# AsiaEdu

# 2026 ASIA CONFERENCE ON EDUCATION TECHNOLOGY

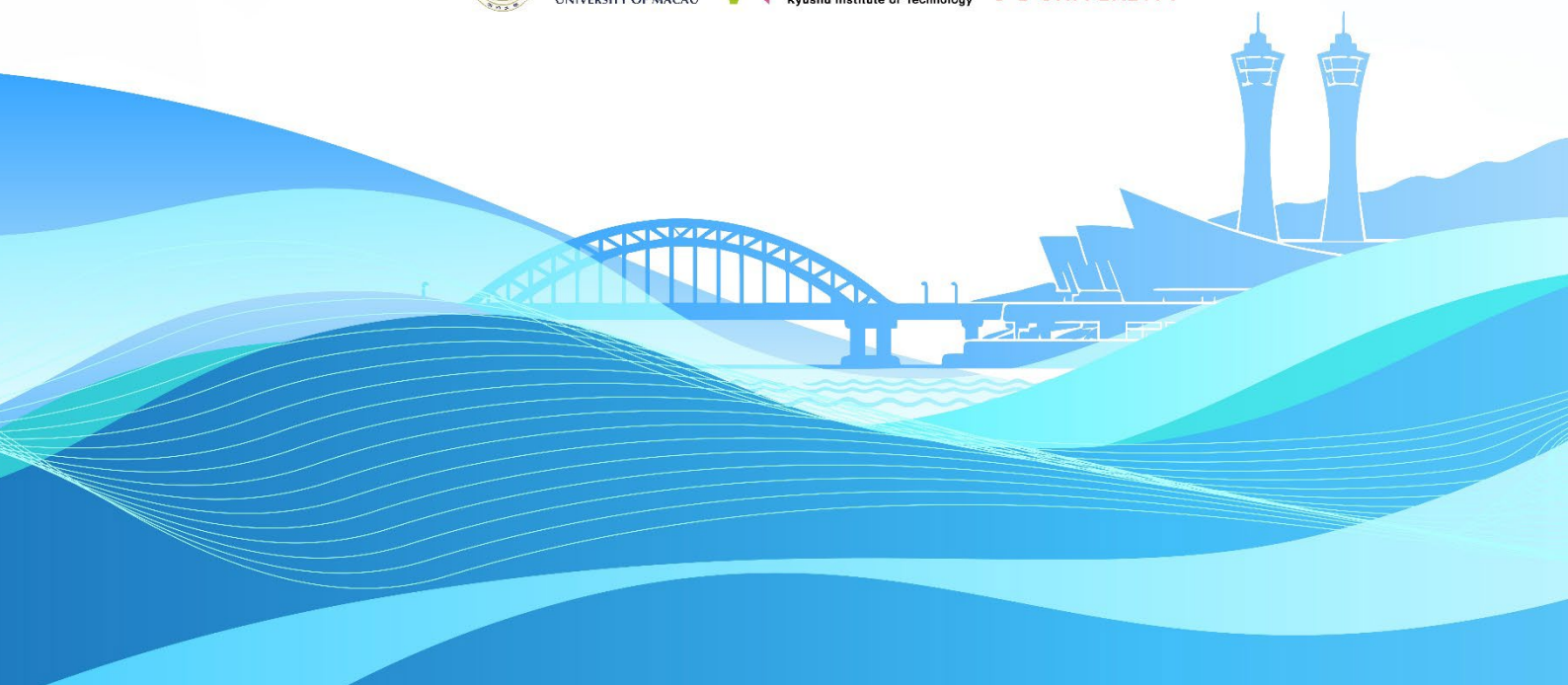
## INCC 2026 2026 4TH INTERNATIONAL CONFERENCE ON INFORMATION NETWORK AND COMPUTER COMMUNICATIONS

2026 NOVEMBER 28-30 NIIGATA, JAPAN

Co-sponsored by NIIGATA UNIVERSITY EIC 電子情報通信学会 The Institute of Electronics,Information and Communication Engineers(IEICE)

Technically Co-sponsored by デジタルハリウッド大学 DIGITAL HOLLYWOOD UNIVERSITY

Patrons 澳門大學 UNIVERSIDADE DE MACAU UNIVERSITY OF MACAU Kyutech Kyushu Institute of Technology RITSUMEIKAN UNIVERSITY



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Note

# WELCOME MESSAGE

On behalf of Conference Committee, we welcome you to attend 2026 Asia Conference on Education Technology (AsiaEdu) & 2026 4th International Conference on Information Network and Computer Communications (INCC) held in Niigata, Japan during November 28-30, 2026, co-sponsored by Niigata University, IEICE and IEEE, technically co-sponsored by Digital Hollywood University, Japan.

AsiaEdu 2026 & INCC 2026 welcomes author submission of papers from any branch of education technology; network and computer communications, and their applications or other topic areas. The areas covered by the include, but not limited to: Artificial Intelligence in Education; Inclusive Learning Environments; Emerging Technologies in Learning; Information Network; Wireless and Mobile Communications, Communication Fundamentals and Signal Processing; Emerging Computing and Frontier Networking Technologies; Network and Information Security and so on.

The conference aims to provide an interactive communication platform for practitioners to learn about the most cutting-edge academic and industrial application trends, to share the latest scientific research and technological achievements, innovative ideas and scientific methods in the field of Artificial Intelligence in Education; Inclusive Learning Environments; Emerging Technologies in Learning; Information Network; Wireless and Mobile Communications, Communication Fundamentals and Signal Processing; Emerging Computing and Frontier Networking Technologies; Network and Information Security, so as to serve the global strategic deployment of new and old kinetic energy conversion, and promotes technology research, development, and application home and abroad.

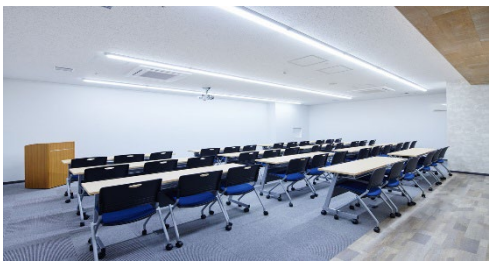
We feel deeply grateful to all that have contributed to make this event possible: authors, the conference steering committees, the conference speakers, and the peer reviewers. Thanks are also extended to the conference administrative committee and the supporters for their tireless efforts throughout the course of the conference.

We hope that all participants benefit from these two conferences.

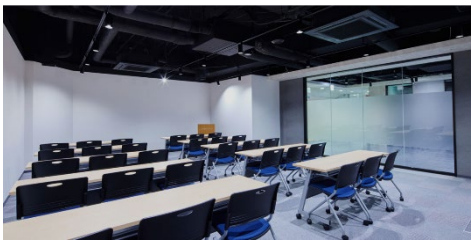
Conference Organizing Committee

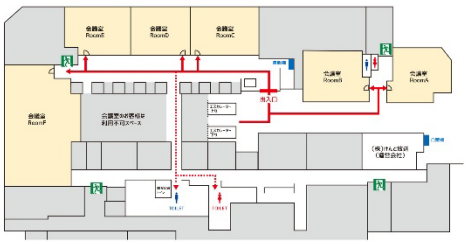
# GENERAL INFORMATION

**◆Conference Venue**









**NINNO3 会議室（ニーノスリー会議室）**

Add: 〒950-0917 新潟県新潟市中央区天神 1-1 プラーカ 3 B1F

Website: https://ninno-kaigi.com/

**◆Onsite Registration**

Go to the registration desk→ Inform the staff of your paper ID→ Sign-in→ Claim your conference kit.

**◆Devices Provided by the Organizer**

Laptops (with MS-Office & Adobe Reader) / Projectors & Screen / Laser Sticks

**◆Materials Provided by the Presenter**

Oral Session: Slides (pptx or pdf version). Format 16:9 is preferred.

**◆Duration of Each Presentation**

Keynote Speech: 40 min, invited speech: 20 min.

Onsite/Online Oral Session: 15min apiece, include 13 min for presentation, 2min for Q&A.

**◆NOTICE**

※ Please wear your delegate badge (name tag) for all the conference activities. Lending your participant card to others is not allowed.

※ Please take good care of your valuables at any time during the conference. The conference organizer does not assume any responsibility for the loss of personal belongings of the participants during conference day.

**◆Zoom Meeting ID**

| Meeting ID | Meeting Link | |
|---|---|---|
| 827 1712 6676 | https://us02web.zoom.us/j/82717126676 | ✧ Zoom Download: here<br>✧ Guide for new users: here<br>✧ Conference Banner: here<br>✧ Zoom Background: here |

# CONFERENCE COMMITTEE

(in no particular order)

**Conference Advisory Committee**
Ryuji Kohno, Yokohama National University, Japan & YRP International Alliance Institute, Japan

**Conference General Chair**
Tatsuya Yamazaki, Niigata University, Japan

**Conference General Co-Chairs**
Atsuko K. Yamazaki, Digital Hollywood University, Japan
Chi Man Pun, University of Macau, Macau, China

**Conference Program Committee Chairs**
Akiko Ryu Innes-Taylor, Waseda University, Japan
Keisuke Nakano, Niigata University, Japan
John Blake, Aston University, UK

**Conference Program Committee Co-chairs**
Tsukasa Yamanaka, Ritsumeikan University, Japan
Kayoko H. Murakami, Shibaura Institute of Technology, Japan
Kazuyuki Miyakita, Niigata University, Japan

**Conference Publicity Chairs**
Adlin Anuardi, Hiroshima University, Japan
Wan Noor Farah Wan Shamsuddin, Universiti Malaysia Pahang Al-Sultan Abdullah, Malaysia

**Conference Publication Chair**
Jung Woo-jin, Korea Association of Information Education, Korea

**Conference Treasurer**
Xin Yue Chia, Science Centre Singapore, Singapore

**Conference Technical Program Committees**
Siti Farhah Binti A Aziz, Universiti Tun Abdul Razak, Malaysia
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Ande M. Luna, National University, Philippines
Jholan Dela Cruz Torres, De La Salle Santiago Zobel School, Philippines
Ericson O Alieto, Western Mindanao State University, Philippines
Akihiko SHIRAI, Kaishi Innovation University / AICU Inc., Japan
Marlon Aves Diloy, National University, Philippines
Bryan L. De Guzman, National University, Philippines
Leticia C. Gamad, National University, Philippines

Madhusudan J.V., University of Hyderabad, India
SANTOSH KUMAR GUPTA, University of Hyderabad, India
Hoan Van Tran, Lac Hong University, Việt Nam
Gabriel Enrique Euan Valle, Universidad Modelo, Mexico
Sanjeev Chauhan, University of Hyderabad, India
Muhammad Nur Adilin Mohd Anuardi, Hiroshima University, Japan
Aileen Gail Angeles-Lumabas, National University, Philippines
Muhammad Ridhuan Tony Lim bin Abdullah, Universiti Teknologi PETRONAS, Malaysia
Ian S. Pasahol, National University, Philippines, Philippines
Fahim Khan, Toyo University, Japan
Jeerapan Phomprasert, Phetchabun Rajabhat University, Thailand
Pengtao Wang, Network Security and OSINT Research Institute, Zhejiang Yuexiu University, China
Hiroyuki Obari, Globiz Professional University, Japan
Mark Anthony Dalisay Elepaño, National University, Philippines
Annop Monsakul, Panyapiwat Institute of Management, Thailand
Agnes Herawati, Bina Nusantara University, Indonesia
Nadia Mahatmi, Universitas Multimedia Nusantara, Indonesia
Rani Aryani Widjono, Universitas Multimedia Nusantara, Indonesia
Tomohiro Inagaki, Hiroshima University, Japan
Adolf Josef Yao, City of Malabon University, Philippines
Jeremiah Palmiano, FEU Diliman, Philippines
Amy Wong, Singapore University of Social Sciences, Singapore
Thomas Welsh, University of Iceland, Iceland
Yuet Hung Cecilia Chan, City University of Hong Kong, Hong Kong, China
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Kwang Sik Chung, Korea National Open University, South Korea
Nur W. Rahayu, Universitas Islam Indonesia, Indonesia
Hsien-Sheng Hsiao, National Taiwan Normal University, Taiwan
Heiko Fechtner, University of Wuppertal, Germany
Yuko Murakami, Hiroshima University, Japan
Hsiu-Te Sung, National Taiwan Normal University, Taiwan
John Blake, University of Aizu, Japan

# AGENDA OVERVIEW

Onsite: Venue in Niigata: 〒950-0917 新潟県新潟市中央区天神 1-1 プラーカ 3 B1F

Online: Zoom Meeting ID: 827 1712 6676 Link: https://us02web.zoom.us/j/82717126676

| November 28 Saturday (GMT+9) | | |
|---|---|---|
| **14:00~17:00** | Onsite Registration for ALL offline attendees | **Room A（NINNO3 会議室）(B1F)** |
| **14:00~15:30** | Zoom Pre-test for ALL Online Attendees | See below |

## **Zoom Pre-test** for All Online Attendees

※Participants who are going to do an online presentation are required to join the Zoom pre-test on November 28 (GMT+9). Duration: 3 minutes apiece. Free to leave after you finish the rehearsal.

