388 (Password: 072512)
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Plenary Session 3 (Beijing Time 09:00 p.m.-09:30 p.m. Budapest Time 03:00 p.m.-03:30 p.m)
Title: Smart Building Service Systems, Operations, and Management
Speaker: *Robin Qiu*
Chair: Prof. Gábor Bohács
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Plenary Session 4 (Beijing Time 09:30 p.m.-10:00 p.m. Budapest Time 03:30 p.m.-04:00 p.m)
Title: Healthcare Planning under Climate Crisis
Speaker: *Yannis A. Phillis*
Chair: Prof. Gábor Bohács
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VooV Meeting ID: 225 884 871 (Password: 072505)
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IE1: Industrial Economics 1
Chair: Qi Wang

- IEIS2021_4: The Evaluation System of Publishing Industry's Competitiveness in Overseas Market
  (*Dong Tong*)
- IEIS2021_1: Energy balance data fusion privacy protectionalgorithm in IoT Environments
  (*Peiyuan Jiang, Xu E, Mingjing Yang*)
- IEIS2021_143: Economic research on regional poverty alleviation and prevention of return to poverty
  (*Qiangjing Zhang, Jun Tian, Linlin Fu*)
- IEIS2021_153: Sustainable Performance of Rural Banking: A Heterogeneity Study in the Coastal Regions of China
  (*Jun Wei*)
- IEIS2021_6: Research on the Development of Rural Credit Bank's e-commerce platform in China
  (*BaoLin Ma, Yihan Wang*)
- IEIS2021_7: Research of New Energy Vehicles Eco-business Model and Its Influence on Brand Competitiveness
  (*Qianyu Mao, Ruiyang Wang, Zhen Li*)
- IEIS2021_2: The Impact of Government Subsidies on the Financing Constraints of Small and Medium-sized Enterprises
  (*Xiuwen Zhang*)
- IEIS2021_142: Equity Diversification and Capital Allocation Efficiency: Evidence from China's mixed ownership reform
  (*Qi Wang, Zhong Ma*)
- IEIS2021_5: Research on the Relationship between Financing Constraints and the Innovation Capability of Chinese Enterprises: Mechanism and Policy Analysis
  (*Renhua Feng, Ying Ren*)
- IEIS2021_145: Analysis of the problems in the core field of industrial robot industry
  (*Xiguang Zhang, Jingcheng Li*)
- IEIS2021_156: Research of "2025 Digital Empowerment Plan" Promotes Development of High-Level Sophisticated Industry Talents
  (*Jiajia Liu*)

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2	Xiuwen Zhang	IE1	Industrial Economics1	VooV Meeting ID: 225 884 871 (Password: 072505) Backup VooV Meetiong ID: 251 832 970 (Password: 072505)
4	Dong Tong	IE1	Industrial Economics1	VooV Meeting ID: 225 884 871 (Password: 072505) Backup VooV Meetiong ID: 251 832 970 (Password: 072505)
5	Renhua Feng, Ying Ren	IE1	Industrial Economics1	VooV Meeting ID: 225 884 871 (Password: 072505) Backup VooV Meetiong ID: 251 832 970 (Password: 072505)
6	BaoLin Ma, Yihan Wang	IE1	Industrial Economics1	VooV Meeting ID: 225 884 871 (Password: 072505) Backup VooV Meetiong ID: 251 832 970 (Password: 072505)
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145	Xiguang Zhang, Jingcheng Li	IE1	Industrial Economics1	VooV Meeting ID: 225 884 871 (Password: 072505) Backup VooV Meetiong ID: 251 832 970 (Password: 072505)
146	Yu Sun, Xiaojun Jia Jun Guo	IE2	Industrial Economics2	VooV Meeting ID: 219 441 112 (Password: 072511) Backup VooV Meetiong ID: 768 490 200 (Password: 072511)
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