2024 13th International Conference on Educational and Information Technology (ICEIT 2024)

Workshop: 2024 the 4th International Conference on Artificial Intelligence in Education (ICAIE 2024)

ꜱꜱꜱ   **March 22-24, 2024 | Chengdu, China**

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Hosted by

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►Welcome Message

2024 13th International Conference on Educational and Information Technology (ICEIT 2024) and its workshop 2024 the 4th International Conference on Artificial Intelligence in Education (ICAIE 2024) will take place from March 22 to 24, 2024, in Chengdu, China.

Educational and Information Technology encompasses the study, development, and implementation of innovative technological solutions to enhance teaching and learning processes. Over the years, this field has witnessed significant growth and transformation, driven by advances in digital technology and a growing recognition of the critical role technology plays in education.

This conference provides opportunities for the different areas Delegates to exchange new ideas and application experiences face to face, to establish business or research relations and to find global partners for future collaboration. We hope that the conference results constituted significant contribution to the knowledge in these up-to-date scientific field.

ICEIT & ICAIE 2024 includes keynote speeches from Prof. Yang Xiao, The University of Alabama, USA; Prof. James Tin-Yau KWOK, Hong Kong University of Science and Technology and Prof. Huan Li, Southwest University, China, invited speeches from Assoc. Prof. Suraya Masrom, Universiti Teknologi MARA, Malaysia; Prof. Manolis Vavalis, University of Thessaly & Charalampos Peteinarelis, Greece and Prof. Anand Nayyar, Duy Tan University, Vietnam, and 11 parallel technical sessions.

The chairman and conference technical members played a great role in conducting the program of the conference and on behalf of the conference committee, we would like to express sincere thanks for your long-term support and help on our work. We were grateful for the reviewers, who had also been very helpful in efficiently reviewing the manuscripts and made valuable suggestions for the authors to improve their work. At the same time, we also extended our heartfelt thanks to the understanding and support of every author.

We sincerely hope that all authors and attendees derive valuable insights and enjoy the presentations and personal interactions throughout the conference. We welcome your suggestions and comments, as they are instrumental in enhancing the organization and quality of future conferences. Your input is greatly appreciated!

We wish you an enriching, stimulating, and enjoyable week of discovery, and looking forward to meeting you again in next year!

ICEIT & ICAIE 2024 Conference Committees

►Guideline

For Onsite Participants

Time Zone
➢ Chengdu standard time: UTC+8

Conference Venue
➢ 成都望江宾馆 (Wangjiang Hotel)

地址：中国四川省成都市锦江区下沙河铺街 42 号

No.42 Xiashahepu Street, Jinjiang District, Chengdu, Sichuan, China

预订促销代码 (Promo Code): ICEIT　预订电话 (Reservation Call): 028-84090060

For Presentation
➢ The duration of oral presentation slot is 15 minutes (including 2-3 minutes Q&A).
➢ Your punctual arrival and active involvement in each session will be highly appreciated.
➢ Get your presentation PPT or PDF files prepared and backed up.
➢ The regular oral presentation time arrangement is for reference only. In case any absence or some presentations are less than 15 minutes, please join your session earlier.
➢ A best presentation will be selected from each session which will be announced and awarded a best presentation certificate.

Attention
➢ For security purpose, all participants are required to wear name badge to all sessions and social function. Entrance into sessions is restricted to registered delegates only.
➢ For your personal and property safety, please take care of your belongings in public area. Conference does not assume any responsibility for loss of personal belongings of participants.

Emergency Numbers

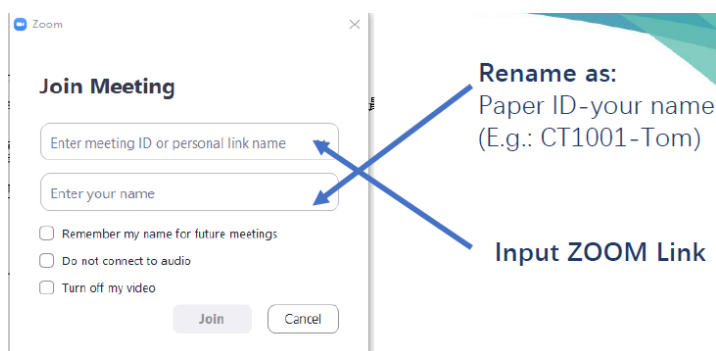| Medical Emergency: 120	Police: 110	Fire: 119

►Guideline

For Online Participants

Time Zone

➢ Chengdu standard time: UTC+8

Platform: ZOOM

➢ For general users, Zoom Download: https://zoom.us/
➢ For authors in China: Zoom Download: https://zoom.com.cn/download
➢ Please unmute audio and start video during your presentation.
➢ Use headset with microphone or earphone with microphone.

➢ Set up your Name.
   Authors: Paper ID-Name / E1001-Jimmy Smith
   Listener: Listener- Name / Listener- Jimmy Smith
   Keynote Speaker: Keynote-Name / Keynote- Jimmy Smith
   Committee Member: Committee-Name / Committee- Jimmy Smith

Conference Recording

➢ The whole conference will be recorded. We appreciate your proper behavior and appearance.

►Conference Schedule Overview

March 22, 2024 / UTC+8

Onsite Activity		
Time	**Schedule**	**Venue**
10:00-17:00	Registration & Sign-in & Collecting Materials	望江宾馆-望江会馆大厅 地址：中国四川省成都市锦江区下沙河铺街 42 号 No.42 Xiashahepu Street, Jinjiang District, Chengdu, Sichuan, China

Online Test ZOOM link: https://us02web.zoom.us/j/81518313078 Password: 032224	
10:00-12:00	**Online Speakers & Online Session Chairs & Committee Members**
	Online Paper Presentation Test E3169, E4234, E3173, E3134, E3127, E4221, E3189 E3157, E3194, E1067, E1050, E3184, E3170, E3190 E4207, E4230, E3204, E3199, E7004, E1063, E7002, E1006, E3181 E3158, E3147, E1080, E3133, E1107, E1001, E1111, E7008, E1014 E3156, E1099-A, E1084, E1004, E504, E4224, E1009, E1057, E3124, E3119 E4236, E3136, E3155, E3198, E3197, E503, E1028, E4233, E1085, E1090, E3175

March 23, 2024 / UTC+8

Time	Arrangement 圣淘沙岛厅 / Fourth floor
8:00-9:00	**Onsite Conference Sign-in**
	Host: Prof. Jining Han, Southwest University, China Zoom link: https://us02web.zoom.us/j/81518313078 Password: 032224
9:00-9:05	**Welcome Message** Prof. Yun Li, Sichuan University, China
9:05-9:10	**Opening Remarks:** Prof. Michele Della Ventura, Music Academy 'Studio Musica', Italy
9:10-9:55	**Keynote Speaker I – Onsite Talk** Prof. Yang Xiao, The University of Alabama, USA -- Speech Title: Personal Thoughts on Education
9:55-10:40	**Keynote Speaker II - Onsite Talk** Prof. Huan Li, Southwest University, China -- Speech Title: Identification and Intervention of Students with Dyslexia Supported by Educational Technology
10:40-11:10	***Group Photo & Coffee Break***
11:10-11:55	**Keynote Speaker III – Online Talk** Prof. James Tin-Yau KWOK, Hong Kong University of Science and Technology -- Speech Title: Enhancing Language Models through Improved Pre-Training and Fine-Tuning
12:00-13:30	***Lunch & Break - 望江会馆普吉岛餐厅 (First floor)***

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Onsite Sessions - Fourth floor	
13:30-15:15 圣淘沙岛厅	**Session 1 - Educational Data Mining and Models for Data Processing** **Session Chair: Dr. Hui-Ngo GOH, Multimedia University, Malaysia** E1093, E1110, E1020, E3195, E1112, E1045, E1054
13:30-15:15 吉打厅	**Session 2 - Educational Innovation and Technology Application in Education** **Session Chair: Assoc. Prof. Mustafa Ozguven, Xi'an Jiaotong-Liverpool University, China** E7007-A, E1055, E3183, E3154, E1091, E1032, E7001
15:15-15:35	*Coffee & Break*
15:35-17:20 圣淘沙岛厅	**Session 3 - Artificial Intelligence in Education and Personalized Teaching** **Session Chair: Prof. Jining Han, Southwest University, China** E3203, E507-A, E515, E1064, E1044, E513, E3153
15:35-17:20 吉打厅	**Session 4 - Blended Learning and Digital Learning** **Session Chair: Asst. Prof. Anisa Vahed, Xi'an Jiaotong-Liverpool University, China** E3165, E1051, E1022, E1106, E7006-A, E4226, E509
17:30-18:15 圣淘沙岛厅	**Poster Session - Modern Educational Technology and Educational Innovation** **Session Chair: Prof. Jining Han, Southwest University, China** E3182, E1097, E1113, E3146, E3118, E3179, E3191, E3186, E3117
18:00-19:30	*Dinner*

March 24, 2024 / UTC+8

Online Sessions / Password: 032224	
9:30-11:35	**Online Session A - Virtual Learning Environment and Game-Based Learning** **Zoom link: https://us02web.zoom.us/j/89827262038** **Session Chair: Asst. Prof. Yuhua Deng, Hunan Institute of Technology, China** **Invited Speaker: Assoc. Prof. Suraya Masrom, Universiti Teknologi MARA, Malaysia** E3169, E4234, E3173, E3134, E3127, E4221, E3189

9:30-11:35	**Online Session B- Virtual Learning Environment and Game-Based Learning** **Zoom link: https://us02web.zoom.us/j/81518313078** **Session Chair & Invited Speaker: Prof. Anand Nayyar, Duy Tan University, Vietnam** E3157, E3194, E1067, E1050, E3184, E3170, E3190

Online Sessions / Password: 032224	
13:00-15:15	**Online Session C- Flipped Classroom and Blended Learning** **Zoom link: https://us02web.zoom.us/j/89827262038** **Session Chair: Assoc. Prof. Ibona Lunzaga Panto, Aclc College Ormoc / Cebu Institute of Technology University, Philippines** E4207, E4230, E3204, E3199, E7004, E1063, E7002, E1006, E3181
13:00-15:15	**Online Session D- Educational Data Mining, Data Analysis, and Knowledge Management** **Zoom link: https://us02web.zoom.us/j/81518313078** **Session Chair: Dr. Chau Kien Tsong, Universiti Sains Malaysia, Malaysia** E3158, E3147, E1080, E3133, E1107, E1001, E1111, E7008, E1014
15:15-15:30	*Break*
15:30-18:20	**Online Session E- Digital Transformation of Education and Educational Innovation** **Zoom link: https://us02web.zoom.us/j/89827262038** **Session Chair: Prof. Yun Li, Sichuan University, China** **Invited Speaker: Prof. Manolis Vavalis, University of Thessaly & Charalampos Peteinarelis, Greece** E3156, E1099-A, E1084, E1004, E504, E4224, E1009, E1057, E3124, E3119
15:30-18:15	**Online Session F- Artificial Intelligence in Education and Personalized Learning** **Zoom link: https://us02web.zoom.us/j/81518313078** **Session Chair: Prof. Patrick D. Cerna, MAPUA Malayan College Mindanao, Philippines** E4236, E3136, E3155, E3198, E3197, E503, E1028, E4233, E1085, E1090, E3175