1. We recommend to install the Zoom platform beforehand. New users can login the Zoom meeting without registration.
2. Please set your display name before joining the online meeting. For instance,

**◆Name Setting**

Keynote Speaker: Keynote-Name Author: Paper ID-Name < AE001-Name >

Committee: Position-Name Delegate: Delegate-Name < Delegate_Name >

| November 28, 2026 | Zoom Room: 827 1712 6676 |
|---|---|
| **14:00-15:30** | |
| **14:00-15:00** | AE306 AE327 AE001 AE018 AE079 AE093 AE016 AE094 AE067 AE031 AE072 AE085 AE077 |
| **15:00-15:30** | ※Participants who are unavailable during the above allocated time can join the rehearsal at 15:00-15:30 |

| November 29| Sunday (GMT+9) | | |
|---|---|---|
| **Room C（NINNO3 会議室）(B1F)**<br>**Zoom Meeting ID: 827 1712 6676** | | |
| **08:30-09:00** | Onsite Registration | |
| Chairman: **Prof. Tatsuya Yamazaki,** Niigata University, Japan | | |
| **09:00-09:10** | Opening Remarks | **Prof. Tatsuya Yamazaki**<br>Niigata University, Japan |
| **09:10-09:50** | Keynote Talk title:<br>Harmonized Coexistence of Wireless Commercial Infra and Ad-hoc Networks, and with Scientific Radio Systems for SDGs | **Prof. Ryuji Kohno (IEEE and IEICE Life Fellows)**<br>Professor Emeritus, Yokohama National University, Japan,<br>Vice-President, YRP International Alliance Institute, Japan |
| **09:50-10:30** | Keynote Talk title:<br>Lightweight Image-Based AI Model Design and Its Applications | **Prof. Lin MENG(Senior Member of IEEE and Member of ACM, IPSJ, IEICE, and IEEE)**<br>College of Science and Engineering and head of the Intelligent High-performance Computing Lab., at Ritsumeikan University (RU), Japan |
| **10:30-11:00** | Group Photo & Morning Break | |
| **11:00-11:40 (Online)** | Keynote Talk Title:<br>The Gap Between Technology for Education and School Practice | **Prof. Atsuko K. Yamazaki**<br>Digital Hollywood University, Japan |
| **11:40-12:00** | Invited Talk title:<br>Virtual Road Networks for Inter-Drone Communications: Mobility and Performance Analysis | **Assoc. Prof. Kazuyuki Miyakita**<br>Niigata University, Japan |
| **12:00-13:30** | Lunchtime < Room C（NINNO3 会議室）(B1F) > | |
| **Onsite Sessions** | | |
| **13:30-15:30** | **Room C（NINNO3 会議室）(B1F)** | |
| | **Onsite Session 1: Intelligent Computing and Advanced Network Technologies**<br>Session Chair: Assoc. Prof. Kazuyuki Miyakit, Niigata University, Japan<br>**AE307 AE308 AE313 AE314 AE316 AE325 AE328 AE329** | |
| | **Room A（NINNO3 会議室）(B1F)** | |
| | **Onsite Session 4: Digital Learning Innovation, Intelligent Technologies and Inclusive Education**<br>Session Chair: Asst. Prof. Siti Farhah Binti A Aziz, Universiti Tun Abdul Razak, Malaysia<br>**AE014 AE084-A AE091 AE083 AE033 AE088 AE095** | |

| | |
|---|---|
| **15:30-15:45** | Coffee Break |
| **15:45-18:05** | **Room C（NINNO3 会議室）(B1F)** |
| | **Onsite Session 2: Technology-Enhanced Language Learning: Affect, Engagement and Feedback**<br>Session Chair: Asst. Prof. Jeerapan Phomprasert, King Mongkut's University of Technology Thonburi (KMUTT), Thailand<br>**Invited Talk- AE015**<br>**AE007 AE012-A AE028 AE034 AE036 AE037 AE061 AE066** |
| | **Room A（NINNO3 会議室）(B1F)** |
| | **Onsite Session 3: AI-Enhanced Teaching, Assessment and Educator Development: AI Literacy, Ethics and Governance**<br>Session Chair: Prof. Takashi IMAMURA, Niigata University, Japan<br>**AE017 AE019 AE023 AE029-A AE058-A AE081 AE035-A** |
| **13:30-18:00** | **Room C（NINNO3 会議室）(B1F)** |
| | **Poster Display**<br>**AE071** |
| **18:30-20:30** | **Dinner Banquet <アートホテル新潟駅前 レストラン彩巴（いろは）>** |

| November 29| Sunday (GMT+9)<br>Online Sessions | |
|---|---|
| **Online Sessions**<br>Room: 827 1712 6676 Link: https://us02web.zoom.us/j/82717126676 | |
| **14:00-17:15** | **Online Session 1: Emerging Technologies in Education and Intelligent Systems: AI, Immersive Learning, and Computing Infrastructure**<br>Session Chair: Asst. Prof. Mark Anthony D. Elepaño, National University, Philippines, NU Lipa, Philippines<br>AE306 AE327 AE001 AE018 AE079 AE093 AE016 AE094 AE067 AE031 AE072 AE085 AE077 |
| **Note:**<br>The meeting room will open 30 minutes earlier than scheduled. Please enter your room 10-15 minutes early.<br>NO-SHOW POLICY Papers unpresented at the conference, without prior written approval by the Conference Technical Program Chair, will be removed from the final conference proceedings before submitted to IEEE Xplore. No refund will be approved to authors of those papers. | |
| **November 30| Monday (GMT+9)**<br>**One-day Tour** | |
| **08:00-18:00** | **NIIGATA NATURE & SCENIC DAY TOUR** |

# INTRODUCTION OF KEYNOTE SPEAKER



## Speech Title: Harmonized Coexistence of Wireless Commercial Infra and Ad-hoc Networks, and with Scientific Radio Systems for SDGs

**Prof. Ryuji Kohno（IEEE and IEICE Life Fellows）**

**Professor Emeritus, Yokohama National University, Japan,**
**Vice-President, YRP International Alliance Institute, Japan**

Abstract: Common radio resources should be fairly used by harmonization among scientific, commercial, and other uses. URSI Japan founded a new commission or study group (SG) on harmonization for radio resource management among various uses in Science Council of Japan (SCJ) 2025 to promote “Harmonization among Multiple Uses of Radio with Regulatory Science for SDGs,” accepted as a project of the Future academic promotion design 2023 SCJ program and updated in 2025. We have discussed the harmonization in events, i.e. GASS2011, AP-RASC2013, JRSM2015, GASS2023. However, such argument has not been converged yet while increasing urgent problems to be solved. The new SG has started to argue about finding a common strategic approach based on regulatory science to obtain consensus among all related stakeholders. The new SG invites representatives from scientific use side in commissions F, G, H, and J, and commercial use side in commissions C, D, F, and K while measurement in commissions A,B, and E to study and derive a fair solution from various viewpoints. In particular, demand for commercial radio uses has been drastically increasing for these decades while scientific radio uses have a huge impact in origin of the universe and other academic progress. Electromagnetic interference between scientific and commercial radio uses has been considered in several venues; ITU-R, CISPR. Regional and international regulators have been making various rules and recommendations to harmonize commercial and non-commercial radio uses considering benefit versus risk for individual radio users. Regulatory science is a primitive concept to make a consensus by scientific approach for making global rules and on promoting social services and industrial innovation because radio is a global common resource to achieve most of the SDGs. This keynote will approach to resolve remaining issues in the harmonization with regulatory science focusing on some specific use cases such as medical wireless body area networks (BANs), wireless power transmission (WPT), etc.

**Ryuji Kohno** received the Ph.D. degree from the University of Tokyo in 1984. He was a Professor and the Director of Centre on Medical Information and Communication Technology, in Yokohama National University in Japan for 1998-2021 and then Professor Emeritus. In his currier he played a part-time role of a director of

Advanced Telecommunications Laboratory of SONY CSL during 1998-2002, directors of UWB Technology and medical ICT institutes of the National Institute of Information and Communication Technologies (NICT) during 2002-2012. For 2012-2020 he was CEO of University of Oulu Research Institute Japan – CWC-Nippon Co. and since 2020 Vice-President of YRP International Alliance Institute. The meanwhile for 2007-2020 a distinguished professor in University of Oulu in Finland and since 2006 an associate member of the Science Council of Japan(SCJ). In IEEE he was a member of the Board of Governors of Information Theory Society in 2000-2009, and editors of Transactions on Communications, Information Theory and ITS, IEEE802.15 standardization TG6ma Chair and IEEE Life Fellow. In IEICE he was Vice-president of Engineering Sciences Society of IEICE during 2004-2005, Editor-in chief of the IEICE Trans. Fundamentals during 2003-2005 and IEICE Life Fellow. He is a founder and a chair of steering committees of international symposia of medical information and communication technologies (ISMICT) since 2006, general and TPC chairs in many international conferences such as PIMRC99, SDR02, ISIT03, UWBST04, ISMICT06&15, etc.

# INTRODUCTION OF KEYNOTE SPEAKER



## Speech Title: Lightweight Image-Based AI Model Design and Its Applications

**Prof. Lin MENG (Senior Member of IEEE and Member of ACM, IPSJ, IEICE, and IEEE)**

**College of Science and Engineering and head of the Intelligent High-performance Computing Lab., at Ritsumeikan University (RU), Japan**

Abstract: Image-based AI has been widely applied to tasks such as image classification, object detection, and anomaly detection. However, many of these applications must operate in hardware resource-constrained environments, such as embedded systems and edge devices. At the same time, current AI models often involve a large number of parameters and high computational complexity, which limit their practical deployment in such environments. In this talk, we present a comprehensive review and analysis of modern image-based AI models, including convolutional neural networks (CNNs) and Vision Transformers (ViTs). We then introduce several approaches for reducing redundant computation and enabling lightweight model design. In addition, we present practical implementations of these models in real-world applications, such as the integration of object detection models into food-service robots for automatic dish collection after meals, as well as nano-drones for agricultural applications. In the food-service domain, we further present a complete pipeline covering dataset collection, model development, and automatic AI model design. Finally, we highlight other AI-related achievements, including applications of image-based AI in cultural heritage preservation, bioengineering, and related areas.

