

INVITED SESSION SUMMARY**Title of Session:**

Emerging Technologies, Challenges and Solutions for Zero Trust

Name, Title and Affiliation of Chair:

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Details of Session (including aim and scope):

Recently, more and more organizations have embraced the zero-trust technologies due to minimizing risk in enforcing accurate, least privilege per-request access decisions in service applications under the circumstance of a compromised network. In a zero-trust architecture, each access request should be authenticated and evaluated whether the request is permitted no matter it originated from external or internal network. In addition, unauthorized people from utilizing devices of authorized users to intrude other devices for lateral movement. Organizations need to evaluate trustworthiness of access requests based on user behaviours and threat intelligence and adapt associated access control policies. To date, the research community has stressed the importance of innovative technologies and integrated solutions for zero-trust.

This session solicits original and high-quality works on recent advances on the innovative technologies, challenges and solutions for zero-trust. We aim to enhance the current state of development of zero-trust technologies including algorithms, methodologies, frameworks to evaluate risk of access requests for achieving zero trust and accordingly reduce potential cybersecurity risks. Topics of interest include, but are not limited to:

- Trust evaluation algorithm for zero-trust
- Cyber threat intelligence for zero-trust
- Edge device risk evaluation for zero-trust
- Emerging innovative access control for zero-trust
- Access policies and selective restrictions for zero-trust
- Novel theories, architectures, applications and paradigms with zero-trust
- Practices and experiences for zero-trust architecture
- Security modelling for zero-trust architecture
- Privacy enhanced technologies for zero-trust
- Effectiveness evaluation and benchmark of zero-trust technologies
- Advances in the use of zero-trust underlying technologies (e.g., AI, blockchain, deterministic networks, cloud/edge computing, etc.)
- Miscellaneous issues for zero-trust

Main Contributing Researchers / Research Centres (tentative, if known at this stage):**Website URL of Call for Papers (if any):**

<http://kes2023.kesinternational.org/cmsISdisplay.php>

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Kuo-Hui Yeh (SM'16) is a full Professor with the department of Information Management, National Dong Hwa University, Hualien, Taiwan. He received M.S. and Ph.D. degrees in Information Management from the National Taiwan University of Science and Technology, Taipei, Taiwan, in 2005 and 2010, respectively. Dr. Yeh has authored over 100 articles in refereed journals and conferences. His research interests include IoT security, Blockchain, mobile security, NFC/RFID security, authentication, digital signature, data privacy and network security. Dr. Yeh is currently an Associate/Academic Editor of the Journal of Information Security and Applications (JISA), Symmetry, Security and Communication Networks (SCN), Mobile Information Systems (MISY), the Journal of Internet Technology (JIT), the Journal of Surveillance, Security and Safety (JSSS), Foundations, Research Reports on Computer Science and Frontiers in Communications and Networks – Security, Privacy and Authentication. In addition, he has served as an Associate Editor for IEEE Access and Data in Brief and a Guest Editor for Future Generation Computer Systems (FGCS), Cloud Computing, IEEE Access, Annals of Telecommunications, CMC-Computers, Materials & Continua, Mathematical Biosciences and Engineering (MBE), and the International Journal of Information Security (IJIS), JIT, Sensors and Cryptography. Moreover, Dr. Yeh has served as a TPC member for 50 international conferences/workshops on information security. He is a Senior Member of the IEEE and a Member of the (ISC)2, ISA, ISACA, CAA, CCISA, as well as holds CISSP, CISM, Security+, ISO 27001 LA, ISO 27701 LA and IEC 62443-2-1 LA certifications.

Shi-Cho Cha (SM'17) received the B.S. and Ph.D. degrees in information management from National Taiwan University, in 1996 and 2003, respectively. He is currently a professor and department chair with the Department of Information Management, National Taiwan University of Science and Technology (NTUST), where he has been a faculty member since 2006. He is also the director of the information security center, NTUST. He is a certified PMP, CISSP, CSSLP, CCFP, and CISM. From 2003 to 2006, he was a Senior Manager with PricewaterhouseCoopers, Taiwan. His current research interests include security and privacy of blockchain applications, IoT security and privacy, and information security.

Hsing-Kuo Pao (Kenneth) received the bachelor degree in mathematics from National Taiwan University, and M.S. and Ph.D. degrees in computer science from New York University. From 2001 to 2003, he was a post-doctorate research fellow in the University of Delaware, and later he joined in Vita Genomics as a research scientist. In 2003, he joined the department of computer science and information engineering in National Taiwan University of Science and Technology, and now a professor and chairman in the department. His current research interests include machine learning methodology and its applications such as IoT analytics, computer vision and information security.

Hsin-Chin Liu received the B.S. degree in communication engineering from National Chiao Tung University, Taiwan, and the M.S. and Ph.D. degree in electrical engineering from the Pennsylvania State University, University Park, PA, USA. He has been an engineer with Taiwan Alcatel, Taiwan Siemens, and National Dong Hwa University, Taiwan. In 2003, he was an assistant professor in the department of electrical engineering, National University of Kaohsiung, Taiwan. He joined the department of electrical engineering, National Taiwan University of Science and Technology, Taiwan since 2004, and now a professor in the department. His current research interests include wireless communications, IoT, smart antennas, RFID, localization, physical layer security, machine learning, and signal detection.

Nai-Wei Lo received the B.S. degree in engineering science from National Cheng Kung University, Tainan, Taiwan, in 1988, and the M.S. and Ph.D. degrees in computer science and electrical engineering from The State University of New York, Stony Brook, NY, USA, in 1992 and 1998, respectively. He was the Director of the Taiwan Information Security Center, National Taiwan University of Science and Technology (TWISC@NTUST), from 2014 to 2018. He is currently a Full Professor with the Department of Information Management, National Taiwan University of Science and Technology, Taipei, Taiwan. He has published over 140 peer-reviewed articles and book chapters. His current research interests include blockchain security, IoT/RFID security, cloud security, crowdsensing, and web technology. He has been serving as a Board Member of the Chinese Cryptology and Information Security Association, Taiwan, since 2015. He was a recipient of the 2017 NTUST Outstanding Teacher Award, the 2018 NTUST Excellent Research Scholar Award, and the

2012 IBM Faculty Award. He is currently an Associate Editor of the Journal of Information Security and Applications.