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►Keynote Speakers

March 23, Saturday | UTC+8
9:10-9:55 | 圣淘沙岛厅 **/ Fourth floor - Onsite Talk**
Zoom link: https://us02web.zoom.us/j/81518313078   Password: 032224

Prof. Yang Xiao, Fellow of IEEE, IET, AAIA
The University of Alabama, USA

Bio: Prof. Yang Xiao is a Full Professor with the Department of Computer Science, The University of Alabama, Tuscaloosa, AL, USA. He directed over 20 doctoral dissertations and supervised over 20 M.S. theses/projects. He has published over 300 Science Citation Index (SCI)-indexed journal papers (including over 60 IEEE/ACM TRANSACTIONS) and 300 Engineering Index (EI)-indexed refereed conference papers and book chapters related to these research areas. His research interests include cyber–physical systems, the Internet of Things, security, wireless networks, smart grid, and telemedicine. Prof. Xiao was a Voting Member of the IEEE 802.11 Working Group from 2001 to 2004, involving the IEEE 802.11 (Wi-Fi) standardization work. He is an IEEE Fellow, an IET Fellow, and an AAIA Fellow. He served as a Guest Editor over 35 times for different international journals, including the IEEE Journal on Selected Areas in Communications (JSAC) in 2022-2023, IEEE TRANSACTIONS ON NETWORK SCIENCE AND ENGINEERING in 2021, IEEE TRANSACTIONS ON GREEN COMMUNICATIONS AND NETWORKING in 2021, IEEE Network in 2007, IEEE WIRELESS COMMUNICATIONS in 2006 and 2021, IEEE Communications Standards Magazine in 2021, and Mobile Networks and Applications (MONET) (ACM/Springer) in 2008. He also serves as the Editor-in-Chief of Cyber-Physical Systems Journal, International Journal of Sensor Networks (IJSNet), and International Journal of Security and Networks (IJSN). He has been serving as an Editorial Board Member or an Associate Editor for 20 international journals, including the IEEE Transactions on Network Science and Engineering (TNSE) since 2022, IEEE TRANSACTIONS ON CYBERNETICS since 2020, IEEE TRANSACTIONS ON SYSTEMS, MAN, AND CYBERNETICS: SYSTEMS from 2014 to 2015, IEEE TRANSACTIONS ON VEHICULAR TECHNOLOGY from 2007 to 2009, and IEEE COMMUNICATIONS SURVEYS AND TUTORIALS from 2007 to 2014. He serves/served as a Member of Technical Program Committee for more than 300 conferences. He received the IEEE Transactions on Network Science and Engineering Excellent Editor Award in 2022 and 2023.

Speech Title: Personal Thoughts on Education
Abstract: Having taught in universities for over twenty years, I would like to share some personal thoughts on education in general, particularly Computer Science (CS) education. In this talk, I will share my comments on several aspects of education: definition, objectives, effectiveness, retention, management, quality, length (short-term vs. long-term), etc. Furthermore, I will discuss teaching evaluation, teaching vs. research, theory vs. practicality, etc.

►Keynote Speakers

March 23, Saturday | UTC+8

9:55-10:40 | 圣淘沙岛厅 / Fourth floor - Onsite Talk

Zoom link: https://us02web.zoom.us/j/81518313078   Password: 032224

Prof. Huan Li
Southwest University, China

Bio: Dr. Huan Li, a professor, PhD supervisor, and vice dean at the Faculty of Special Education in Southwest University, holds a distinguished position under the Hanhong Youth Talent program. Selected as a top young talent in the Chongqing Talent Program and awarded by the Ministry of Education's Fok Ying-Tong Education Foundation, Dr. Li is an expert in teacher education accreditation, children's resources, and educational evaluation in Chongqing, as well as a member of several psychological and inclusive education associations. Graduating from Peking University's School of Medicine and obtaining a PhD in education from Beijing Normal University, Dr. Li has dedicated their career to the research of language and reading disorders in special children, earning numerous awards and leading several national research projects. With over 30 SSCI and CSSCI papers and six monographs.

Speech Title: Identification and Intervention of Students with Dyslexia Supported by Educational Technology

Abstract: Dyslexia, a neurobiological learning disability in the reading domain that has symptoms in early childhood and persists throughout life, presents distinct challenges within educational systems. This review provides an exhaustive examination of how educational technology can support the needs of students with dyslexia, focusing on the identification and intervention processes. It begins by defining dyslexia, outlining the diagnostic criteria, and describing the typical symptoms and prevalent methods for its identification and intervention. Building on this framework, the review proactively highlights the critical roles played by advanced educational technologies in the precise assessment, diagnosis, and recognition of dyslexia. A critical examination of current technological challenges in practice lays the groundwork for the subsequent analysis. Through a meta-analysis approach, the review assesses the impact of these technologies on these students' progress and evaluates the hurdles faced while integrating technological solutions in educational settings. The latter part of the review is future-oriented, discussing the nascent potential of artificial intelligence (AI) in streamlining the identification and intervention process for dyslexia. The review concludes by advocating for responsible dissemination strategies to ensure these innovations offer inclusive, equitable support across diverse student populations, thereby transforming the learning landscape for individuals with dyslexia.

►Keynote Speakers

March 23, Saturday | UTC+8
11:10-11:55 | 圣淘沙岛厅 / Fourth floor - Online Talk
Zoom link: https://us02web.zoom.us/j/81518313078　　Password: 032224

Prof. James Tin-Yau KWOK, IEEE Fellow
Hong Kong University of Science and Technology

Bio: Prof. Kwok is a Professor in the Department of Computer Science and Engineering, Hong Kong University of Science and Technology. Prof. Kwok served/is serving as an Associate Editor for the IEEE Transactions on Neural Networks and Learning Systems, Neurocomputing, Artificial Intelligence Journal, International Journal of Data Science and Analytics, and on the Editorial Board of Machine Learning. He is also serving / served as Senior Area Chairs of major machine learning / AI conferences including NeurIPS, ICML, ICLR, IJCAI, and as Area Chairs of conferences including AAAI and ECML. Prof Kwok will be the IJCAI-2025 Program Chair. He is an IEEE Fellow.

Speech Title: Enhancing Language Models through Improved Pre-Training and Fine-Tuning

Abstract: Language models (LMs) are essential in natural language processing and vision-language modeling. However, several challenges arise in pre-training and fine-tuning of LMs. First, when learning through unsupervised pre-training, information that are semantically irrelevant may negatively affect downstream tasks, leading to negative transfer. Second, cross-modal masked language modeling is often used to learn vision-language associations in vision-language models. However, existing masking strategies may be insufficient in that the masked tokens can sometimes be simply recovered with only the language information, ignoring the visual inputs. Lastly, prompt tuning is effective in fine-tuning LMs on downstream tasks with limited labeled samples, but prompt design is difficult.

To tackle these issues, we propose several measures. First, we introduce a new pre-training method that trains each expert with only semantically relevant data through cluster-conditional gates. This allows downstream tasks be allocated to customized models pre-trained on data most similar to the downstream data. Second, on pre-training vision-language models, we use a masking strategy based on the saliencies of language tokens to the image. Lastly, we use meta-learning to learn an efficient prompt pool that can extract diverse knowledge from historical tasks. This allows instance-dependent prompts to be constructed from the pool without tuning the whole LM. Experimental results show that these measures can significantly improve the performance of LMs.

►Invited Speakers

March 24, Sunday | UTC+8
9:30-9:50 | Online Talk
Zoom link: https://us02web.zoom.us/j/89827262038   Password: 032224

Assoc. Prof. Suraya Masrom
Universiti Teknologi MARA, Malaysia

Bio: Associate Professor Ts. Dr. Suraya Masrom leads the Machine Learning and Interactive Visualization (MaLIV) Research Group at the Perak Branch of Universiti Teknologi MARA (UiTM), MALAYSIA. She serves as the chief editor of the Mathematical Sciences and Informatics Journal published by UiTM Press and has been recognized as the recipient of the university's Best Journal Editor award in 2023. She received her Ph.D. in Information Technology and Quantitative Science from UiTM in 2015. Her professional journey began in the realm of information technology, holding a position as an Associate Network Engineer at Ramgate Systems Sdn. Bhd (a subsidiary of DRB-HICOM) in June 1996, shortly after completing her bachelor's degree in computer science from Universiti Teknologi Malaysia (UTM) in March 1996.

Speech Title: Genetic Programming in Automated Machine Learning

Abstract: The challenge of implementing machine learning (ML) models in various domains lies not just in the complexity of algorithms but also in the intricacies of feature selection, algorithm choice, and hyper-parameter tuning. This is where Automated Machine Learning (AML) steps in, offering a transformative approach to surmount these hurdles. AML simplifies the end-to-end process of developing ML models, making it accessible to both experts and novices alike, and significantly reducing the time and expertise required to deploy effective solutions. One of the most promising techniques within AML is Genetic Programming (GP), a type of evolutionary algorithm that mimics the process of natural selection to iteratively find the best solutions. GP can be effectively used in AML to optimize machine learning pipelines. This optimization process involves automatically selecting the best features, choosing the most suitable algorithms, and tuning hyper-parameters in a way that is significantly more efficient and less prone to human error than traditional methods. GP-based AML does not rely on brute-force or exhaustive search. Instead, it evolves over generations, gradually improving solutions by combining and mutating them to find the most effective configurations. This approach can suggest the best feature selection strategies, identify the most appropriate algorithms, and determine the optimal settings for hyper-parameters, leading to enhanced model performance and accuracy.

►Invited Speaker

March 24, Sunday | UTC+8
9:30-9:50 | Online Talk
Zoom link: https://us02web.zoom.us/j/81518313078   Password: 032224

Prof. Anand Nayyar
Duy Tan University, Vietnam

Bio: Dr. Anand Nayyar received Ph.D (Computer Science) from Desh Bhagat University in 2017 in the area of Wireless Sensor Networks, Swarm Intelligence and Network Simulation. He is currently working in School of Computer Science-Duy Tan University, Da Nang, Vietnam as Professor, Scientist, Vice-Chairman (Research) and Director- IoT and Intelligent Systems Lab. A Certified Professional with 125+ Professional certifications from CISCO, Microsoft, Amazon, EC-Council, Oracle, Google, Beingcert, EXIN, GAQM, Cyberoam and many more. Published more than 175+ Research Papers in various High-Quality ISI-SCI/SCIE/SSCI Impact Factor- Q1, Q2, Q3, Q4 Journals cum Scopus/ESCI indexed Journals, 70+ Papers in International Conferences indexed with Springer, IEEE and ACM Digital Library, 40+ Book Chapters in various SCOPUS/WEB OF SCIENCE Indexed Books with Springer, CRC Press, Wiley, IET, Elsevier with Citations: 10000+, H-Index: 53 and I-Index: 190. Member of more than 60+ Associations as Senior and Life Member. He has authored/co-authored cum Edited 50+ Books of Computer Science. Associated with more than 600+ International Conferences as Programme Committee/Chair/Advisory Board/Review Board member. He has 18 Australian Patents, 7 German Patents, 4 Japanese Patents, 33 Indian Design cum Utility Patents, 8 UK Patents, 1 USA Patent, 3 Indian Copyrights and 2 Canadian Copyrights to his credit in the area of Wireless Communications, Artificial Intelligence, Cloud Computing, IoT, Healthcare, Drones, Robotics and Image Processing.