**Lin MENG** is a Professor at the College of Science and Engineering and head of the Intelligent High-performance Computing Lab., at Ritsumeikan University (RU), Japan. He received his Ph.D. from the Graduate School of SE at RU 2012. He was a Research Associate, Assistant Professor, and lecturer at the Dept. of ECE, RU. In 2015, he was a visiting scholar in the Dept. of CSE, University of Minnesota at Twin Cities, USA. His research interests include Computer Architecture, Parallel Processing, Intelligence High-Performance Computing (IHPC), FPGA-based Accelerator Design, the Internet of Things (IoT), and Artificial Intelligence (AI). He has published over 400 papers, including IEEE TASE, IEEE TETCI, IEEE TIM, IEEE TSC, IEEE TITS, IEEE IoT J, Adv. Sci., AIRE, APIN, Neurocomputing, Heritage Science, etc. He is among the top 2% of scientists in the updated science-wide author databases of standardized citation indicators created by Elsevier from 2023. He serves as an editor for several journals, including Internet of Things, IEEE-TCE, Biomimetics Intelligence and Robotics, IJAMechS, and others. He is also serving as the program chair for several international conferences in 2025, including IEEE RCAR 2025, IIKI 2025, and ICAMechS 2025 etc. In the past three years, he received several fundings from the NEDO and the Japan Science and Technology Agency (JST), Japan Society for the Promotion of Science (JSPS), etc. He is a senior member of IEEE and a member of ACM, IPSJ, IEICE, and IEE.

# INTRODUCTION OF KEYNOTE SPEAKER



## Speech Title: The Gap Between Technology for Education and School Practice

**Prof. Atsuko K. Yamazaki**
**Digital Hollywood University, Japan**

Abstract: This keynote examines the persistent gap between rapid advancements in educational technology (EdTech) and their meaningful integration into school practice, with a particular focus on communication education. Recent innovations in artificial intelligence (AI), learning analytics, and immersive technologies such as virtual reality (VR) offer new opportunities to enhance communicative competence through interactive, experiential learning. For example, VR environments can simulate authentic communication contexts, enabling learners to practice language and interaction skills in realistic settings. However, despite these possibilities, implementation in schools remains limited. Key challenges include misalignment with curriculum and assessment systems, limited teacher involvement in technology design, insufficient pedagogically oriented professional development, and institutional constraints. In addition, disparities in access and digital competence continue to affect equitable adoption. This keynote argues for a shift toward pedagogy-driven, communication-centered approaches to EdTech integration. It highlights the importance of co-design with educators, curriculum alignment, sustained professional development, and context-sensitive implementation. Ultimately, the effectiveness of EdTech should be evaluated by its ability to support meaningful interaction and real-world communication. Bridging the gap requires collaboration among educators, researchers, developers, and policymakers to ensure that technology enhances, rather than disrupts, communication learning in authentic educational contexts.

**Atsuko K. Yamazaki** serves as a Specially Appointed Professor at the Graduate School of Digital Hollywood University, Japan. Her expertise lies in communication studies, information science, systems engineering, human and digital communication studies, and global education in engineering. She holds a Bachelor of Science in Chemistry from Ibaraki University, a Master of Arts in TESOL from the Monterey Institute of International Studies, a Master of Science in Computer Science from the University of Maryland, and a Ph.D. in Systems Engineering from Wakayama University. Previously, she served as an adjunct research instructor at the Naval Postgraduate School in Monterey, California, and as a visiting researcher at the Woods Hole Oceanographic Institution. In 2021, she joined DHU Graduate School after spending 13 years as a Professor at Shibaura Institute of Technology. Her research has been published in journals such as Ecological Modelling, Deep-Sea Research, IEEE, KES, Japan Society for Artificial Intelligence, Japanese Society for Information and Systems in Education, among others. Her current research and projects focus on communication studies utilizing UI, VR, brain function measurement, and simulation. She is also actively involved in global talent development and corporate DX projects. Furthermore, she has contributed to academic societies as an editor and officer, including IEEE Professional Communication Society and the Japan Leadership Society.

# INTRODUCTION OF INVITED SPEAKER



## Speech Title: Virtual Road Networks for Inter-Drone Communications: Mobility and Performance Analysis

**Assoc. Prof. Kazuyuki Miyakit**
**Niigata University, Japan**

Abstract: Mobility plays an essential role in epidemic communication because information exchange depends on contacts between mobile nodes. One way to increase communication opportunities between independently moving drones is to enlarge the communication range. However, power consumption and equipment limitations can make this difficult.

This talk introduces virtual road networks as an alternative approach to increasing communication opportunities in epidemic communication between drones. Drones move in a distributed manner along virtual roads and thus pass close to each other more frequently. Through theoretical analysis, we clarify how much virtual road networks can improve contact performance and also investigate the increase in travel time due to detours. We also introduce related results on virtual road networks.

**Kazuyuki Miyakita** received a B.E. degree from the National Institution of Academic Degrees in 2005 and M.E. and Ph.D. degrees from Niigata University in 2007 and 2010, respectively. He is currently an associate professor in the Faculty of Engineering at Niigata University. He received the Young Researcher's Award from IEICE in 2009, the Best Research Awards from IEICE ICTSSL in 2018 and 2025, and the Service Award from IEICE Engineering Sciences Society in 2019. He is a senior member of IEICE and a member of IEEE.

# Onsite Session 1

| | |
|---|---|
| **Time** | **13:30-15:30 \| November 29, 2026 (Sun.)** |
| **Venue** | **Room C（NINNO3 会議室）(B1F)** |
| **Topic** | **Intelligent Computing and Advanced Network Technologies** |
| **Chair** | **Assoc. Prof. Kazuyuki Miyakit, Niigata University, Japan** |

| Time | Paper ID | Paper Detail |
|---|---|---|
| 13:30-13:45 | **AE307** | Position-Aware Flower Direction Estimation for Robotic Pollination of Pears<br>**Chanda Gupta,** IIT Roorkee, India; Niigata University, Japan<br><br>Artificial pollination in pear cultivation is a labor-intensive task performed within a short flowering period, creating a growing demand for automation due to the declining and aging agricultural workforce. Accurate estimation of flower orientation is particularly important for robotic pollination, as it directly influences the feasibility and efficiency of pollen delivery. This paper proposes a position-aware flower direction estimation method for the pear variety Le Lectier based on Mask R-CNN. The proposed approach incorporates the center coordinates of the bounding box for each detected flower as positional features and combines them with Region of Interest (RoI) appearance features to improve orientation estimation. Experimental results demonstrate that the proposed method increases the overall detection performance from 0.602 to 0.818 in terms of mAP@0.50. Furthermore, the AP for the right and left orientation classes improves from 0.427 to 0.813 and from 0.334 to 0.804 respectively, while maintaining high performance for the front and up orientations. These results demonstrate that incorporating positional information alongside visual features significantly improves flower direction estimation and provides a more reliable visual perception framework for robotic pollination. |
| 13:45-14:00 | **AE308** | Evaluating Kohaku Koi Quality Using a Denoising Diffusion Probabilistic Model<br>**Touthor Hangsengsua,** Niigata University, Japan<br><br>Nishikigoi (ornamental koi) are culturally and economically important in Niigata prefecture, Japan, yet their quality is judged through the tacit knowledge of expert judges, and datasets of low-quality reference fish are scarce. This paper investigates whether a denoising diffusion probabilistic model trained only for award-winning Kohaku koi images can serve as a learned prior of “award quality” for evaluating unseen koi. Following an anomaly-detection framing, a test image is partially noised to an intermediate timestep and then fully denoised, and the reconstruction error against the input is used as a quality signal. Award-winning koi reconstruct faithfully, whereas non-verified koi are pulled toward the learned award manifold and incur higher error. On forty-three held-out award koi versus forty-three non-verified koi, mean squared error separates the groups strongly (AUC 0.97), corroborated by structural similarity, while a learned perceptual metric separates them only weakly. We argue that this pattern is a predictable consequence of the pixel-space training objective, present a leakage-free |

| | | |
|---|---|---|
| | | evaluation protocol, and quantify a photographic domain gap as the principal limitation. |
| 14:00-14:15 | **AE313** | TCP Pacing Using Coarse-grained Timer<br>**Toshihiko Kato,** University of Electro-Communications, Japan<br><br>High throughput is required in a high speed and long-haul network environment. Although most of TCP congestion control algorithms adopt the window-based-flow control, it is mentioned that the rate-based flow control provides higher throughput. Traditionally, TCP pacing was proposed to realize the rate-based flow control over the conventional flow-based congestion control, and its efficiency has been reported in a simulation study. However, its implementation in commodity computers has an issue that the precise timer control such as the nanosecond order provides large burden of clock interrupt processing. This paper describes the performance of TCP pacing when a coarse-grained timer is used and shows that the performance becomes worse under some conditions. This paper also proposes a revised TCP pacing scheme which takes account of wasted pacing time invoked by large clock granularity. The performance evaluation shows that the revised TCP pacing provides high throughput even when the clock granularity is 100 microseconds. |
| 14:15-14:30 | **AE314** | TNT-Sleep: Random forest-based classification of in-bed tossing and bed-exit during sleep using Wi-Fi CSI<br>**Hankyul Kim,** Daegu University, Republic of Korea<br><br>The increasing number of people with insomnia has prompted interest in continuous sleep monitoring and sleep quality management. Wearable devices must be worn throughout the night, whereas camera-based approaches may raise privacy concerns because they record images in private spaces such as bedrooms. We constructed TNT-Sleep, an ESP32-based Wi-Fi channel state information (CSI) dataset collected from four participants, to distinguish in-bed tossing from bed-exit without wearable devices or video recording. Two ESP32 boards collected CSI while participants performed two action scenarios. We extracted 350 events, comprising 280 tossing events and 70 bed-exit events, from 70 recordings. Each event was represented by eight features describing the extent and duration of signal variation. We applied a random forest (RF) classifier to mitigate the overfitting of individual decision trees when training data are limited and to analyse feature importance. The pooled model using all eight features achieved a tossing recall of 93.3%, a bed-exit recall of 77.6% and a macro-F1 score of 0.848. We also compared feature combinations to identify the features that contribute to distinguishing the two actions, and compared personalised and pooled models to examine the effect of training data composition. |
| 14:30-14:45 | **AE316** | Is NIS2 Ready for 6G? Expert Perceptions of Regulatory Coverage for AI-Native Network Security Risks<br>**Arman Khan,** Goethe University Frankfurt, Germany<br><br>Sixth-generation (6G) networks will place machine learning inside network control, operate in millimetre-wave and terahertz bands and carry long-lived data exposed to future quantum attacks. In the European Union, their operators fall under the NIS2 Directive, a technology-neutral instrument drafted before 6G took shape. This exploratory study examines how experts perceive the adequacy of NIS2 for these risks. We develop a 6G–NIS2 Control Matrix that extends ENISA's 5G Security Controls Matrix with six 6G-specific domains and links each of fourteen domains to NIS2 provisions. A purposive panel of fourteen specialists |