Speech Title: AI in Education: Exploring ChatGPT in Education and Future Perspectives

Abstract: As artificial intelligence (AI) continues to revolutionize various industries, its integration into education has garnered significant attention for its potential to enhance learning experiences and outcomes. This talk will delve into the role of AI, particularly focusing on ChatGPT, in education and will provide insights into its current applications and future prospects. The presentation will commence with an overview of AI's growing influence in education, highlighting its capacity to personalize learning, automate administrative tasks, and facilitate adaptive learning environments. ChatGPT, an advanced natural language processing model, will be introduced as a versatile tool capable of simulating human-like conversations and offering tailored educational support. The talk will then explore the diverse applications of ChatGPT in education, ranging from virtual tutoring systems to automated essay grading and intelligent educational assistants. Through real-world examples and case studies, attendees will gain a comprehensive understanding of how ChatGPT can be leveraged to address various educational challenges and cater to individualized learning needs.

►Invited Speaker

March 24, Sunday | UTC+8
15:30-15:50 | Online Talk
Zoom link: https://us02web.zoom.us/j/89827262038   Password: 032224

Manolis Vavalis, Charalampos Peteinarelis
University of Thessaly & Charalampos Peteinarelis, Greece

Bio: Professor Manolis Vavalis, Department of Electrical & Computer Engineering, University of Thessaly, Volos, Greece He is also Senior Researcher at the Information Technologies Institute (ITI) of the Centre of Research and Technology Hellas (CERTH)and he has served as a faculty member at the University of Crete and Purdue University and as a Senior Researcher at the Institute of Computer Science (ICS) of the Foundation for Research and Technology - Hellas (FORTH). He authored more than 100 peer reviewed publications and supervised more than 80 students. His research has been supported by NSF, European Commision and the General Secretariat for Research and Technology - Greece and currently focuses on Smart Energy Systems, Web Technologies, and Information and Knowledge Management Systems.

Speech Title: Genetic Algorithms on Quantum Computers

Abstract: The rise of interest in Quantum Computing over the last years is not only a motivation to create new algorithms, but most importantly to adapt the already existing ones to a Quantum Computing environment, and to do so in a way that defends their supremacy over their classical versions across many applications. Since optimization boasts a cemented position in the backbone of engineering, it is one of the most important applications that will be affected, especially with respect to stochastic algorithms that match and can exploit the fuzziness of Quantum Computing, such as Evolutionary Metaheuristics, and more specifically Genetic Algorithms. The purpose of this study is to introduce the reader to Genetic Algorithms and provide a review of the most popular techniques used by their quantum counterparts to process information.

►Session 1

► **Educational Data Mining and Models for Data Processing**
► **Session Chair: Dr. Hui-Ngo GOH, Multimedia University, Malaysia**
► 13:30-15:15 | March 23, 2024 | Venue: 圣淘沙岛厅/ Fourth floor
► E1093, E1110, E1020, E3195, E1112, E1045, E1054

E1093 **13:30-13:45**	*Imbalanced Data Classification using Oversampling and Automatic Feature Selection Methods for Undergraduate Student Career Prediction* *Radiah Haque, Hui-Ngo Goh, Choo-Yee Ting, Albert Quek, MD Rakibul Hasan* *Presenter: Hui-Ngo GOH, Multimedia University, Malaysia* Abstract: The application of machine learning techniques for predicting the career trajectories of fresh undergraduate students has become a crucial strategy for evaluating their potential to secure employment post-graduation or pursue further education. However, for such applications, imbalanced data is a vital issue that needs to be addressed with proper methods. In this paper, the combination of oversampling, using Synthetic Minority Oversampling Technique (SMOTE) and Adaptive Synthetic Sampling (ADASYN), and feature selection, using Recursive Feature Elimination (RFE) and the Boruta algorithm, is applied. The results show that the SMOTE-based Boruta approach is effective to improve the performance of machine learning classification models for undergraduate student career prediction.
E1110 13:45-14:00	Analysis of Student Classroom Emotional Tendency Based on Random Forest Model Jiaming Zhang, Yang Zhou, Yayun Gong ,Xiaoyu Tang Presenter: Yang Zhou, South China Normal University, China Abstract: The humanistic theory focuses on students' subjective experiences, emotions, and needs. Educators should prioritize students' emotional tendencies and create a positive learning environment. This study employs random forest models to analyze the Guangdong dataset and overcomes traditional research limitations. The SHAP framework visualizes the importance of each factor. Finally, the study found that students' positive emotions were significantly influenced by the student participation index, the number of positive teacher utterances, the average length of student speech, the negative atmosphere in the classroom created by the teacher, and the teacher's emotional expression. Similarly, negative emotions were largely influenced by the student participation index, the number of positive teacher utterances, the total duration of teacher speech, the average duration of student speech, and the teacher's language comprehension in the classroom. Based on these results, relevant suggestions have been provided.
E1020 14:00-14:15	Research on Information Extraction and Visualization Methods for Blended Learning Data Huiying Cai Presenter: Huiying Cai, Shandong University of Finance and Economics, China Abstract: With the promotion of the OBE concept, blended learning has become an important teaching method for cultivating students' autonomous learning ability. In the process of implementing blended learning, a large amount of educational data has been accumulated. These data contain a wealth of useful information that can enhance the effectiveness of blended learning. This paper will explore how to construct evaluation

	indicators for optimizing blended learning, and information extraction and visualization methods that support evaluation indicators. The purpose is to enable teachers and students to teach and learn in a targeted manner that can improve teachers' teaching literacy and cultivate students' autonomous learning ability. It will promote the development of blended teaching
E3195 14:15-14:30	Design of a Classroom Big Data Analysis System based on Open Source Technology Zhitui Wang, Ruoxi Xiang, Jimei Li Presenter: Zhitui Wang, Beijing Language and Culture University, China Abstract: Based on open-source technology, this paper has designed and implemented the technical solution for a classroom Big Data analysis system and explored the integrated application of this system in the field of education Big Data. Facing the growing demand for education Big Data management, this paper takes classroom Big Data analysis as the service object, using Python+Flask framework as the technical basis, comprehensively applying both API (Application Programming Interface) integration and source code integration, and implementing the technical solution of integrating open interfaces and open-source systems, such as Tencent Text Extraction, LTP (Language Technology Platform) Text Analysis, Superset Analysis and Visualization, and Whoosh Retrieval System, into the classroom Big Data analysis system. It realizes the complete data management function of classroom Big Data from collection, annotation, analysis, visualization to retrieval, providing a technical solution for the analysis and visualization of educational Big Data that can be quickly integrated and applied. This design is very effective in analyzing Big Data in the classroom, which can effectively improve the ability to analyze data and help educators better understand the effectiveness of classroom teaching and learning. This study provides a new idea for the Big Data technology framework in the field of education and gives a useful reference for the design of technical solutions for the in- depth development of educational data analysis.
E1112 14:30-14:45	Research on the path of digital resources construction in preschool education under the background of Teachers' Digital Literacy Hu Xiao Presenter: Hu Xiao, Si Chuan Normal University, China Abstract: The Outline for the Development of Chinese Children (2021-2030) calls for improving the level of campus intelligence and improving the water of information service flat. The standardization of digital resources in preschool education provides a good external environment for improving teachers' digital literacy. Pre-education learning resources are rich in China, but there are both regional differences，urban and rural differences, and the integration efficiency of high-quality preschool education resources is not high. Based on the analysis of the uneven distribution of digital resources in preschool education, refer to the evaluation model of Yu Ping and Gu Xiaoqing digital education resources evaluation strategy, this paper proposes the retrieval and search strategy and classification mechanism of big data resources for preschool education.
E1045 14:45-15:00	Evaluation of Student Study Behavior for Grade Prediction Using Random Forest Modeling Juntao Chen, Xiaodeng Zhou, Jiahua Yao and Su-Kit Tang Presenter: Juntao Chen, Macao Polytechnic University, China Abstract: With the rapid development of online education, researching on the Education

	Data Ming (EDM) has been studied extensively in recent years. The study of online learning behavior data has become an important aspect of EDM. In contributing a deeper verifying of applying with EDM, this study firstly preprocessed online learning behavior data and analyzed the correlation between online learning behavior data and student performance. By inputting the selected features into LightGBM (Light Gradient Boosting Machine) model, random forest model, support vector machine regression model and linear regression model, we had mined the correlation coefficient between the behavioral features. By comparing the evaluation indicator of data mining, findings showed the algorithm priority and the random forest model was the best data model. Specifically, applying the advanced random forest model for verifying, the behavior data of about 300 students undertaking a major in tourism management was meticulously examined and validated. The results showed that the prediction accuracy of random forest model was up to 98.15%, which further confirmed the performance of random forest algorithm. This research combined student behavior data and student scores with data mining technology, and through sufficient experimental verification, the experimental process, methods and results were validated. The study suggests that random forest algorithm can be applied to analyze learning behavior data generated by other learning platforms to predict students' final performance and provide judgment basis for reducing students' dropout risk based on the results.
E1054 15:00-15:15	Research on the Construction and Application of International Chinese Teachers' Professional competence Evaluation Model based on Multimodal Data Fusion Wen Chen, Yufang Pan, Li Lei Presenter: Wen Chen, Sichuan University, China Abstract: Conducting professional competency evaluation of international Chinese language teachers is an important measure to promote the standardization of the international Chinese language teaching staff, and strengthen the construction of the International Chinese Language Education standard system. With the digital development of the International Chinese Language Education, new generation information technologies have provided new paths for the professional competency evaluation of this teachers. According to "Professional Competence Standards for International Chinese Language Teachers", this paper divides the relevant multimodal data into basic information data layer, environmental situation data layer and behavior characteristic data layer, and constructs the evaluation model from four levels: multimodal data collection, data preprocessing, fusion calculation and analytical applications. Research has shown that this evaluation model helps Chinese teachers continuously improve their ability profile and enhance their professional competence in a continuous, contextualized, and dynamic evaluation process. Based on the evaluation results, it helps to drive evidence-based decision-making in education management, establishing intelligent intervention mechanisms, and achieving personalized resource recommendations, which can serve teachers' development, providing a good teacher guarantee for the high-quality and connotative development of international Chinese language education.