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| | | rated every domain for risk severity and NIS2 adequacy. AI/ML security received the highest mean risk rating (4.29 of 5) and the lowest mean adequacy rating (2.69), and is the only domain classified as a gap under every threshold tested. Crypto-agility showed a weaker, threshold-sensitive version of this pattern, while physical-layer security drew moderate, divided risk ratings and largely uncertain adequacy ratings. Domains with more specific or reinforced provisions, such as incident reporting, tended to be rated more adequate. In rankings of the six extended domains, agreement was moderate on risk (W = 0.48) and weaker on adequacy (W = 0.29). The findings are directional. |
| 14:45-15:00 | **AE325** | Implementation of YOLO Object Detection on FPGA-Based Embedded System<br>**Minghao Chang,** Ritsumeikan University, Japan<br><br>Field-programmable gate arrays (FPGAs) provide an energy-efficient platform for real-time object detection in resource-constrained edge systems. However, deploying YOLO models on FPGA-based accelerators remains challenging due to unsupported operators and compatibility issues in hardware compilation toolchains. This paper investigates the deployment of YOLOv8n on the ZCU102 platform using AMD Vitis AI, focusing on unexpected CPU fallback caused by Hard-Swish activation replacement. Although replacing the unsupported SiLU activation with Hard-Swish enables model quantization and compilation, the resulting model contains CPU subgraphs that prevent successful execution. Through a systematic analysis of Vitis AI versions 2.5, 3.0, and 3.5, we identify the root cause of this failure and establish a structural rule for detecting affected activation patterns. Based on this finding, we propose an automated identity-bridge insertion method that modifies the computational graph to improve compatibility with the DPU accelerator. The proposed approach is evaluated across eight YOLO computational graphs and compared with alternative deployment strategies, including activation retraining. Experimental results demonstrate the effectiveness of the proposed method in addressing operator compatibility and deployment failures without requiring model retraining. This study provides practical insights into FPGA-based YOLO deployment and highlights the importance of computational graph structure in hardware accelerator compatibility. |
| 15:00-15:15 | **AE328** | Charger Placement and Drone Routing for Epidemic Communication on Virtual Roads<br>**Takeshi Iwaya,** Niigata University, Japan<br><br>This paper considers epidemic communication using drones. In our previous study, we showed that virtual road networks improve contact performance, but we neglected charging time. In practice, however, drones must stop for charging and may also wait for chargers. In this paper, we evaluate the effects of charging and waiting on communication performance through simulation. We also propose the concentrated placement and center routing methods, which place more chargers near the center of the service area and make drones travel via the center with limited detours. Simulation results show that combining these methods improves contact performance while suppressing the increase in travel time. |
| 15:15-15:30 | **AE329** | Multipath QUIC Scheduling Using Trajectory Information and Radio Maps for Vehicular Networks<br>**Onur Alparslan,** Doshisha University / Mobility Research Center, Japan<br><br>Radio maps may warn a moving vehicle about weak coverage before recent round-trip-time (RTT) measurements reveal it. We augment vehicle-side |

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| | | Multipath QUIC scheduling with cell-conditioned maps separating serving-cell and after-cell observations. The proposed method queries these maps along the vehicle's intended trajectory over a configurable lookahead period to trigger switching or duplication, subject to historical support and transport eligibility. We evaluate the approach using real-world measurements from multiple cellular providers in the Berlin V2X dataset and a periodic uplink workload. Preliminary simulations show a modest improvement in delivery within the application latency limit under the presented core-network delay configuration, while additional configurations show no change in timely delivery. During the selected degradation event, switching and duplication each reduce the deadline misses observed with minimum-RTT scheduling (MinRTT). In this event, duplication achieves lower mean and median record delays than switching, at the cost of additional transmitted bytes. |

# Onsite Session 4

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| **Time** | **13:30-15:15 \| November 29, 2026 (Sun.)** |
| **Venue** | **Room A（NINNO3 会議室）(B1F)** |
| **Topic** | **Digital Learning Innovation, Intelligent Technologies and Inclusive Education** |
| **Chair** | **Asst. Prof. Siti Farhah Binti A Aziz, Universiti Tun Abdul Razak, Malaysia** |

| Time | Paper ID | Paper Detail |
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| 13:30-13:45 | **AE014** | Effects of Background and Text Color Combinations on Prefrontal Cortex Activity During Arithmetic Tasks on ICT Devices<br>**Murakami Shogo,** Hiroshima University, Hiroshima, Japan<br><br>This study investigated the effects of background and text color combinations on prefrontal cortex activity and task performance during arithmetic tasks on ICT devices. While previous studies have suggested that screen color schemes may influence cognitive performance and brain activity, there has been insufficient research examining these effects under controlled contrast conditions. In this study, participants performed fill-in-the-blank arithmetic tasks under multiple color schemes while prefrontal cortex activity was measured using fNIRS. Two experiments involving young and older adults were conducted. The results indicated that young adults tended to exhibit higher task performance and greater brain activity under conditions using dark text on a light background. In contrast, while relatively high brain activity was observed in older adults under conditions involving the color blue, increased brain activity was not necessarily associated with improved task performance. These results suggest that screen color schemes may influence cognitive processing differently depending on age group, highlighting the importance of accessible interface design for ICT devices. |
| 13:45-14:00 | **AE084-A** | From Shared Decisions to Inclusive Preschool Practice: A Conceptual Framework and Qualitative Study Protocol<br>**Nurul Atikah Md Azhar,** Universiti Tun Abdul Razak, Malaysia<br><br>Inclusive early childhood education depended not only on placing children with diverse learning needs in mainstream classrooms but also on effective collaboration among teachers, parents, and specialists. This qualitative study explored teachers' experiences of transdisciplinary partnerships, including how they understood their roles, communicated with parents and specialists, participated in shared decision-making, and addressed children's individual needs. Six preschool teachers who had experience teaching in inclusive classrooms were selected through purposive sampling. Data were collected through semi-structured interviews and analysed using thematic analysis. The study examined the benefits of collaboration as well as challenges such as limited time, unclear responsibilities, inconsistent communication, insufficient access to specialists, and inadequate professional preparation. By foregrounding teachers' voices, the study provided practical insights for developing a |

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| | | contextually relevant framework to strengthen transdisciplinary partnerships and support meaningful inclusion in early childhood education. |
| 14:00-14:15 | **AE091** | Design and Evaluation of a Context-Aware Generative AI Dialogue Support System for Collaborative Learning in a Metaverse<br>Takuya Uehara, Fumito Kitamura and Norio Setozaki, Nagasaki University, Nagasaki, Japan<br><br>In metaverse learning environments, learners who discuss through avatars find it difficult to convey mental images in words alone and to share the context of the discussion. This study uses generative AI to support dialogue among learners rather than between a learner and an AI. We developed a browser-based metaverse environment with real-time transcription, a personal AI agent for each learner, and image generation. The agent refers to a shared conversation log that merges transcribed speech and text chat and provides summaries, answers, and topic information, and images generated from the dialogue are shared in the 3D space. Twenty university students used the system in pairs in a facilitated four-phase discussion about the school in 2050. The mean System Usability Scale score was 81.0, which lies between good and excellent on an adjective rating scale, and the mean raw NASA Task Load Index score was 37.42, with mental demand the highest subscale and frustration low. On five-point items, the AI summary and chat functions received the highest ratings, and participants agreed that image generation helped them grasp each other's ideas and that transcription helped them avoid missing utterances. Opinions were divided on whether image generation interrupted the discussion, and the free-text responses pointed to the need for an interface that keeps shared images visible and for AI support that supplements rather than replaces dialogue between learners. |
| 14:15-14:30 | **AE083** | Digital Bridges: A Qualitative Study of Transdisciplinary Partnerships in Inclusive Early Childhood Education<br>**Siti Farhah Binti A Aziz,** Universiti Tun Abdul Razak, Malaysia<br><br>Supporting young children with special educational needs requires teachers, families, and specialists to work closely together. Yet the knowledge each person holds may remain disconnected across home, classroom, and therapy settings. Digital tools offer ways to connect these experiences, although frequent communication does not necessarily lead to shared decisions. This exploratory qualitative study explores how digital technologies support transdisciplinary partnerships in inclusive early childhood education, with particular attention to communication, shared decision-making, and coordinated classroom support. 11 participants had been purposively selected from preschool teachers, parents and specialists (occupational and speech therapists) who have experience using digital tools to discuss and support children's learning and development. Data have been generated through semi-structured interviews, where feasible and with consent. Thematic analysis has been used to examine how participants understand their roles, contribute knowledge and translate discussions via technology into everyday practice. The study also explores challenges related to digital access while remaining open to experiences that question the value of digital communication. By bringing together different stakeholder perspectives, the research aims to understand when digital connections become meaningful partnerships to support the children. Its intended contribution is a detailed account of how digital tools can be used to support collaborative practices that respect family knowledge, connect professional expertise, and respond to children's needs. The study may inform practical approaches to sustaining |

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| | | shared responsibility for inclusion across home, early childhood settings, and specialist services. |
| 14:30-14:45 | **AE033** | Bottom-Up Fabrication and Decentralized Fabrication Spaces for Regional STEAM Education<br>**Koh Sueda,** Hannan University/Digital Hollywood University, Japan<br><br>A bottom-up fabrication environment emerged without a formal makerspace through student-led use of shared 3D printers, open-source tools, home workspaces, and online coordination. We trace this evolution, identify tensions between agency, institutionalization, and AI-accelerated making, and propose decentralized regional STEAM pilots to test a transferable learning model. |
| 14:45-15:00 | **AE088** | Learning from Artificial Intelligence Errors: Designing and Evaluating a Critical AI-Assisted Learning Model to Develop High School Students' Mathematical Reasoning Competence<br>**Nguyễn Quốc Bảo,** Hue University of Education, Việt Nam<br><br>Large language models can produce plausible mathematical solutions containing subtle errors. This study develops and examines the Critical AI Error Analysis (CAEA) model, a five-phase cycle of Present, Detect, Diagnose, Repair, and Reflect. An eight-week quasi-experiment involved 86 Grade 10 students in four intact classes (44 experimental; 42 control) studying quadratic functions and equations. Mathematical reasoning was assessed with a 12-item test measuring justification, error analysis, and generalization; critical AI disposition was measured by self-report. An analysis of covariance adjusting for pretest scores indicated higher mathematical reasoning scores in the CAEA group, particularly in error analysis. Students also reported stronger critical AI dispositions and positive perceptions of the activities. The findings suggest that structured evaluation of AI solutions may support mathematical reasoning, but the small number of classes limits causal inference. |
| 15:00-15:15 | **AE095** | DEVELOPING THE EXTENDED AI-CLT FRAMEWORK: FROM COGNITIVE SCAFFOLDING TO SCHEMA AUTOMATION IN ADVANCED MATHEMATICS TEACHING<br>**Ngân Thị Hồng Ngân,** Nguyen Hue University, Việt Nam<br><br>In the context of Vietnamese higher education undergoing profound transformation under the influence of generative artificial intelligence (GenAI), the predominant use of AI merely as a problem solving tool or temporary scaffold has yet to fully exploit the technology's cognitive potential. This study extends the previously proposed AI-CLT pedagogical framework by introducing a fourth mechanism: Generative Schema Automation (GSA) through generative problem synthesis. After students apply a pedagogical prompt engineering matrix to overcome complex problems under controlled AI support, GenAI is transformed into a continuous generator of progressive problem sequences spanning four levels: retrieval consolidation, procedural variation, conceptual transfer, and authentic real world interdisciplinary thinking. Grounded in the principle of schema automation within cognitive load theory and the tenets of deliberate practice, this mechanism aims to free working memory capacity and foster durable problem solving competence. The study's primary contributions are an extended prompt matrix and a dual cycle model of "Scaffolding, Automation." Building on this foundation, the paper proposes strategic directions for standardizing AI pedagogical competencies among university lecturers and cultivating adaptive learning ecosystems in Vietnamese higher education. |

# Onsite Session 2

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| **Time** | **15:45-18:05 \| November 29, 2026 (Sun.)** |
| **Venue** | **Room C（NINNO3 会議室）(B1F)** |
| **Topic** | **Technology-Enhanced Language Learning: Affect, Engagement and Feedback** |
| **Chair** | **Asst. Prof. Jeerapan Phomprasert, King Mongkut's University of Technology Thonburi (KMUTT), Thailand** |

| Time | Paper ID | Paper Detail |
|---|---|---|
| 15:45-16:05 | **Invited Talk (AE015)** | A Localized Mobile Game with Automated Feedback and Learning Analytics for Tourism English Learning<br>**Jeerapan Phomprasert,** King Mongkut's University of Technology Thonburi (KMUTT), Thailand<br><br>Tourism English is useful for learners in provincial communities because it helps them describe local attractions, give basic information, and communicate with visitors. However, many English learning materials are general and do not always connect with learners' local places. This paper reports the design and classroom pilot of Phetchabun Adventure, a localized mobile game for tourism English learning in Phetchabun Province, Thailand. The game uses local tourist attractions as the basis for short vocabulary, reading, listening, and sentence-level tasks. Learners move through story-based stages, answer questions, receive automated feedback, gain experience points, and collect stars. A researcher dashboard records progress, attempts, stage scores, and activity patterns. During implementation, the dashboard recorded 134 player accounts and 1,766 stage attempts. Complete matched pre-test, post-test, and satisfaction data were available from 100 learners. Therefore, learning outcome and perception results were based on the 100 matched cases, while the wider dashboard records were used only to describe system activity. The results showed higher post-test scores, positive satisfaction ratings, and learner comments about replaying stages, local content, visual design, and mobile access. The study offers a practical model for using localized mobile games, automated feedback, and learning analytics to support tourism English practice in provincial learning contexts. |
| 16:05-16:20 | **AE007** | Interview Anxiety in Metaverse: A Comparison Between Native and Local English Interviewers<br>**Wan Noor Farah Wan Shamsuddin,** Universiti Malaysia Pahang Al-Sultan Abdullah, Malaysia<br><br>This study investigates the anxiety exhibited by participants when they engaged in a virtual reality (VR) game set in a job interview setting. A virtual reality application called /spiːx/ was designed with two scenarios. One scenario involves a job interview with three non-player characters (NPCs) portrayed as native English interviewers, whereas the other involves three NPCs portrayed as local Malaysian speakers with local English accents. Forty-four (N = 44) university students were |

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| | | recruited to participate in the study and completed three rounds of VR treatment. Their interview anxiety was measured at the beginning of the study as a pre-test using the Measure of Anxiety in Selection Interview (MASI) and later measured again after the VR treatments to see any difference in the treatment. Then, they were required to complete an online survey adapted from Coppinger & Sheridan (2022) to report on their interview anxiety towards native and non-native English interviewers. Semi-structured interviews were also conducted to provide more depth in the study. The findings showed that participants reported lower interview anxiety with local Malaysian interviewers than with native English interviewers by 29%. The qualitative findings also found that they reported feeling more relaxed and more familiar with the accents of the local Malaysian interviewers. However, some participants also reported admiration for native English accents. All in all, this study provides insights into how cultural markers such as NPCs' accents, clothing, and organisational contexts are represented in VR applications. |
| 16:20-16:35 | **AE012-A** | Anxious but Engaged? A Mixed-Methods Study of Anxiety, Willingness to Communicate, and Engagement in Paid Online L3 Japanese Learning<br>**Chenrui Miao,** Curtin University, Australia<br><br>Paid online foreign language courses have become an increasingly important learning ecology, yet little is known about how learners' anxiety, willingness to communicate (WTC), and engagement interact in online third-language (L3) learning. Focusing on adult Chinese learners of L3 Japanese, this mixed-methods study examines why some anxious learners remain engaged whereas others withdraw from participation. The study adopted an explanatory sequential design. In the quantitative phase, data from 205 learners enrolled in paid online Japanese courses were analysed using fuzzy-set qualitative comparative analysis (fsQCA). Five conditions were examined: language apprehension, teacher–student interaction anxiety, fear of negative evaluation, WTC in meaning-focused activities, and WTC in form-focused activities, with learner engagement as the outcome. In the qualitative phase, seven representative learners were followed across a 13-session synchronous online Japanese course through classroom observation, homework records, and semi-structured interviews. The fsQCA results revealed two pathways to high engagement and four pathways to low engagement. High engagement was achieved both through a high-anxiety–high-WTC pathway and through a low-anxiety–high-WTC pathway, showing that anxiety does not necessarily suppress engagement when WTC remains strong. Conversely, low engagement was mainly associated with the absence of WTC, either combined with anxiety-driven withdrawal or decoupled from anxiety altogether. Qualitative findings further identified four learner types: sunk-cost-driven, affiliative-supportive, techno-pragmatic breakdown, and low-willingness disengagement. These cases showed that silence, typed responses, homework persistence, and selective withdrawal represented different forms of engagement rather than simple participation failure. The study contributes to online language learning research by demonstrating the configurational and asymmetric relationship among a |
| 16:35-16:50 | **AE028** | Mitigating AI Misuse in English Language Learning: A Cognitive Load Theory Framework for Academic Inquiry Writing<br>**Muhammad Ridhuan Tony Lim Bin Abdullah,** Universiti Teknologi PETRONAS, Malaysia<br><br>The rapid deployment of Generative Artificial Intelligence (GenAI) in higher education has triggered a paradigm shift from mere technology adoption to |

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| | | systemic pedagogical integration. However, unmitigated GenAI usage often creates a "black box" dilemma, resulting in algorithmic bias, cognitive atrophy, and "schema fraud" where students substitute AI output for genuine deep learning. This paper proposes a selective-use mitigation framework grounded in Cognitive Load Theory (CLT). We argue that while AI can safely offload extraneous cognitive tasks (such as mechanical formatting and grammar policing), it must not breach the "AI Red Line" that protects germane cognitive load (critical argument synthesis and ethical evaluation). This framework is operationally demonstrated within the context of tertiary Academic Writing and Professional Communication courses, shifting the focus of assessment from mechanical output generation to formative critical judgment. |
| 16:50-17:05 | **AE034** | Consent as the First Lesson: Personalized Vocabulary Learning Embedded in an Emotional-Support AI Companion for Student Users<br>**Akihiko SHIRAI,** Kaishi Innovation University / AICU Inc., Japan<br><br>Language-learning applications reach only students who choose to open them. We report a different placement: a spaced-repetition English vocabulary coach embedded inside a live emotional-support AI companion whose user base is predominantly students. Rather than asking learners to migrate to a dedicated tool, the coach meets them inside a daily conversational ritual they already maintain. Three design choices distinguish the system. First, enrollment is a consent event: the learner's stated goal ("reach TOEIC 600") is recorded in a consent ledger with an explicit lifecycle—grant, periodic re-confirmation, and withdrawal without justification—so that the intention itself is remembered and can be honorably abandoned. Second, study is a self-assessment batch drill with spaced repetition (an SM-2 style schedule) in which unknown words are "written out" by the learner rather than merely marked. Third, incorrect recall is affirmed rather than penalized, reframing forgetting as information about when to review. We describe the architecture and report data from an unsolicited live deployment reaching 1,000 users: 56 learners set a learning goal in conversation, 32 actively drilled, and 821 words were marked known against 79 written-out unknowns. A conversational invitation to enroll achieved a 54% affirmative-engagement rate. We discuss the ethical stance the design takes toward a student-heavy, minorinclusive audience—consent-first enrollment, comprehension accessibility, and withdrawal dignity—and outline planned work on personalizing the review schedule to individual forgetting curves. |
| 17:05-17:20 | **AE036** | When AI Gives IELTS Writing Feedback: Distinguishing Judgement Substitution from Judgement Development<br>**Yuan Zhang,** Taiyuan Institute of Technology, China<br><br>Generative AI can improve the surface quality of learner writing, but an improved text does not show how a learner reached a revised choice. This qualitative pilot investigated judgement episodes in private IELTS Writing Task 2 tutoring: bounded moments in which learners decide whether to accept, reject, adapt, question, or even defer an AI suggestion. Six learners preparing for a real IELTS examination produced an independent first draft, used generative-AI feedback in one recorded revision session, completed a stimulated-recall interview, and attempted a short no-AI transfer activity. Episodes were coded for trigger, feedback type, learner–AI judgement relation, semantic movement, and outcome. Cases demonstrate the framework's capacity to distinguish substitution, apprenticeship, and negotiation, as well as its commitment to leaving ambiguous cases unresolved when evidence is insufficient, a feature that tests the framework's interpretative limits. The study tested a preliminary |

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| | | translation device for distinguishing direct textual uptake from evidence that a learner can articulate and independently use a writing principle. |
| 17:20-17:35 | **AE037** | Evaluation of VR-Based English Presentation Training for STEM Majors with and without International Conference Experience<br>**Kenta Uekusa,** Shibaura Institute of Technology, Japan<br><br>English presentations at international conferences require not only language proficiency but also the ability to respond to questions under pressure. However, conventional practice methods, such as script memorization and video recording, often fail to recreate the tension and realism of actual presentation environments. This study investigated current English presentation practice among STEM students and evaluated an improved VR-based English presentation Q&A training system. First, a questionnaire survey was conducted with 34 science and engineering students to examine their English presentation practices and training needs. In addition, 10 students experienced a VR-based English presentation Q&A training system and completed questionnaires and interviews. The results showed that participants evaluated the VR training as more practical and engaging than conventional learning materials. In particular, the system was highly rated for its practicality, ease of use, and ability to support repeated practice. Furthermore, differences were observed between participants with and without international conference experience, suggesting that prior presentation experience influences learners' perceptions of VR-based training. However, issues related to VR discomfort and the limited realism of question-and-answer interactions were identified. These findings suggest that a VR-based presentation Q&A training system has the potential to provide a practical learning environment and that future systems should consider learners' prior presentation experience when designing training content. |
| 17:35-17:50 | **AE061** | Borobudur-Based Immersive Virtual Reality for Indonesian as a Foreign Language Learning: Effects on Listening Comprehension<br>**Aldi Dwi Saputra,** Universitas Sebelas Maret, Indonesia<br><br>Immersive virtual reality (IVR) provides new opportunities for foreign language learning by integrating auditory input with contextual visual and spatial information. This study investigates the effect of a Borobudur-based IVR virtual tour on the listening comprehension of students learning Indonesian as a foreign language. A quasi-experimental pretest-posttest control group design was conducted with 36 international students at Universitas Sebelas Maret, divided into an experimental group and a control group. The experimental group learned through an immersive virtual tour of Borobudur Temple using Meta Quest 3, while the control group received equivalent learning materials through two-dimensional audiovisual media. Both groups were assessed using a listening comprehension test and an audiovisual information reconstruction task. Data were analyzed using analysis of covariance with pretest scores as a covariate. The results showed that the IVR group achieved significantly higher posttest listening comprehension scores than the control group after controlling for initial ability. The findings indicate that integrating Indonesian language input with relevant visual, spatial, and cultural contexts through immersive virtual environments can enhance listening comprehension. This study highlights the potential of cultural heritage based virtual tours as contextual learning environments for Indonesian as a foreign language education. |
| 17:50-18:05 | **AE066** | Different Pieces, Better Picture: Combining Traditional Indices and Embedding-Derived Features for Readability Prediction with Machine Learning |

**En Yu York Wang,** University of North Dakota, United States

Machine learning provides a useful approach to readability prediction. It allows different types of textual features to be incorporated into predictive models. Traditional readability indices are commonly used as predictors but capture only a limited range of textual characteristics. This study examined whether embedding-derived clustering features provide complementary predictive information beyond traditional readability indices. A total of 1,620 English excerpts from the CommonLit Ease of Readability (CLEAR) corpus were analyzed. FastText word embeddings were grouped into 20 clusters using K-means, and each text was represented by the distribution of its words across these clusters. A linear support vector regression (SVR) model was evaluated using three feature sets: clustering features, traditional readability indices, and their combination. Ten-fold cross-validation showed that traditional readability indices performed slightly better than clustering features alone. However, the combined feature set achieved the best performance. These findings suggest that embedding-derived clustering features provide complementary information beyond traditional readability measures and may support more comprehensive machine learning approaches to readability prediction.