►Session 2

► **Educational Innovation and Technology Application in Education**
► **Session Chair: Assoc. Prof. Mustafa Ozguven, Xi'an Jiaotong-Liverpool University, China**
► 13:30-15:15 | March 23, 2024 | Venue: 吉打厅 / Fourth floor
► E7007-A, E1055, E3183, E3154, E1091, E1032, E7001

E7007-A **13:30-13:45**	*Driving Educational Disruption: Insights into China's Autonomous Vehicle Technology through an Entrepreneurial and Artificial Intelligence Lens* *Prof. Mustafa Ozguven* *Presenter: Mustafa Ozguven, Xi'an Jiaotong-Liverpool University, China* Abstract: In response to the pressing concern of road accidents, government policies are instrumental in shaping the trajectory of Autonomous Vehicle (AV) adoption, aiming to minimise vehicle-related incidents. The integration of artificial intelligence (AI) and sensorial technologies, encompassing computer vision, odometry, GPS, laser lights, sensors, and mapping systems, has emerged as a key driver in the widespread adoption of partial or full AV technology in China. This convergence opens new avenues for entrepreneurial innovation while significantly impacting the business landscape. This study explores the intersection of entrepreneurship, marketing, and AI in propelling the adoption of driverless technology, extending the focus beyond the automotive sector to include the transformative role of AI and Entrepreneurship in education. Employing a multi-case study research design within a qualitative framework and following an interpretive paradigm, interviews with key stakeholders from five of China's most successful AV companies form the basis of data collection. Thematic analysis is applied to extract meaningful insights, ensuring the trustworthiness of findings through member-checking. The outcomes reveal that startups can disrupt industries, optimize operations, and gain a global competitive edge by strategically combining entrepreneurship, marketing, and AI. Factors such as data security, privacy concerns, ethical considerations in AI adoption, and the demand for skilled talent in emerging technologies significantly impact the success of startups. Additionally, the narrative surrounding AVs underscores a tendency to emphasize optimistic visions of uncertain futures, potentially compromising responsible and ethical business practices and posing complex risks for societies at large. The salient findings from this study have implications for the integration of AV content into the undergraduate entrepreneurship curriculum at a transnational university in China, opening up a more nuanced avenue for further research.
E1055 13:45-14:00	Research on ELAN-Based Multimodal Teaching in International Chinese Character Micro-Lessons Chuanrong Huang, Yapeng Zhang, Li Lei Presenter: Chuanrong Huang, Sichuan University, China Abstract: Micro-lessons, a product of the integration of internet technology and mobile devices, exhibit multimodal characteristics through streaming media playback. This study applies multimodal discourse analysis theory and ELAN6.6 software to analyze award-winning Chinese character micro-lessons from the National Chinese Language Teaching Micro-Lesson Competitions. The research content encompasses the overall application of multimodal resources, their distribution and functions in teaching stages, and the relationships of modalities in each teaching stage. Through quantitative and

	qualitative analysis, our aim is to uncover usage patterns in Chinese character micro-lesson instruction, providing guidance for design and execution of multimodal Chinese micro-lessons.
E3183 14:00-14:15	Design for Psychology Drawing Course Based on Computer Vision Boyao Zhao, Zhe Zhang, Wen Chen, Buxin Han Presenter: Boyao Zhao, Chinese Academy of Sciences, China Abstract: In mental health education, the evaluation of mental health is an indispensable part, closely related to students' psychological growth and improvement of their psychological abilities. However, the existing evaluation methods within mental health education system of the secondary school lack timeliness and depth and have not been well integrated into the psychology course. The purpose of this study is to integrate drawing psychological test with computer vision technology into the psychology course, aiming to design a curriculum that allows teachers to evaluate specific mental issues of students in real-time based on the needs of mental health education.
E3154 14:15-14:30	Enhancing College Students' Programming Ability Based on Individual Factors and Strategies Qian Yang, Kangkang Li, Yingxiang Lu Presenter: Qian Yang, Jiangsu Normal University, China Abstract: In the era of booming artificial intelligence technology, programming skills have become a cornerstone in numerous industries, as well as the core element for students to achieve innovative ideas, address practical issues, and enhance professional competitiveness. To explore individual factors influencing the programming ability of college students, we analyzed literature related to programming competence. It has been found that there are problems with the enhance of programming ability of college students, such as inadequate learning engagement, weak foundational programming knowledge, deficiencies in logical thinking ability, and limited proficiency in algorithmic design. To enhance the programming ability of college students, combined with the influencing factors of programming ability improvement, we have designed programming pedagogical strategies, such as "Student-led Instruction", "Intelligent Learning Reports", "Algorithmic Flowcharts", and "Handwritten Code". The research results indicate that "Student-led Instruction" strategies contributes to increased student learning engagement, the "Intelligent Learning Reports" strategy can enhances students' foundational programming knowledge, the "Algorithmic Flowcharts" strategy can improves students' logical thinking ability, and the "Handwritten Code" strategy assists in elevating students' proficiency in algorithm design.
E1091 14:30-14:45	Adaptation of Flanders Interaction Assessment System for Online and Offline Comparative Purposes Zhao FANG, Stephen E. Sandelius Presenter: Zhao FANG, East China University of Science and Technology, China Abstract: This article proposes a revision to the Flanders Interaction Analysis System (FIAS), called the FIAS for Online and Offline Comparative Purposes, in order to establish a unified framework with equivalent categories for comparing and contrasting online and offline classroom interaction. While it makes moderate modifications to the application and analysis procedures of FIAS, a completely redesigned category system is proposed to better align the format and techniques of online teaching with traditional offline classes. The original categories of FIAS are preserved, but the subsystems of

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	each category are greatly enriched to encompass 24 types of classroom utterances and behaviors. For Teacher Talk/Behaviors, nonverbal interactions and postponed feedback are considered with new ingredients of novel lecturing. Emphasis is laid on the improvements to Student Talk/Behaviors to incorporate presentation, chat room discussion, and other new forms of interaction activities. Interspace transcends mere silence and confusion by encompassing both operation and preparation time, which are instrumental for seamless functioning of online instruction. It is hoped that the utility of FIAS(OOCP) extends to a wider range of comparative interaction analyses across various subjects and disciplines.
E1032 14:45-15:00	Design and Research of Multicast Experiment Based on PIM-SM and OSPF Protocol Jun Tao, Wanfeng Yu, Yayun Yang, Xingxing She Presenter: WANFENG YU, Anhui Institute of Information Engineering, China Abstract: The basic concept of multicast was elaborated. Compared with unicast and multicast, multicast has the advantages of high transmission efficiency and low link load. An experimental multicast network was constructed based on the PIM-SM and IGMP protocols. Routers in the network sent multicast traffic through the PIM-SM and OSPF protocols, while hosts and routers sent multicast traffic through the IGMP protocol. The experimental results were good, and all experimental parameters such as packet loss, delay, and jitter were normal. Through this experimental teaching, students have made long-term progress in mastering multicast knowledge and achieved excellent results in related exams, competitions, and scientific research.
E7001 15:00-15:15	Empirical Study on Temporal and Spatial Inequality and Its Strategy in Higher Vocational College English Oral Teaching Hui Sun, Biyu Wu Presenter: Hui Sun, Shanghai Technical Institute of Electronics & Information, China Abstract: Linguistic expression can be inseparable from Time and Space. Oral English and Oral Chinese are deeply incriminated by Time and Space. Cognitively, these two factors affect the overall reliability and validity. Micro-speaking, Chinglish, whose reversed expressive sequence in Time and Space, has caused mis-expressiveness in oral English. Currently, there have been rare cognitive researches on how to manipulate the temporal and spatial laws when college students are conducting the oral English? What are the interior and exterior factors that influence their oral English? What are the specific measures that can guide them process the above-mentioned elements? How can the college teachers conduct the most effective strategies? Based on empirical studies, some strategies have been proposed in order to play a positive role in changing and improving Oral English for English Majors in college.

►Session 3

► **Artificial Intelligence in Education and Personalized Teaching**
► **Session Chair: Prof. Jining Han, Southwest University, China**
► 15:35-17:20 | March 23, 2024 | Venue: 圣淘沙岛厅 / Fourth floor
► E3203, E507-A, E515, E1064, E1044, E513, E3153

E3203 15:35-15:50	ChatGPT and Teacher Human-machine Collaboration for Personalized Teaching - Taking Poetry Writing Teaching as an Example Xiaohong Li, Zhanji Yang, Wei Zhang and Zhao Yang Presenter: Xiaohong Li, Zhaotong University, China Abstract: This paper explores how to use ChatGPT-4 as an assistant for personalized teaching in the poetry writing class of Class 1 of the third-year university majoring in Chinese language and literature, to realize the human-computer collaboration between ChatGPT and the teacher, and conduct personalized teaching to provide students with personalized teaching. professional guidance and timely feedback. Traditional poetry writing teaching is difficult to meet the personalized needs of large-scale classes, and the introduction of artificial intelligence (AI) assistants can effectively solve this challenge. Therefore, this paper discusses how to use the advice of ChatGPT-4 and the professional guidance of teachers to improve the efficiency and quality of students' poetry homework correction, achieve personalized teaching guidance for students, and thus promote the improvement of poetry writing skills.
E507-A 15:50-16:05	Can AI be a supportive emotional partner for university students? Na Li, Jinhee Kim, Sang-Soog Lee, Jialin Wang, Bowen Li, Rita Detrick Presenter: Na Li, Xi'an Jiaotong-Liverpool University, China Abstract: University students' academic stress and psychological well-being issues have persisted as a common concern worldwide. In recent years, artificial intelligence-based chatbots have begun to take part in empathetic conversations with people about their stress and applied in psychological counselling (Kim et al., 2023; Li et al., 2020, Meng & Dai, 2021). Studies found that disclosing stressful experiences and feelings with a conversational partner can mitigate psychological issues (Shenk & Fruzzetti, 2011). However, there is a lack of empirical studies on validating its effects on students' academic stress reduction in school contexts. Therefore, this study aims to examine the effects of the use of emotional AI Chatbots to alleviate university students' academic stress. Reflecting on the Computers Are Social Actors (CASA) framework (Nass & Moon, 2000), we believe that university students are capable of reacting to an AI Chatbot's emotional assistance in a manner akin to how they would respond to humans. Additionally, we translate reciprocal self-disclosure into a social cue of AI Chatbots, allowing for the in-depth examination of how relational communication could interact with emotional support in alleviating students' academic stress.
E515 16:05-16:20	Factors Influencing the Acceptance of ChatGPT as an Autonomous English Learning Tool by University Students in Japan Chui Ling Tam, Rei Kataoka Presenter: Chui Ling Tam & Rei Kataoka, Hokkaido University, Japan Abstract: This study aimed to verify the applicability of the modified Japanese version of the UTAUT2 for measuring students' acceptability of the ChatGPT as an autonomous