# Onsite Session 3

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| **Time** | **15:45-17:30 \| November 29, 2026 (Sun.)** |
| **Venue** | **Room A（NINNO3 会議室）(B1F)** |
| **Topic** | **AI-Enhanced Teaching, Assessment and Educator Development: AI Literacy, Ethics and Governance** |
| **Chair** | **Prof. Takashi IMAMURA, Niigata University, Japan** |

| Time | Paper ID | Paper Detail |
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| 15:45-16:00 | **AE017** | Scaffolding Educators' Opinion Formation through Dialogue with a Domain-Specific AI: Design and Preliminary Evaluation of an Interactive Medium<br>**YUTA SATO,** Digital Hollywood University, Japan<br><br>The use of AI in education is expanding rapidly, and educators—teachers, administrators, and staff in boards of education and private educational services—face daily decisions about whether and how to adopt new technologies. Under an overload of fragmented information, such decisions often become heteronomous, relying on external references rather than on one's own judgment. We argue that the essential difficulty is not the absence of a correct answer but the absence of a scaffold for thinking. This study designs and implements an interactive medium that supports educators in forming and articulating their own opinions through dialogue with AI, positioning AI not as a decision-maker but as a scaffold for the user's own thinking. The system features (1) a domain-specific Retrieval-Augmented Generation (RAG) mechanism referencing public educational documents, (2) multiple dialogue modes, and (3) a pathway from dialogue to opinion expression. In a preliminary evaluation with 13 participants who completed the protocol, dialogue with AI did not act uniformly on all users but was more likely to support opinion articulation among participants whose views were not yet fixed (negative correlation between prior opinion certainty and self-efficacy gain, rho=-0.42, p=0.032). For the domain-specific RAG, the difference in users' perceived evaluation did not reach significance, but the dialogue logs showed a clear difference in the grounding of responses in public documents. This study suggests the promise of treating AI as a scaffold to support educators' judgment formation, and the usefulness of integrating domain-specific knowledge. |
| 16:00-16:15 | **AE019** | AI-accelerated End-to-End Framework for Rapid Professional Upskilling<br>**Tam Nguyen,** Crew Scaler, United States<br><br>By 2030, 59 of every 100 workers will need reskilling or upskilling, yet closing a single identified skill gap through training still takes a median of roughly 15 calendar days per employee across industries, and about 26 days for data science, digital, and specialty IT skills. Most current frameworks accelerate single stages of upskilling programs and generally lack industry validation. We present an end-to-end framework that applies AI acceleration across five stages of knowledge acquisition, content development, content review and verification, |

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| | | teaching, and assessment development with a strong focus on both production and learning efficiency. Three strong external signals validate the framework: the US National Association of State Boards of Accountancy has reviewed and approved an upskilling program built on the framework for continuing-professional-education credits; 3 learners followed the program and passed the NVIDIA Certified Professional in Agentic AI exam in a significantly short amount of time, with 14 more in progress; the program's knowledge base supports complex downstream analysis such as the production of a robust 1,267 risk item dataset for managing multi-agent AI system risks. |
| 16:15-16:30 | **AE023** | IAm: A Conversational AI Instrument for Diagnosing Generative AI Literacy Among Engineering Faculty<br>**Gabriel Enrique Euan Valle,** Universidad Modelo, Mexico<br><br>Institutions are under increasing pressure to prepare faculty for generative artificial intelligence (AI), but most diagnostic tools rely on self-report surveys susceptible to social-desirability bias and coarse, single-score outputs. This paper describes IAm, a conversational AI tool that evaluates faculty AI literacy using a semi-structured chatbot interview of 10–15 minutes and a separate evidence-based coding process that scores 25 items across five dimensions of the Digital Education Council (DEC) AI Literacy Framework. We applied IAm to a sample of 46 engineering faculty members at a private Mexican university and validated its scoring through independent manual coding of a subsample of 10 participants. Agreement between human and bot was strong (Pearson r = 0.96 on the global score, ICC(2,1) = 0.89, and linear-weighted Cohen's kappa = 0.76 on a four-level classification), with a small, explainable negative bias in manual scores. Diagnostic results reveal a modal "functional-low" profile (43% of faculty), a consistent weakness in the technical understanding of generative AI (D1) across all proficiency bands, and no significant relationship between teaching experience and AI literacy (r = −0.27). We argue that the conversational-interview design, combined with quote-grounded coding, provides a scalable and less performative alternative to survey-based AI-literacy diagnostics and report the reliability evidence needed to support its use in institutional decision-making. |
| 16:30-16:45 | **AE029-A** | Knowing the Learner Matters: Teachers' Formative Assessment Practices and Acceptance of Automation<br>**SANTOSH KUMAR GUPTA,** University of Hyderabad, India<br><br>Automated Formative Assessment (AFA) has the potential to enhance current formative assessment and feedback at scale, but this use depends on teachers' practices and terms. This study adopted qualitative reflexive thematic analysis (RTA) of seventeen Telugu-medium government secondary school teachers in Rangareddy District, Telangana, recruited through convenience sampling, to understand how they practice feedback, what they know about learners and where that knowledge resides, and on what terms they would engage with this AFA. Using RTA, the author constructed five themes. Teachers running assessment and feedback using relational learner knowledge held in their memory rather than using any record; dealing with large size classrooms, they rationed that they self-triage rule and actively engineered the fairness which are fragile in nature; official assessment system depends only on marks while missing the child; whole learning of the learners absorbed by the school only where homes could offer none, limiting the potential that can technology make; and acceptance of AI was universal but sovereignty set through who holds the instrument. These findings indicate a need to design an AFA tool for low-resource settings and to advance a novel conceptual understanding of how learners' |

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| | | related data (LRD) can be integrated into assessment decision-making and feedback generation. |
| 16:45-17:00 | **AE058-A** | Enhancing Artificial Intelligence Literacy through Artificial Intelligence-Assisted Chinese Test Item Generation<br>**Yu-Chin Li,** Chung Yuan Christian University, Taiwan<br><br>Generative artificial intelligence (AI) can accelerate test-item writing, yet fluent output may conceal construct-irrelevant language, weak distractors, inaccurate content, and cultural bias. This practice-oriented study examined a standards-grounded AI-assisted Chinese test-item generation system implemented in a university course for prospective teachers of Chinese as a second language. Developed iteratively over nearly three years, the system integrates a domain knowledge base containing Test of Chinese as a Foreign Language (TOCFL) specifications, Taiwan Benchmarks for the Chinese Language (TBCL), graded vocabulary and grammar resources, item-writing principles, and teacher-developed examples. Its workflow combines retrieval-supported prompting with mandatory human review, revision, and justification. Seventy-seven students used the system and completed a 39-item, five-point Likert questionnaire measuring AI literacy, self-efficacy, technology acceptance, cognitive load, and perceived assessment fairness. All scales demonstrated high internal consistency (Cronbach's alpha = .90-.97). Students reported favorable technology acceptance (M = 4.11, SD = .82), AI literacy (M = 3.96, SD = .75), and self-efficacy (M = 3.95, SD = .84), while cognitive load was moderate to low (M = 2.86, SD = 1.03). Fairness perceptions were moderately positive (M = 3.49, SD = .79), with particularly strong endorsement of human checking. AI literacy and self-efficacy were strongly correlated with technology acceptance (r = .82 and .81, respectively; both p < .001). These findings suggest that AI-assisted item generation can function as professional learning when users must evaluate level alignment, validity, distractor plausibility, factual accuracy, cultural suitability, and fairness rather than accept generated content uncritically. The implementation of this research offers a feasible model for integrating AI literacy with language-assessment education. Future work should compare h |
| 17:00-17:15 | **AE081** | Development of a VR-Based Crime Prevention Training System Based on Existing Scenarios for Elementary School Teachers<br>**Yui YAMADA,** Takashi IMAMURA, Niigata University, Japan<br><br>Crime prevention trainings assuming the intrusion of suspicious persons are conducted in elementary schools nationwide in Japan. They are considered important for preparedness in emergencies. However, current problems include the possibility of monotony due to continuous implementation and difficulties in responding to unexpected situations. Therefore, this study focuses on VR, which can recreate various situations in an artificial reality space, with the aim of developing a crime prevention training system that allows participants to experience various scenarios of dealing with suspicious persons. In a previous experiment, we built a 3D model of an elementary school and a VR system that lets you explore inside the model, and we confirmed that the VR environment feels very realistic and has a low chance of causing motion sickness. In this report, based on that basic system, we talk about building a security training system based on an actual security training scenario, and we also discuss future experimental plans for this system. |
| 17:15-17:30 | **AE035-A** | Beyond the Score: Teachers' Use of Multidimensional Learner-Related Data in Formative Assessment and Feedback<br>**Sanjeev Chauhan,** University of Hyderabad, India |

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| | | The objective of the study is to explore the understanding and use of four broader dimensions, such as cognitive, affective, psychomotor, and social learner-related data (LRD) in formative assessment and feedback. Using a cross-sectional, convergent mixed-methods survey design, data were collected from the 31 government secondary school teachers in the Rangareddy district of Telangana state. The findings revealed that they attended to a broad multidimensional range of LRD in formative assessment, in which marks and scores had the least preference rather than a central position, and no single dimension emerged as dominant. Teachers also revealed that learners' affective readiness is a precondition for both assessment and feedback, and that feedback first repairs confidence rather than correcting the content. Findings indicate that teachers' knowledge on LRDs has more than what the current study designed and captures, offering teachers a grounded foundation for designing richer formative assessment and feedback practices. |

# Poster Display

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| **Time** | **13:30-18:00 \| November 29, 2026 (Sun.)** |
| **Venue** | **Room C（NINNO3 会議室）(B1F)** |

| Time | Paper ID | Paper Detail |
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| 13:30-18:00 | **AE071** | Diagnosing School Management Literacy for Digitally Transformed Schools: A Five-Component Framework for Pre-Service Teachers in Kazakhstan<br>**Aida Yertileuova,** Yessenov University, Kazakhstan<br><br>Teacher preparation for digitally evolving schools increasingly requires competencies that extend beyond classroom instruction and routine technology use. Future teachers are also expected to understand how schools organize information, coordinate professional activities, support collective decision-making, and respond to managerial challenges. This study examines the baseline level of school management literacy among pre-service teachers in Kazakhstan through a five-component diagnostic framework encompassing motivational-value, cognitive, activity-based, digital-information, and reflective dimensions. The diagnostic phase involved 236 students from two universities, including 120 participants in the experimental group and 116 in the control group, prior to the implementation of any formative intervention. The initial distributions were highly comparable across the two groups. In the experimental group, 17.7% of participants demonstrated a high level of school management literacy, 44.8% a medium level, and 37.5% a low level; the corresponding figures in the control group were 17.0%, 45.1%, and 37.9%. Component-level analysis indicated that activity-based readiness, particularly in relation to organization, communication, and decision-making, represented one of the most evident areas for further development. The diagnostic findings also suggested that students were generally more confident in using digital technologies for learning purposes than in applying digital tools to monitoring, educational analytics, information processing, and school-level management tasks. The proposed framework provides a structured basis for identifying developmental needs in initial teacher education and for designing practice-oriented learning experiences that connect digital competence with organizational and managerial readiness. |

# Online Session 1

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| Time | 14:00-17:15 \| November 29, 2026 (Sun.) |
| Venue | Zoom Room: 827 1712 6676 |
| Topic | Emerging Technologies in Education and Intelligent Systems: AI, Immersive Learning, and Computing Infrastructure |
| Chair | Asst. Prof. Mark Anthony D. Elepaño, National University, Philippines, NU Lipa, Philippines |

| Time | Paper ID | Paper Detail |
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| 14:00-14:15 | **AE306** | Virturalized RDMA for Cloud Native Networks: DPU Offloading and Performance Evaluation<br>**Han Fei,** Tencent Cloud Computing (Beijing) Co., Ltd., China<br><br>Traditional TCP/IP networks suffer from high transmission overhead, elevated CPU utilization, and low bandwidth efficiency, while Underlay RDMA incurs prohibitive deployment costs and exhibits poor adaptability to cloud-native environments. To address these fundamental challenges, this paper conducts systematic research and comprehensive engineering implementation of virtualized RDMA technology in cloud computing scenarios. We first elaborate the connotation and evolution trend of virtualized RDMA, and comprehensively compare its fundamental differences with Underlay RDMA across network architecture, deployment cost, operational elasticity, and performance characteristics. Second, based on DPU hardware offloading and VXLAN tunnel encapsulation, we analyze the implementation principle and key technical path of virtualized RDMA, including packet processing pipelines, congestion control mechanisms, and RDMA semantics preservation over overlay tunnels. Third, we evaluate and compare the productization capabilities and deployment maturity of self-developed DPU-based virtualized RDMA solutions across mainstream cloud vendors, examining feature parity and operational complexity. Finally, we conduct extensive experiments in three representative scenarios: general computing, cloud HPC, and AI heterogeneous inference. The results demonstrate that virtualized RDMA achieves 2.6x network performance improvement over traditional TCP/IP. In cloud HPC scenarios, it attains performance equivalent to Underlay RDMA while reducing total cluster cost by 16.9% over three years. In AI inference with Prefill-Decode (PD) disaggregation architecture, virtualized RDMA delivers 31.0% end-to-end performance improvement and 33.3% infrastructure cost reduction. This study verifies that virtualized RDMA can provide high performance approaching physical RDMA while maintaining full cloud-native elasticity and multi-tenancy support, offering both theoretical foundations and practical engineering references for the evolution of high-performance networks in modern cloud data centers. |
| 14:15-14:30 | **AE327** | Collaborative Filtering with Neighbor-Aware Embedding vectors Learning Using Historical Interaction Data<br>**YIDAN ZHANG,** Chulalongkorn University, Thailand |

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| | | Collaborative Filtering (CF) is one of the most effective approaches for recommendation systems. However, existing CF-based methods still suffer from these limitations. Most approaches learn user and item representations by optimizing a recommendation objective rather than explicitly defining collaborative relationships in the model. Consequently, these models do not explicitly incorporate the representations of similar users and items identified from historical rating interactions. In contrast, methods that explicitly model collaborative neighbor relations often rely solely on statistical similarity measures, limiting their ability to capture complex nonlinear relationships between users and items. Therefore, we propose a neighbor-aware collaborative filtering framework that incorporates similarity-selected user and item neighbour embeddings into a neural model for nonlinear rating prediction. Experiments compare the proposed framework with MF, NCF, and a non-neighbor SASRec-NCF model across benchmark recommendation datasets and examine the effects of embedding dimension and neighborhood size. |
| 14:30-14:45 | **AE001** | Exploration of Programming Technology Talent Cultivation Model Based on a Three-Level Competition System<br>**Jing Wang,** Information Engineering University, China<br><br>Practical teaching serves as a crucial approach to cultivating high-quality programming talents, representing an effective process for the comprehensive application of programming knowledge and the deepening of theoretical understanding. Aiming to address the limitations of existing programming practical teaching, which is often confined to textbook cases and lacks diversity, authenticity, and competitiveness, this paper proposes a three-tiered competition-based training system consisting of "One School, One Competition," "Three Clubs, One Studio," and "Two Competitions Per Year." Practice has verified that this system effectively improves students' practical operation and problem-solving abilities. |
| 14:45-15:00 | **AE018** | Beyond Generic AI Ethics: A Theory-Integrated and Culturally Contextualized Scale for Generative AI Academic Integrity in Philippine Higher Education<br>**Mark Anthony D. Elepaño,** National University, Philippines, NU Lipa, Philippines<br><br>The rapid integration of generative artificial intelligence (GenAI) in higher education has outpaced the development of context-sensitive ethical frameworks and measurement tools. Existing instruments largely assume that academic integrity constructs are stable and universally applicable, overlooking the influence of institutional norms and cultural contexts, particularly in developing higher education systems, such as the Philippines. This study developed and validated a culturally contextualized, theory-integrated questionnaire that reconceptualizes GenAI ethics as a multidimensional and context-dependent construct in higher education. Unlike purely deductive scale development approaches, this study integrated prior qualitative findings with theory-driven item construction to enhance its contextual validity and cultural sensitivity. The instrument covered six constructs: GenAI Attitudes, Ethical Use, Awareness of Misuse Risks, Academic Writing Support, Disclosure and Transparency, and Institutional Support and Training. Data collected from undergraduate students were analyzed using reliability testing, exploratory factor analysis (EFA), and confirmatory factor analysis (CFA). The results demonstrated high internal consistency across the scales and initially supported the multidimensional structure of GenAI ethics and academic integrity. However, factor analyses revealed uneven construct stability, particularly in disclosure and perceived academic utility, showing that some dimensions are context-sensitive |

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| | | rather than consistently structured across settings. Institutional support also failed to conform to a unidimensional structure, suggesting that students experience governance, training, and policy clarity as fragmented rather than unified processes. These findings challenge the assumption that GenAI ethics can be measured using fixed, context-independent constructs and highlight the need for culturally grounded and institutionally informed measurement models in |
| 15:00-15:15 | **AE079** | Attached to AI or Just a Tool? Validaitng AI Attachment among Education and Science Students in Southwestern Philippines<br>**Alexandhrea Hiedie Dumagay,** Western Mindanao State University, Philippines<br><br>As generative artificial intelligence (GenAI) becomes increasingly integrated into higher education, students may engage with these systems not only functionally but also relationally. This study examined Emotional Closeness, Social Substitution, and Normative Regard as dimensions of AI attachment among Education and Science students in the Zamboanga Peninsula, Philippines. The measurement model demonstrated satisfactory reliability and validity ($\alpha$ = .869–.941; $\rho$A = .871 to .942; $\rho$C = .905–.955; AVE = .657–.809; HTMT < .85). Measurement Invariance of Composite Models (MICOM) supported invariance for Emotional Closeness and Normative Regard, but not Social Substitution (p = .021); therefore, only the former two were compared across programs. No significant program differences emerged in Emotional Closeness (p = .686) or Normative Regard (p = .287), and no significant gender differences were found (p > .05). Normative Regard showed the highest means ($\mu$ = 3.15, Education; $\mu$ = 3.06, Science), followed by Emotional Closeness, while Social Substitution showed the lowest descriptive means. These findings provide initial psychometric evidence for the AI Attachment Scale in the Philippine higher education context and suggest that students may relate to AI beyond its functional use. The findings further highlight the importance of relational and ethical AI literacy in supporting responsible, human-centered AI integration aligned with Education 5.0 and may inform discussions concerning SDG 4 (Quality Education). |
| 15:15-15:30 | **AE093** | Design and Evaluation of a Tangible Virtual Reality System for Disaster Education<br>**Tsutomu Iwasaki,** N-BARCO, Japan<br><br>This study developed a flood-disaster learning environment that integrates multiple tangible tables with a shared virtual reality (VR) space and evaluated learners' subjective responses. Learners place disaster-prevention equipment in a virtual campus by manipulating physical objects and can review the results using Windows PCs or VR head-mounted displays. Twenty-four undergraduate students participated in the evaluation, and 23 valid responses were analyzed. The mean System Usability Scale (SUS) score was 66.52. For the four-point items developed for this study, positive responses were significantly more frequent for items such as interest in the system, usefulness as disaster education material, and cooperation within groups. In contrast, no significant imbalance between positive and negative responses was found for the items concerning awareness of flood mechanisms and relationships with adjacent areas. Open-ended responses expressed interest in the material and its usefulness, alongside requests to improve usability and flood representations. Learners' subjective evaluations showed positive responses regarding usefulness as disaster education material and indicated a need to improve usability and support for activities focusing on relationships among areas. |

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| 15:30-15:45 | **AE016** | Evaluating Large Language Models for Grading Novice Python Code: Error Taxonomy, Scoring, and Feedback<br>**Deyu Yi,** Macau University of Science and Technology, Macau SAR, China<br><br>Large language models (LLMs) are increasingly used to support educational assessment, but their practical role in novice programming grading remains uncertain. This paper evaluates five LLMs—GPT, Claude, Doubao, DeepSeek, and Gemini—for grading Python code written by beginner-level social science students. The dataset contains 52 submissions for one beginner Python task involving loop control, string handling, condition checking, vowel counting, and output formatting. The study compares the models in error-taxonomy generation, fixed-rubric scoring, short feedback, grading time, and access conditions. The expert human baseline was provided by an experienced teacher, who graded all 52 submissions using the same 10-point rubric. The results show that Doubao achieved the same MAE as GPT, produced an average score close to the expert human baseline, and generated fine-grained diagnostic categories. Representative case analysis further shows that Doubao can correctly identify severe structural-error submissions, although it may over-penalize some functional but non-standard novice code. The findings suggest that LLMs are most suitable for first-pass diagnostic grading rather than independent final grading. Among the compared models, Doubao shows the strongest practical adoption value for accessible formative code assessment because it combines close human-baseline alignment, detailed diagnostic output, and strong access feasibility, while still requiring teacher review for final grading decisions. |
| 15:45-16:00 | **AE094** | Validated Scenarios for Automated Feedback in an Inclusive Virtual Reality Training Environment for Caregivers of Children with Autism<br>**Passent Elkafrawy,** Effat University, Saudi Arabia<br><br>Caregivers are the main everyday teachers of young children with autism spectrum disorder (ASD), yet access to evidence-based caregiver training is limited by cost, specialist shortages, and cultural and language barriers. Immersive virtual reality (VR) with automated assessment and feedback can offer scalable, repeatable practice, but automated feedback is only as trustworthy as the content it evaluates learners against. This paper presents a library of ten VR training scenarios for caregivers of children with ASD aged 2--8 and proposes a protocol, for the next phase of the project, to establish their content validity, so that they can serve as the expert-validated reference for the system's automated feedback engine. Building on a Meta Quest prototype grounded in the antecedent--behavior--consequence (ABC) model of applied behavior analysis, the scenarios target social orienting, transitions, requesting, joint attention, turn-taking, imitation, following instructions, greetings, asking for help and shared book reading. Each is specified as an eight-step ABC sequence that doubles as a machine-readable rule base for feedback. The scenarios follow neurodiversity-affirming principles and are culturally adapted to Saudi family settings. In the proposed validation, a panel of at least six experts will rate each scenario and step over two modified-Delphi rounds, and content validity indices, modified kappa and intraclass correlation will be computed. The work lays the foundation for a validated content layer for trustworthy automated feedback and a replicable procedure for inclusive, culturally responsive VR training tools. |
| 16:00-16:15 | **AE067** | Back to Basics: Effects of Low AI-dependent Learning Strategies on Civil Engineering Students' Academic Performance in HEI's Intervention Courses<br>**Maria Theresa Bolo Kalaw,** National University, Philippines, Lipa, Philippines |