	tool for learning English and to identify predictors of different levels of acceptability of the ChatGPT as an autonomous tool for learning English. Participants were 175 Japanese university students. Exploratory factor analysis (EFA), reliability analysis, and decision tree analysis were used as research methods. The results of the study indicated that the Japanese version of the UTAUT2 with a 5-factor structure was an appropriate instrument to use. In addition, the results indicated that the price value factor and the social influence factor were significant predictors. It was found that acceptance of ChatGPT is more likely to be higher among university students who have a higher degree of agreement with the price value of ChatGPT. In addition, if university students are more sensitive to social influences, those with lower agreement with the price value of ChatGPT are also likely to have higher acceptance of ChatGPT. This study provides valuable information about the acceptance of ChatGPT by Japanese students and helps to address future questions about the use of ChatGPT by university students.
E1064 16:20-16:35	The Willingness of College Educators in Animation and Digital Media to Embrace Generative AI Xi Chen, Fan Yang, Wei Yu Presenter: Xi Chen, Wuhan Textile University, China Abstract: Artificial intelligence (AI) tools, including generative AI like ChatGPT, Bing, Midjourney, and Co-Pilot, are gaining significant attention in education for their potential to improve learning outcomes, offer personalized guidance, and boost student engagement. However, there is limited research on how university educators, particularly in animation and digital media disciplines, view and embrace these AI tools in higher education. This study explores the attitudes and expectations of these educators, revealing their openness to AI's potential in areas like script-writing and character design. Concerns about potential over-reliance on AI tools and a lack of institutional support, especially in public universities, are identified. There is a strong call for customized training and technical support to effectively integrate AI tools into education. This research enhances understanding of animation-related educators' perspectives on AI in higher education, paving the way for future policies and support strategies, as well as further investigations into the long-term impact of AI tools in the classroom.
E1044 16:35-16:50	Knowledge Tracing Based Wheel Spinning Detection Model in Intelligent Tutoring Systems Mingzi Chen, Yanan Chen, Shouxiang Ni, Peilin Li, Xuguang Zhang Presenter: Mingzi Chen, Nanjing University of Posts and Telecommunications, China Abstract: The recent spread of Intelligent Tutoring Systems (ITS) provides students with access to adaptive learning. However, existing ITS systems face significant challenges in student supervision, primarily in designing robust detection models to characterize the students' learning state and to prevent students from getting stuck in wheel spinning. To this end, this paper proposes a wheel spinning detection model based on Mediating Deep Knowledge Tracing (MDKT). First, the detection model applies "student question mastery" as a mediator variable to improve its interpretability. Specifically, we utilize a Classification and Regression Tree (CART) in the detection model, which enhances the model compatibility with a variety of data by incorporating explicit features (e.g., hint usage). In addition, we employ deep knowledge tracing to merge implicit time-dependent features (e.g., students' knowledge proficiency and forgetting) so as to improve the detection accuracy. Finally, an interpretable neural network based on

	logistic regression is applied to determine the probability of a student experiencing wheel spinning behavior. Experimental results validate the effectiveness and interpretability of our wheel spinning detection model.
E513 16:50-17:05	Research on VR-based Interactive Campus Panoramic Roaming System Yu-fei JIANG, Hui-ning SONG Presenter: Yu-fei JIANG, Xuzhou University of Engineering, China Abstract: By simulating the campus landscape in three dimensions, it is possible to understand the layout and environment of the campus more intuitively. In this paper, VR technology is used to realize the design of virtual campus roaming system modeled on the east campus of Xuzhou Engineering Institute, which includes many functions such as local browsing of traditional single-view panorama, and the design of virtual campus roaming system. In this paper, VR technology is used to realize the design of virtual campus roaming system modeled on the east campus of Xuzhou Engineering Institute, which includes many functions such as local browsing of traditional single-view panorama and global roaming of multi-view panorama, and combines with tilt camera technology to realize virtual process navigation, which makes the information transfer more convenient and efficient, and provides a more immersive experience of the campus environment for the experiencers.
E3153 17:05-17:20	Research on the Impact of Interactive Experience and Perceived Value on User Satisfaction in VR Education Qiao Sui, Li Sui Presenter: Qiao Sui, Quzhou University, China Abstract: With the continuous advancement of science and technology, the application of virtual reality (VR) technology in the field of education has become increasingly attractive. This study explores the impact mechanisms of interactive experiences and perceived value on user satisfaction in VR education. An experimental study of ninth-grade students at Huaiyin Middle School found that an excellent interactive experience and perceived value significantly impact user satisfaction. In terms of interactive experience, users can more easily engage in learning activities and improve subject understanding and skill mastery by designing a more immersive and engaging interaction mode. In terms of perceived value, users' perception of the actual value and benefits of virtual learning is directly related to satisfaction and learning effectiveness. These findings provide empirical support for optimizing the design of VR education systems. By in-depth studying the impact mechanism of interactive experience and perceived value on user satisfaction, this study aims to provide helpful guidance and inspiration for designing and implementing VR education systems and promote the development and application of virtual learning in education

►Session 4

► **Blended Learning and Digital Learning**
► **Session Chair: Asst. Prof. Anisa Vahed, Xi'an Jiaotong-Liverpool University, China**
► 15:35-17:20 | March 23, 2024 | Venue: 吉打厅 / Fourth floor
► E3165, E1051, E1022, E1106, E7006-A, E4226, E509

E3165 15:35-15:50	The Influence of Using GSP Math Software with STAD Cooperative Learning Model on Enhancing Mathematical Problem-Solving Ability Nuttapong Wattanasiripong, Nisakorn Sangwaranatee, Narong Sangwaranatee Presenter: Nisakorn Sangwaranatee, Suan Sunandha Rajabhat University, Thailand Abstract: This study aimed to 1) assess the improvement in problem-solving abilities related to surface area and volume of 3D shapes among students using STAD cooperative learning with GSP compared to Lecture-oriented teaching, and 2) evaluate students' attitudes with the mathematics STAD cooperative learning activities using GSP. The statistical techniques employed in this study included Mean, Standard Deviation, and T-test analysis. The findings of the study indicated that, between the two teaching approaches, students in the STAD cooperative learning environment, integrating GSP interactive digital learning, demonstrated significantly enhanced problem-solving skills. Although both methods exhibited improvement in the post-test, it is apparent that the STAD model of cooperative learning with GSP is more effective than Lecture-oriented teaching when it comes to comprehending the surface area and volume of 3D shapes. Additionally, students expressed high attitudes toward the mathematical learning management approach.
E1051 15:50-16:05	Design of Principles of Communications Course Based on BOPPS Model Rong Geng, Ce Ji, Chunhong Cao Presenter: Rong Geng, Northeastern University, China Abstract: As the core professional course of communication and electronics, the course of Principles of Communication plays an important role in the cultivation of students' professional basic theoretical knowledge and practical ability. To strengthen the deep integration of modern information technology and education and teaching, solve the problem of teaching and learning mode innovation, cultivate students' thinking ability and innovation ability, give full play to the leading role of students, enable students to be input to active output, introduce BOPPPS and takes the modulation and demodulation of 2PSK as an example for teaching design. Our goal is to improve the teaching effect of innovative teaching methods, and puts forward requirements for the teachers and evaluation system of teaching, thus providing a reference for the comprehensive training of communication and electronic talents.
E1022 16:05-16:20	A Blended Learning Strategy for English-based Programming Courses in China's Higher Education Mei Wu, Xining Wang, Tao Lu, Gregory M.P O'Hare Presenter: Mei Wu, Wuhan Institute of Technology, China Abstract: As English becomes the mainstream language in communication and education worldwide, more and more Chinese universities emphasize the importance of adding English content to the higher education curriculum. This paper explores the integration of English content into Computer Science education in Chinese universities,

	with a focus on bilingual programming courses. It proposes a blended learning strategy that combines face-to-face classroom interaction with platform-based self-directed learning. It designed the experiment and the number of participants is 84. The experimental results show that the adoption of this blended teaching strategy can enhance students' enthusiasm for bilingual programming courses and facilitate students in achieving the desired learning effect.
E1106 16:20-16:35	Construction of A Virtual Learning Environment for English Teaching and Learning in A China-UK Joint Educational Program Jing Wen, Linyi Qi, Shuyan He Presenter: Jing Wen, Glasgow College, University of Electronic Science and Technology of China, China Abstract: This article explores the design and implementation of a Moodle-based virtual learning environment (VLE) to complement the teaching and learning of the face-to-face course, UESTC 1033 English for Academic and General Purposes, within a China-UK joint program. Visual resources were used to illustrate the construction process. In order to gain insight into the effectiveness of the Moodle-based VLE, a questionnaire was administered. This survey included two open-ended questions and was distributed to 9 teachers responsible for course delivery and 20 students involved in the learning process. Both teachers and students reported significant benefits from the Moodle-based VLE. Key benefits identified included the VLE acting as a comprehensive repository containing a wealth of valuable teaching and learning materials, and its user-friendly interface. However, the problems associated with unstable internet connections and compatibility with mobile devices are the most common problems encountered by teachers and students.
E7006-A 16:35-16:50	Optimizing Data Driven Education: A Mixed Methods Examination of Implementing Agile Pedagogy with eduScrum Yicheng Wang, Anisa Vahed Presenter: Anisa Vahed, Xi'an Jiaotong Liverpool University, China Abstract: There is a growing interest in embracing Agile learning methodologies, exemplified by eduScrum, to empower students in co-creating and actively participating in their learning through context-content-based projects. In the eduScrum framework, student teams determine the "how," affording them the responsibility to take ownership of their learning journey, while the teacher defines the "why" and the "what". Despite eduScrum's intent to facilitate student agency engagingly and effectively, there is limited evidence-based data on its impact on the academic and personal development of students engaged in active and meaningful learning. This paper aims to ascertain the transformative enrichment of students' learning experiences in data-related courses through eduScrum. Following a pragmatic paradigm, a descriptive cross-sectional case study within a mixed-methods research framework was used. A total of 200 students participated in the study during the 2023/2024 academic year at a transnational university. Quantitative data were collected through anonymized surveys, employing descriptive and inferential statistics for analysis. Qualitative data were obtained through focus group interviews and students' reflective reports, subjected to thematic analysis. As evidenced by higher participation rates and positive feedback on the eduScrum approach, the results revealed an improvement in student engagement and collaboration. Statistically, there was a significant improvement in the learning outcomes observed, with students showing enhanced comprehension and retention of course

	material. Qualitative data underscored advancements in soft skills, such as collaborative problem-solving and mutual trust in teamwork. Identified challenges included the implementation of eduScrum, resource constraints, and the adaptation of data processes. Significantly, the findings indicated that when eduScrum is appropriately integrated into the curriculum, students are more likely to cultivate mutual trust and derive meaningful, enriching learning experiences in data-related courses.
E4226 16:50-17:05	Revolutionizing Higher Education E-learning: A Universal Robot Approach with Vocal Encouragement and Movement Performance Pengfei Lyu, Toshio Eisaka Presenter: Pengfei Lyu, Kitami Institute of Technology, Japan Abstract: The widespread adoption and development of communication technologies, including ICT and the internet, have led to the full-fledged introduction of e-learning in educational settings, involving active learning through personal computers and networks. Despite the advantages of e-Learning such as flexibility and resource optimization, passive interaction methods have posed challenges. Simultaneously, social robots have demonstrated potential in educational contexts. This study proposes a novel universal robot that utilizes vocal encouragement and movement performance to enhance academic achievement and motivation in higher education e-learning. Different from traditional educational robots, this universal agent operates independently of specific content, ensuring versatility, and can be seamlessly integrated into existing e-learning systems. A three-month experiment statistically validated the robot's effectiveness in improving learning outcomes.
E509 17:05-17:20	Teaching Feedback System Based on ViT Expression Recognition in Distance Education Kexin Wang, Meng Cheng Presenter: Kexin Wang, Shanghai Normal University, China Abstract: This paper proposes an online emotional feedback system for distance education based on the Vision Transformer (ViT). The objective is to provide teachers with real-time information on students' emotional states, such that the teaching strategies can be properly adapted to improve the quality of education. In the proposed system, the OpenCV is used to call the camera to collect the video in class, and the facial information is then detected by the Dlib. After that, the acquired facial images are processed with the ViT model augmented with two attentive pooling ViT (APViT) modules, to calculate students' emotions during class. Then, the emotional states of the students will be analyzed and repeatedly fed back to the teachers. It has been found from the simulations that the APViT model can achieve a training accuracy of 94.68% with the OL-SFED dataset, exhibiting the advantage of applying the ViT technique to the field of distance education.

►Poster Session

► Modern Educational Technology and Educational Innovation
► Session Chair: Prof. Jining Han, Southwest University, China
► 17:30-18:15 | March 23, 2024 | Venue: 圣淘沙岛厅 / Fourth floor
► E3182, E1097, E1113, E3146, E3118, E3179, E3191, E3186, E3117

E3182 17:30-17:35	Proof of Stake and Activity: Rewarding On-Chain Activity Through Consensus Zhidong Wang, Junlin Lu, Jinyue Su, Fengqiang Deng, Ling Yang, Jun Xiao , Haifeng Li Presenter: Zhidong Wang, South China University of Technology, China Abstract: Electrical engineering and its automation have increasingly developed into a highly interdisciplinary discipline that integrates many new engineering disciplines. Because it involves a lot of new engineering disciplines, it also attaches great importance to the development of experimental teaching. Although the physical platform is intuitive and easy to understand, it is less flexible. Equipment constraints are often encountered. Although the use of virtual platform for teaching can simulate the real experimental environment and operation process, it still cannot completely replace the authenticity and perceptual understanding of the experiment. In this paper, we will discuss the experimental teaching methods of electrical engineering and automation, and analyze the advantages and disadvantages of common experimental teaching methods. Then, combining the advantages of the two, the idea of panoramic semi-virtual experimental teaching exploration is proposed and analyzed. Finally, the specific application examples of its experiments in electrical engineering, electrical engineering, relay protection, and power system are analyzed. Therefore, it shows that the panoramic semi-virtual experimental teaching can solve the problem of experimental teaching well.
E1097 17:35-17:40	MOOC Session-based Recommendation Algorithm of Multi-Interests Yunyan Zhou, Chengwei Wu, Long Zhang Presenter: Shuguang Liu, Huaibei Institute of Technology, China Abstract: The requirements of the new era are to deepen the reform of classroom teaching, actively explore the interactive, heuristic, exploratory and experiential classroom teaching based on the situation and problem orientation, and promote the deep integration of information technology and education and teaching. The rapid development of technologies such as big data and artificial intelligence has made teaching reform and innovation in higher education classroom an inevitable choice. The traditional teaching mode has no longer adapted to the development requirements of the new era. On the basis of summarizing the disadvantages of the traditional teaching mode, we summarize the relevant literature of PBL teaching mode and flipped classroom, and put forward the flipped classroom teaching mode based on PBL in combination with the characteristics of "electrical control and PLC" course. This hybrid teaching mode takes PBL model as the basic framework, and absorbs the essence of flipped classroom, which is conducive to solving problems in traditional classroom and giving full play to the subjective initiative of teachers and students.
E1113 17:40-17:45	Key Management and Authentication Scheme Forward Trusted Pervasive Container Computing Xiaohng Li, Zhao Yang, Wei Zhang and Zhanji Yang Presenter: Zhanji Yang, Naval Petty Officer Academy, China

	Abstract: Based on the OBE (Outcomes-Based Education) concept, this article discusses the teaching practice of the "Introduction to Poetry Creation" course. The OBE philosophy emphasizes being student-centered, oriented toward students' learning outcomes, and focusing on cultivating students' abilities and qualities. The OBE concept emphasizes student-centered, student-oriented learning outcomes, and focuses on cultivating students' abilities and qualities. In the "Introduction to Poetry Creation" course, we implemented the OBE concept by setting clear learning objectives, designing diverse teaching activities, providing timely feedback and guidance, and evaluating student learning outcomes. The practical results indicate that teaching practice based on the OBE concept helps to improve students' poetry creation ability and literary literacy, while also promoting the professional development of teachers and the improvement of course quality.
E3146 17:45-17:50	Interpretable MOOC Course Recommendations Based on Reinforcement Knowledge Graph GAO Cuicui, QI Xinshe, WANG Na, WANG Xin, ZHAI Huanqing, WU Yong Presenter: Cuicui Gao, National Defense University of Science and Technology, China Abstract: In order to continuously deepen teaching reform and improve classroom teaching effectiveness, focusing on the teaching philosophy of "student-centered", a six step method of blended online and offline teaching has been proposed, which clarifies the teaching organization and implementation process in the three stages of pre class, in class, and post class teaching, and optimizes the learning effect evaluation mechanism. Practice has shown that the new teaching mode has achieved deep interaction and effective evaluation, optimizing classroom teaching efficiency.
E3118 17:50-17:55	Framework on enhancing safety-emergency knowledge and skills of chemical experiment personnel in university Zhan Dou, Hang Zhou, Liangchao Chen, Qianlin Wang, Yan'E Ma, Longfei Liu Presenter: Hang Zhou, Beijing University of Chemical Technology, China Abstract: Previous investigations and summaries of university laboratory accidents have shown that human unsafe behaviour is the main leading cause to accidents. However, it is urgent to improve the training framework for chemical experiment personnel in university, especially to strengthen their safety-emergency knowledge and skills. Accordingly, this paper, with the consideration of recent university chemical safety-emergency education situation in China, proposes the training of chemical experiment safety-emergency skills should be added into the present Engineering Training System (ETS), and the chemical experiment safety-emergency knowledge of university faculty and students should be improved by introducing a knowledge-mapping-based training support system. Moreover, an experimental access system based on the dynamic periodic evaluation of safety-emergency theoretical knowledge and safety-emergency operation skills is constructed. In the final summary, it is hope that the implement of abovementioned strategies would provide an available theoretical and practical reference for the higher-level chemical experiment safety-emergency education in universities.
E3179 17:55-18:00	A Citation Count Prediction Model Based on Bi-LSTM and Transformer Yang Ling, Lan Ziyun, Xu Jingnan, Wang Zhidong, Deng Fengqiang, Xiao Jun Presenter: YangLing, South China University of Technology, China

	Abstract: In the context of the new engineering discipline, the experimental teaching of electrical engineering majors urgently needs to be reformed to adapt to the actual production of society. This article proposes a reform plan for the experimental teaching mode in universities based on social research analysis and sampling survey. It envisions improving the level of experimental teaching in universities by integrating the resources of equipment platforms and virtual experimental platforms, developing comparative, complementary and matching functions, coordinating experimental and theoretical course time, changing assessment indicators, and developing assessment systems, so as to cultivate "applied" talents who can adapt well to social production.
E3191 18:00-18:05	Privacy-Preserving Responsible Gaming Systems Fang Lin Presenter: Fang Lin, Dongguan City college, China Abstract: Abstract—This study aims to explore the application of smart education technology in teaching. Conducting a cites pace analysis of the current status and research hotspots in smart education at universities, we analyze and discuss the practical pathways of smart education. Using the "Mechanical Design" course as a case study, we delve into the teaching practices of smart education. The study compares the teaching effectiveness of traditional classrooms, online learning platforms, and smart classrooms, providing a detailed analysis of their impact on teaching outcomes. We specifically examine students' final exam scores in different teaching environments. The results indicate that students who engaged in learning through the combination of smart classrooms and the XueXi Tong platform demonstrated the most favorable final exam results, while the least effective outcomes were observed in traditional classrooms. This research aims to provide valuable insights for educational policymakers, practitioners, and researchers to better understand and utilize smart education technology, fostering innovation and development in education.
E3186 18:05-18:10	Cloud Computing Application of Multi-sensor Earth Observation Images as the Big Data: A KOMPSAT Use Case Wei Wang, Yuxin Cai, Jingjing Lv Presenter: Wei Wang, Xi'an University of Technology, China Abstract: Cultural heritage inevitably fades with time, but science and technology may be able to make it last longer. With the continuous development of science and technology, the application fields of virtual reality (VR) and augmented reality (AR) technology are becoming increasingly widespread. Many existing cultural heritage digitization projects rely on rely on the one-way display of cultural relics and the supplementation of external materials, and the various technical means cannot be effectively integrated. Based on this, the article proposes an integrated design model that combine multimedia technology, virtual reality, augmented reality and digital games together, and use Unity3D for construction a cultural heritage display platform. Finally, the article evaluates the cultural heritage platforms through questionnaire analysis method, and finds that the platform has a positive impact on users' cognition, experience, emotion, and expectation of cultural heritage.
E3117 18:10-18:15	Optimization Study of Trusted Traceability in Agarwood Supply Chain Based on Blockchain Jianhua Cao, Zhigang Jiang, Wei Hu, Xuhui Xia, Xiang Liu, Xiaoqin Liu, Xiong Bao Presenter: Jianhua Cao, Wuhan University of Science and Technology, China

Abstract: Aiming at the issues of high risks, high costs, and low efficiency in the training and teaching process of intelligent manufacturing, which seriously affect the quality of talent cultivation in intelligent manufacturing. By adopting digital twin technology, the intelligent manufacturing production line is mapped to virtual space, and a two-stage practical training teaching model that integrates virtual space simulation operations and physical space actual operations is constructed. And an intelligent manufacturing digital twin teaching platform was established to support the teaching model. The safe, efficient and economical operation of intelligent manufacturing practical training and teaching has been achieved.