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| | | This study examined how using learning strategies with reduced reliance on AI affected the academic performance and experiences of civil engineering students enrolled in intervention courses in Calculus, Physics, and Chemistry at a university in Lipa City, Philippines. The researchers used a phenomenological action research approach and introduced "Back to Basics" methods, focusing on literature-based instruction, handwritten problem solving, Socratic questioning, concept mapping, guided inquiry, peer collaboration, oral defense, and careful monitoring of AI tool use. They collected quantitative data from pre-test and post-test scores, and qualitative data from focus group discussions, classroom observations, and reflective journals. The Wilcoxon Signed-Rank Test showed significant improvements in all three courses: Calculus scores rose from 19.3 to 28.5, Physics from 19.5 to 27.3, and Chemistry from 16.9 to 22.5, with all p-values below .001. Thematic analysis found that students saw these courses as important foundations for advanced learning, appreciated clear and practical teaching, used AI mainly as a limited aid, became more independent when AI use was reduced, benefited from working with peers, and faced some challenges with pacing and implementation. The results suggest that structured strategies that rely less on AI can improve academic performance, understanding of concepts, critical thinking, and independent learning in basic engineering courses. The study recommends continuing scaffolded instruction, setting clear policies for responsible AI use, and improving course pacing to help students succeed in higher education intervention programs. |
| 16:15-16:30 | **AE031** | Technology Supported Outcome Aligned Teaching of Probability and Statistics for Food Technology Students under AUN QA<br>**Hoan Van Tran,** Lac Hong University, Việt Nam<br><br>Outcome-based curricula often specify learning outcomes without showing how technology-supported tasks generate direct evidence of attainment. This conceptual instructional design study develops an implementable framework for teaching Probability and Statistics to Food Technology students under AUN-QA. Using course-document analysis, a focused integrative review, and backward design, the framework combines two measures: a spreadsheet-supported experiential lesson on incoming-lot screening and a digitally documented project on net-content performance after production-line recalibration. Each measure specifies data, instructional steps, expected statistical results, student products, and criterion-level evidence for five course learning outcomes. A lightweight technology layer links simulation, collaborative version histories, source appraisal, individual defence, rubric scores, and a course-attainment dashboard. Because classroom data have not yet been collected, the study claims design coherence and feasibility rather than intervention effectiveness. The resulting design is immediately usable and provides a transparent basis for later evaluation of learning gains, scoring reliability, workload, and transfer to professional decisions. |
| 16:30-16:45 | **AE072** | Human-Centered Instructional Design for Generative AI-Supported Project-Based Primary Mathematics<br>**Hoan Van Tran,** Lac Hong University, Việt Nam<br><br>Generative artificial intelligence (GenAI) can expand teachers' capacity to create explanations, examples, feedback, and differentiated materials, but in primary mathematics it can also replace the reasoning that instruction is intended to develop. This paper presents an evidence-informed instructional design framework for integrating GenAI with project-based learning (PjBL) while preserving learners' mathematical agency. A theory-informed design synthesis connects constructive alignment, task-centered instruction, cognitive load and |

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| | | scaffolding, PjBL evidence, human-centered AI, AI literacy, and recent GenAI studies in primary mathematics. The synthesis yields seven principles: alignment before automation; mathematical necessity; progressive scaffolding and fading; bounded AI roles; verification as a learning activity; teacher orchestration and equitable differentiation; and responsible, age-appropriate AI literacy. These principles are operationalized in a six-phase design cycle and illustrated through a Grade 5 percentage and pricing project. Design conjectures link framework features to observable processes including self-explanation, error detection, and critical evaluation of AI output. The framework is a testable design proposition, not an effectiveness claim, and specifies a staged agenda for classroom validation. |
| 16:45-17:00 | **AE085** | From Curiosity to Agency: A Conceptual Framework for AI-Supported Playful Computational Thinking and Human Development<br>**Enrique Vázquez-Uscanga,** Universidad Alberto Hurtado, Chile<br><br>Artificial Intelligence (AI) is increasingly shaping how children and adolescents learn, solve problems, seek information, and regulate their learning. While research has extensively examined computational thinking, socioemotional skills, and self-regulated learning, these constructs are often investigated independently, limiting our understanding of how they jointly contribute to learner development in AI-enabled environments. Recent educational challenges require moving beyond cognitive-centered perspectives toward more holistic models that account for motivation, persistence, creativity, and agency. This paper proposes a conceptual framework that integrates curiosity, creativity, grit, growth mindset, critical thinking, computational thinking, and Self-Regulated Learning (SRL) within AI-supported and play-based learning environments. The framework conceptualizes curiosity as a driver of exploration, creativity as a mechanism for generating novel ideas and solutions, computational thinking as a structured problem-solving process, and grit as the factor sustaining engagement during productive struggle. Growth mindset shapes learners' responses to challenge and failure, while critical thinking regulates evaluation and reflection. These dimensions converge through SRL, which coordinates planning, monitoring, and reflection processes. Behavioral traces generated in AI-supported learning environments are proposed as observable indicators of these processes, enabling a shift from self-reported measures toward dynamic and process-oriented models of learning. This framework moves beyond cognitive views of computational thinking by conceptualizing learning as an AI-supported, playful, self-regulated, and socioemotionally driven process that contributes to learner agency and human development. The framework offers implications for Artificial Intelligence in Education, Learning Sciences, and future empirical studies on children's development in AI-enabled environments. |
| 17:00-17:15 | **AE077** | The Cognitive Impact of Augmented Reality Picture Books on Young Children: A Quasi-Experimental Study on Interest, Cognitive Load, and Technology Acceptance<br>**Yizhuo Zhang,** The University of Hong Kong, Hong Kong, China<br><br>With the rapid advancement of augmented reality (AR) technology, AR picture books have emerged as a novel reading medium that integrates virtual content with physical books, offering children an immersive "mixed-reality" reading experience. However, the cognitive and educational effects of this emerging medium on young children remain inconclusive. This study developed an original picture book and transformed it into both paper-based and AR versions (with interactive 3D scenes, animations, and auditory feedback) to |

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| | | investigate the effects of AR picture books on 5-7-year-old children's reading interest/motivation, cognitive load, and technology acceptance. A quasi-experimental between-subjects design was employed, with 80 children randomly assigned to either the AR group (*n* = 40) or the paper-based picture book group (*n* = 40). Data were collected using the Intrinsic Motivation Inventory (Interest/Enjoyment subscale), the Cognitive Load Scale (Mental Load and Mental Effort dimensions), and the Technology Acceptance Scale (Perceived Usefulness, Perceived Ease of Use, Attitude, and Behavioral Intention), with all questionnaires administered with teacher/parent assistance to ensure comprehension. The results revealed a dual-edged effect: the AR group demonstrated significantly higher reading interest and motivation (M = 44.55 vs. 39.68, *p* < .001, $\eta^2$ = .215) and remarkably high technology acceptance (M = 53.98, *p* < .001, Cohen's *d* = 5.02), but also reported significantly higher cognitive load (M = 18.18 vs. 11.63, *p* < .001, $\eta^2$ = .371) compared to the paper-based group. These findings remained robust after controlling for age via ANCOVA (motivation: partial $\eta^2$ = .215; cognitive load: partial $\eta^2$ = .384). Exploratory correlational analyses revealed no significant within-group associations among technology acceptance, cognitive load, and motivation (*r* = –.246 to –.008, *p* > .05), suggesting that the significant full-sample correlation bet |

# Delegates List

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| 1 | **Tul Phomprasert,** Alprasoft-Corp, Thailand |
| 2 | **Muhammad Nur Adilin Mohd Anuardi,** Hiroshima University, Japan |
| 3 | **Andrew Enomoto,** Bunkyo University, Japan |
| 4 | **Youngyoon Cha,** Daegu University, Republic of Korea |
| 5 | **Suhyeon Kim,** Daegu University, Republic of Korea |
| 6 | **Kangwoo Choi,** Daegu University, Republic of Korea |

# NIIGATA NATURE & SCENIC DAY TOUR

## Discover the Beauty of Niigata in Late Autumn & Early Winter

Experience the breathtaking natural beauty of Niigata as the landscape transitions from late autumn to early winter. This one-day private tour takes you from serene beech forests to dramatic mountain gorges and a relaxing traditional hot spring town.





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| 🗺️ ROUTE A — SCENIC MOUNTAIN ESCAPE | |
| 08:00<br>NINNO3 Conference Room (ニーノスリー会議室) | 10:00<br>🌿 Bijinbayashi Forest |
| 11:30<br>⛰️ Kiyotsu Gorge & Kiyotsu Gorge Tunnel | 13:00<br>🍜 Local Niigata Lunch |
| 14:30<br>♨️ Matsunoyama Onsen | 15:30<br>Return to NINNO3 Conference Room (ニーノスリー会議室) |
| 17:30–18:00<br>NINNO3 Conference Room (ニーノスリー会議室) | |
| Included Service | Professional English-speaking tour guide, round-trip air-conditioned coach bus, ticket of Kiyotsu Gorge & Kiyotsu Gorge Tunnel, mineral Bottle Water |
| Self-Paid Expenses (Not Included) | Lunch, snacks, personal shopping, hot spring ticket |
| Reminder | ※ Please arrive at NINNO3 Conference Room (ニーノスリー会議室) before 8:00 a.m. on November 30, 2026. We will depart promptly at 8:00 a.m. Latecomers or no-shows can't be refunded.<br>Meeting Point:<br>NINNO3 Conference Room (ニーノスリー会議室)<br>B1F, Plaka 3, 1-1 Tenjin, Chuo-ku, Niigata-shi, Niigata 950-0917, Japan<br>**※ If you have a cold or are feeling unwell, it is recommended not to attempt to soak in the hot spring. Before soaking, you should fully assess your own health condition. People with chronic conditions such as high blood pressure or heart disease should consult a doctor before deciding whether it is suitable for them to use the hot spring. Pregnant women, the elderly, and those with weak constitutions should also take extra caution to avoid discomfort caused by excessive heat or dehydration.**<br>※ Please take good care of your valuables at any time during the tour. The conference organizer does not assume any responsibility for the loss of personal belongings of the participants during the tour. |
| Attention | ❄️ WEATHER-DEPENDENT ITINERARY<br>Please note: The final itinerary is subject to weather and road conditions.<br>As this tour takes place in late November, the mountainous areas of Niigata may experience: |

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| | Rain or sleet<br>Early snowfall<br>Snow-covered or icy roads<br>Fog and reduced visibility<br><br>For your comfort and safety, the final route will be confirmed based on the latest weather forecast and road conditions.<br><br>🌨️ If the weather or mountain road conditions are unfavorable:<br>Route A will be replaced by Route B, a safer and more accessible coastal and cultural itinerary.<br><br>🌊 **ROUTE B — COASTAL & CULTURAL ESCAPE**<br>**Niigata City**<br>⛩️ **Yahiko Shrine**<br>🦀 **Teradomari Seafood Market**<br>🌊 **Sea of Japan Coast**<br>♨️ **Iwamuro Onsen**<br>**Niigata City**<br><br>Enjoy a relaxing alternative route featuring a historic shrine, fresh local seafood, dramatic coastal scenery, and a traditional hot spring experience.<br>**The final route will be determined according to the actual weather and road conditions on the day of the tour.** |

# NOTE