►Online Session A

► **Virtual Learning Environment and Game-Based Learning**
► **Session Chair: Asst. Prof. Yuhua Deng, Hunan Institute of Technology, China**
► 9:30-11:35 | March 24, 2024
► Zoom link: https://us02web.zoom.us/j/89827262038   Password: 032224
► E3169, E4234, E3173, E3134, E3127, E4221, E3189

Invited Speech 9:30-9:50	Speech Title: Genetic Programming in Automated Machine Learning Speaker: Assoc Prof. Suraya Masrom, Universiti Teknologi MARA, Malaysia Abstract: The challenge of implementing machine learning (ML) models in various domains lies not just in the complexity of algorithms but also in the intricacies of feature selection, algorithm choice, and hyper-parameter tuning. This is where Automated Machine Learning (AML) steps in, offering a transformative approach to surmount these hurdles. AML simplifies the end-to-end process of developing ML models, making it accessible to both experts and novices alike, and significantly reducing the time and expertise required to deploy effective solutions. One of the most promising techniques within AML is Genetic Programming (GP), a type of evolutionary algorithm that mimics the process of natural selection to iteratively find the best solutions. GP can be effectively used in AML to optimize machine learning pipelines. This optimization process involves automatically selecting the best features, choosing the most suitable algorithms, and tuning hyper-parameters in a way that is significantly more efficient and less prone to human error than traditional methods. GP-based AML does not rely on brute-force or exhaustive search. Instead, it evolves over generations, gradually improving solutions by combining and mutating them to find the most effective configurations. This approach can suggest the best feature selection strategies, identify the most appropriate algorithms, and determine the optimal settings for hyper-parameters, leading to enhanced model performance and accuracy.
E3169 9:50-10:05	A Comparative Analysis of Cognitive Feedback Between GPT-4.0 and Teacher in Flipped Classrooms Jiaming Lan, KangKang Li, Rongxuan Wei Presenter: Jiaming Lan, Jiangsu normal university, China Abstract: This study investigated the efficacy of GPT-4.0 feedback for substitute teachers in flipped classroom environments. In the study, GPT-4.0 and course teachers delivered cognitive feedback through an online discussion platform respectively. At the end of each topic, 89 third-year university students (53 females) majoring in Educational Technology were required to complete a self-directed learning questionnaire, a learning satisfaction survey, and a learning performance assessment without being aware of the feedback providers' identities. The research results revealed that while GPT-4.0 exhibits some limitations in addressing objective questions, its capacity to enhance self-regulated learning and learner satisfaction is on par with traditional teacher-provided feedback. These findings underscore the imperative for ongoing research and refinement of artificial intelligence applications in educational technology. Future studies should focus on the broader role of artificial intelligence across diverse educational contexts and disciplines and assess its long-term effects.
E4234 10:05-10:20	Gamification for Learning: Development and Application of Learning Software for

	Enhancing Student Engagement and Motivation Shang Wang, Xiangyun Kong, Nan Wang Presenter: Xiangyun Kong, University of Science and Technology Beijing, China Abstract: The development of learning software with gamification characteristics has emerged as a solution to enhance students' interest and engagement in learning in vocational colleges. However, designing effective learning software that combines game elements and educational content to overcome students' aversion to formula calculations and improve their learning outcomes poses a significant challenge. To address this challenge, this study focuses on the course of applied mathematics and investigates the development and application of a learning software with game characteristics. The software, developed using the C# language, incorporates a "alarm light" game victory condition and a "mathematical derivation" module to teach system reliability. The effectiveness of the gamified learning software was evaluated through data analysis from a study involving 71 students. The average scores for various questions were as follows: Q1 (2.71), Q2 (2.68), Q3 (2.38), Q4 (2.41), and Q5 (2.54). These results demonstrate the positive impact of the software on enhancing students' learning involvement, motivation, attractiveness of learning content, enjoyment, and their willingness to continue using the software. The development and application of the gamified learning software have proven successful in improving the quality of teaching and students' engagement and motivation in vocational colleges. This highlights the potential of integrating game characteristics into educational software to enhance learning experiences and outcomes.
E3173 10:20-10:35	Investigating the Impact of Visual Information Orientation on User Task Performance of VDT Tasks in AR Head-Mounted Displays Ruyi Li, Chenlu Mao, Zhanxun Dong Presenter: Ruyi Li, Shanghai Jiao Tong University, China Abstract: Visual display terminal (VDT) tasks typically require vision and memory, resulting in a heavy workload. Effective information presentation in augmented reality environments to reduce workload is a worthwhile research direction. As a fundamental attribute of information presentation, visual information orientation significantly impacts users' perception and processing of task information; however, there is limited research on the visual information orientation of 3D user interfaces in augmented reality HMDs. In order to fill this gap and further deepen the design principles of user interfaces in AR environments, we focused on VDT tasks in AR. We investigated the impact of visual information orientation of user interfaces on task performance in anchored mode. This study quantifies visual information orientation in terms of angles and designs three 3D interfaces with distinct visual information orientations. We extracted three information modules from the typical VDT task to design a continuum visual task and evaluated users' task performance in these interfaces in a controlled experiment. We find that a visual information orientation angle close to 180 degrees improves the user experience and significantly impacts the user's visual perception range. This paper demonstrates the potential of various information orientations for VDT tasks and offers insights for interface design in augmented reality environments.
E3134 10:35-10:50	Investigating the Potential of VR in Language Education: A Study of Cybersickness and Presence Metrics Sakib Hasan, Jing Wang, Muhammad Shahid Anwar, Hanqi Zhang,Yang Liu, Lidong Yang

Presenter: Sakib Hasan, Beijing Institute of Technology, China

Abstract: This study highlights the vital importance of assessing the Simulator Sickness Questionnaire and presence measures as virtual reality (VR) incorporation into language teaching gains popularity. To address user discomfort, which prevents efficient learning in VR environments, the measurement of SSQ becomes crucial. Additionally, evaluating presence metrics is essential to determine the level of engagement and immersion, both crucial for rich language learning experiences. This paper designs a VR-based Chinese language application and proposes a thorough test technique aimed at systematically analyzing SSQ and presence measures Subjective tests and data analysis were carried out to highlight the significance of addressing user discomfort in VR language education. The results of this study shed light on the difficulties posed by user discomfort in VR language learning and offer insightful advice on how to improve VR language learning applications. Furthermore, the outcome of the research explores "VR-based language education," "inclusive language learning platforms," and "cross-cultural communication," highlighting the potential for VR to facilitate language learning across diverse cultural backgrounds. Overall, the analysis results contribute to the enrichment of language learning experiences in the virtual realm and underscore the need for continued exploration and improvement in this field.

E3127
10:50-11:05

Research reviews, hot topics and emerging trends in the field of applied research on VLEs for undergraduate teaching: An analysis based on bibliometrics
Xinru Zhao, Zhixiong Tang, Wanru Zhao, Ruixin Chen, Peng Zhu
Presenter: Zhixiong Tang, Macau University of Science and Technology, China

Abstract: This study aims to delineate the research trajectory, key foci, and emergent trends in the application of VLEs (VLEs) to undergraduate education. Utilizing bibliometric techniques with CiteSpace and drawing upon data from the Web of Science core collection, we conducted a systematic analysis of pertinent literature from 2004 onwards. Our findings elucidate the temporal publication trends, disciplinary distribution, and identify the most prolific and influential authors, institutions, and countries/regions within the field. We observed a phase of gradual advancement followed by a period of accelerated growth and stabilization in the research on VLE applications for undergraduate instruction. Predominant disciplines engaged in this research include Computer Science, Engineering, and Education Educational Research, highlighting the field's interdisciplinary nature. Notably, Guido Makransky, Morris Siu-Yung Jong, and Dirk Richter emerge as leading contributors based on publication volume. The United States, China, and Spain serve as pivotal research hubs, with the Ministry of Education & Science of Ukraine, State University System of Florida, and University of California System standing out as significant institutional contributors. Our analysis underscores the need for enhanced international collaboration among countries and institutions. Cluster analysis of keywords revealed focal themes such as virtual reality, blended learning, medical education, the technology acceptance model, mobile learning, augmented reality, and the educational process in the sophomore year. A review of citation bursts and timeline visualizations suggests a thematic evolution through three stages: the introduction of technology, the transformation of teacher roles, and the evolution of student learning models. Intersecting with the adjusted technology-education paradigm, we anticipate that future research will pivot toward new frontiers, including educational policies' adaptation to VLEs, issues of educational equity and accessibility, concerns regarding data privacy and security, and the sustainable

	development of VLEs.
E4221 11:05-11:20	Development and Application of E-learning Software Aimed at Enhancing Learners' Motivation Zhang Liu, Gui Xu, Shang Wang Presenter: Shang Wang, Beijing Polytechnic, China Abstract: Dull and abstract mechanical concepts, along with cumbersome formulas, often pose challenges for students in mechanical course learning. We propose an innovative approach that combines modeling, numerical computation, and E-learning software development to enhance students' learning enthusiasm. Focusing on the teaching knowledge point of "polar moment of inertia", we examine the automotive transmission axle as a specific research case. By constructing a finite element model and conducting numerical calculations, we generated vivid visualization materials, including Mises stress and displacement cloud images. Leveraging the C# programming language, we developed E-learning software that incorporates the calculus derivation processes for axle torsion deformation. The results of our teaching experiment demonstrate the effectiveness of this teaching innovation, with a 90.63% acceptance rate. Visualization materials, such as Mises stress cloud images, facilitate students' understanding of abstract concepts, garnering an 89.06% acceptance rate. Moreover, the E-learning software significantly increased students' learning enthusiasm, with an 85.91% acceptance rate. The adoption of modeling and simulation to create digital materials for mechanical education provides a robust foundation for E-learning software development and classroom application. Digitalization and E-learning software are poised to be vital trends in future educational development, with ample opportunities for further exploration by scholars in the field.
E3189 11:20-11:35	Practical Research on Intelligent Evaluation of Generative Learning Resource Quality Kangkang Li Presenter: Ruikun Li, Jiangsu Normal University, China Abstract: This study is based on the intelligent evaluation method of large language model, aiming at the evaluation problem of generative learning resources. An empirical study is conducted on the effect of intelligent evaluation on improving the quality of generative learning resources among 31 postgraduate subjects. Specifically, this study set up a control group evaluated by experts and an experimental group involved in intelligent evaluation, and obtained data of generative learning resources created within eight weeks for analysis and comparison. The results showed that intelligent evaluation can achieve a comparable level with expert evaluation in evaluating resources and continuously improving resource quality. This study suggests that by using intelligent evaluation systems, we can quickly and accurately evaluate a large number of learning resources and provide evidence for their improvement.

►Online Session B

► **Virtual Learning Environment and Game-Based Learning**
► **Session Chair: Prof. Anand Nayyar, Duy Tan University, Vietnam**
► 9:30-11:35 | March 24, 2024
► Zoom link: https://us02web.zoom.us/j/81518313078   Password: 032224
► E3157, E3194, E1067, E1050, E3184, E3170, E3190

Invited Speech 9:30-9:50	Speech Title: AI in Education: Exploring ChatGPT in Education and Future Perspectives Speaker: Prof. Anand Nayyar, Duy Tan University, Vietnam Abstract: As artificial intelligence (AI) continues to revolutionize various industries, its integration into education has garnered significant attention for its potential to enhance learning experiences and outcomes. This talk will delve into the role of AI, particularly focusing on ChatGPT, in education and will provide insights into its current applications and future prospects. The presentation will commence with an overview of AI's growing influence in education, highlighting its capacity to personalize learning, automate administrative tasks, and facilitate adaptive learning environments. ChatGPT, an advanced natural language processing model, will be introduced as a versatile tool capable of simulating human-like conversations and offering tailored educational support. The talk will then explore the diverse applications of ChatGPT in education, ranging from virtual tutoring systems to automated essay grading and intelligent educational assistants. Through real-world examples and case studies, attendees will gain a comprehensive understanding of how ChatGPT can be leveraged to address various educational challenges and cater to individualized learning needs.
E3157 9:50-10:05	An Empirical Study on the Effect of Gamified Teaching in Scratch Courses on Developing Elementary Students' Computational Thinking Yuxi Chen, Yang Zhao, Min Wang Presenter: Yuxi Chen, Yunnan Normal university, China Abstract: Computational thinking is a crucial skill for students to analyze and solve problems, and programming education serves as an important pathway to cultivate computational thinking. This study combines relevant literature and utilizes Scratch, a visual programming software, to construct a gamified teaching model for Scratch courses. A quasi-experimental research design was employed, involving two fifth-grade classes from a primary school in K city. The study employed methods such as analysis of student works, SPSS scale data analysis, and student interviews to investigate the impact of gamified teaching in Scratch courses on developing elementary students' computational thinking. The results indicate that gamified teaching in Scratch courses significantly enhances the computational thinking level of elementary students, particularly in the dimensions of critical thinking, problem-solving ability, and algorithmic thinking. Based on the research findings, it is recommended that gamified teaching in Scratch courses should involve appropriate teaching tools, incorporate game-based learning, emphasize problem-solving, encourage collaborative learning, and provide training for educators competent in programming education.
E3194 10:05-10:20	Research on the health problems of school students in virtual reality Manargul Mukasheva, Aisara Omirzakova, Kuandyk Taibolatov Presenter: Aisara Omirzakova, L.N.Gumilyov Eurasian national university, Kazakhstan

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	Abstract: Virtual reality (VR) is a leading technology that is being implemented very rapidly in all areas of human activity, and the prospects for its use in education are very high. Nevertheless, it is very important to be aware of the risks associated with protecting the health of school students when immersed into virtual reality and take appropriate measures to ensure that the results of using VR are positive and useful. This study does not exclude the existence of some problems related to the physical and psychological health of school-age children during their first immersion in VR. The study involved 152 schoolchildren aged 12 to 17 years old. Most learners who took part in this study did not notice strong feelings of discomfort; however, 5.9% of learners noticed significant signs of dizziness and 17.1% experienced the sensation of falling when first immersed in VR. The results of this study also confirm that vertigo symptoms were mostly observed in female learners. The use of VR in schools holds great promise and our findings may be useful for the development of future effective solutions as well as for the prevention of cybersickness symptoms in school students.
E1067 10:20-10:35	Influencing Factors of Aesthetic Education Class Co-constructed by School and Museum under Human-Computer Interaction Background Shijia Zhang, Wei Gao Presenter: Shijia Zhang, Central China Normal University, China Abstract: Aesthetic education is a creative education that beautifies the soul and cultivates emotions. It plays an important role in schools, society, and family environments. The aesthetic education empowered by artificial intelligence presents unique characteristics, such as stimulating creativity, infiltrating the soul, and nourishing emotions. This article takes the joint construction of aesthetic education classrooms by schools and museums as the theme, exploring the impact of different factors on the construction of virtual aesthetic education classrooms by schools and museums. Using the Analytic Hierarchy Process, it is divided into 4 dimensions and 18 indicators. The evaluation results indicate that: (1) artificial intelligence technology plays an extremely important role in the virtualization creation of aesthetic education classrooms, with intelligent aesthetic education classroom environments, aesthetic education technology, and resource mining scores exceeding 5(average score); (2) The impact of the aesthetic education curriculum system is most significant (with a score of 7.22), and the aesthetic education teaching model with teachers and students as the main body has not changed; (3) However, in the process of cooperation with the school, the interactivity of the museum is weak, mainly manifested in the unsatisfactory feedback mechanism scores of aesthetic education teaching, and the security system needs to be strengthened.
E1050 10:35-10:50	The Cultivation of Creative Thinking of Middle School Students in a Gamification Teaching Mode MeiHan, YingYang, YueSun Presenter: MeiHan, Yunnan Normal University, China Abstract: Gamification teaching is a hotspot of current teaching research. Gamification teaching can provide an active, interactive and dynamic learning environment to stimulate students' curiosity and desire for knowledge. Meanwhile, educational games belong to a kind of serious games, which are specially developed for specific educational purposes, and students exercise critical thinking, problem solving ability and creative thinking ability through the tasks and challenges in the games. This study aims to further demonstrate the role of gamification in developing students' creative thinking

	and to improve the quality and effectiveness of teaching. The results of the study show that gamification teaching mode can effectively promote the cultivation of students' creative thinking.
E3184 10:50-11:05	'Dance of Notes' A fundamental Implication Design for a Music-Note Visualization Web-Application Natchaphol Chumpanin, Weerachaya Jarupreechachan, Varunya Attasena Presenter: Natchaphol Chumpanin, Kasetsart University Kamphaeng Saen Campus, Thailand Abstract: This study delves into the transformational role of applications as an excellent tool for introducing fundamental rules of music note instruction by developing a mobile web application with a gamification design. While traditional methods tend to rely on trivial features and one-size-fits-all guidelines, applications are designed around user-centric principles. The user-friendly interface and interactive features of the applications provide an enjoyable and intuitive learning experience for beginners. This study purposely built a mobile web application to convert sound structures into graphics for understanding how a music note application could be effective with the users and be improved in terms of User Interface based on the User Experience. Our participants are students majoring in music and students from computer engineering fields. We used non-probability sampling with a purposive sample technique to recruit participants. For data collection, we conducted the survey questionnaires using I-PANAS-SF questionnaire and user experience question to measure each participant with field notes for observation. The data will be analyzed by using a 5-point Likert scale analysis. The accessibility and simplicity offered by applications redefine the introductory phase of music note learning. Students can access the content at their own pace, without the constraints of traditional programs.
E3170 11:05-11:20	Improving Collaborative Learning Performance Based on LLM Virtual Assistant Rongxuan Wei, Kangkang Li, Jiaming Lan Presenter: Rongxuan Wei, Jiangsu Normal University, China Abstract: The breakthroughs achieved by large language models have further sparked public enthusiasm for transforming "old" education with "new" technology. This study explores how to promote the development of collaborative learning towards intelligence and personalization. Based on theories of human-computer collaborative learning, socialist constructivism, and social interaction, this research proposes an intelligent collaborative learning model based on Large Language Models (LLM). Utilizing ChatGPT and the WeChat system, a virtual assistant based on LLM was developed to create a collaborative learning environment, providing functions such as problem feedback, resource gathering, and inspiration. The study employed a quasi-experimental research method, focusing on the "Educational Game Design" section of the "Educational Artificial Intelligence" course to test the efficacy of the proposed learning model. The results indicate that this model and its system significantly enhance the learners' group cohesion and collaborative inclination, aiding in the better construction of their knowledge systems. Learners in this collaborative learning model experience higher emotional satisfaction and increased willingness to learn, thereby improving their academic performance.
E3190 11:20-11:35	A Corpus-based Comparative Study of Readability of Passages in Compulsory Chinese English Textbooks and Exams for Middle School Students Ziqian Zhou, Malila C. de Almeida Prado*

Presenter: Ziqian Zhou, BNU-HKBU United International College, China

Abstract: This study explores the text difficulty, or readability, of middle school English textbooks and the high school entrance exam in China known as ZhongKao in light of the impact of a recent educational 'Double Reduction' policy from the Chinese central government, which introduces regulations designed to reduce the workload imposed on students. Using the Coh-Metrix L2 Reading Index, three corpora were quantitatively analyzed. Results revealed lower readability in Zhongkao exam passages compared to textbooks, with no significant change post-policy. Stakeholders are urged to address this gap, focusing on the design of teaching materials and teacher education.

►Online Session C

► **Flipped Classroom and Blended Learning**
► **Session Chair: Assoc. Prof. Ibona Lunzaga Panto, Aclc College Ormoc / Cebu Institute of Technology University, Philippines**
► 13:00-15:15 | March 24, 2024
► Zoom link: https://us02web.zoom.us/j/89827262038   Password: 032224
► E4207, E4230, E3204, E3199, E7004, E1063, E7002, E1006, E3181

E4207 13:00-13:15	Application of Flipped Classroom Teaching Method in the Single-chip Microcomputer Course Jiang Jin-gang, Zhang Jia-wei, Du Hai-yan, Wang Kai-rui, Dai Ye, Tang De-dong Presenter: Jingang Jiang, Harbin University of Science and Technology, China Abstract: The principle and application of single-chip microcomputer is a strong theoretical and practical course. By the analysis on traditional teaching mode of principle and application of single-chip microcomputer, the current problems existing in the single-chip microcomputer teaching process is obtained. The current teaching methods are unfavorable to the cultivation of learner's personality and innovative talents. Flipped classroom can transform the students' passive learning to active learning, so it is completely necessary and urgent that flipped classroom method apply and practice in the teaching process of principle and application of single-chip microcomputer. Two different types flipped classroom teaching model of the single-chip microcomputer based on Teaching mode of the single-chip microcomputer based on micro-lesson is designed. The teaching mode design of the single-chip microcomputer based on flipped classroom is realized. Some achievements are obtained. Application of flipped classroom teaching method in the single-chip microcomputer course plays a key role for improving engineering students' practical operation and technical innovation ability.
E4230 13:15-13:30	Reform and Practice of Online-Offline Blend Teaching of Engineering Ethics Incorporating Political Elements Yudong Bao, Junhong Tang, Jingang Jiang Presenter: Yudong Bao, Harbin University of Science and Technology, China Abstract: This paper describes the reform and practice of changing the engineering ethics course from offline to blended online and offline teaching. The course integrates theoretical teaching and case practice and is conducted in the form of video lectures and group discussions. The online part focuses on the study of basic theories, while the offline part focuses on case studies to cultivate students' ethical awareness and moral reasoning ability. The course fully integrates political elements and emphasizes the cultivation of students' sense of social responsibility and correct values. Practical teaching is organized in the form of science lectures, debates, and drama performances, and a variety of case studies are conducted. The teaching process adopts the method of "one main line, two parallel tracks" and forms a closed-loop teaching process. The politics of the course are integrated into all aspects of resources, classrooms, and practices. The reforms have yielded good results in teaching and learning, and students' sense of active learning and practical skills have been enhanced.
E3204 13:30-13:45	Teaching Reform of Principles of Compilers under the Background of New Engineering Min Dong, Sheng Bi Presenter: Min DONG, South China University of Technology, China

	Abstract: With the rapid development of information technology in the context of new engineering, the traditional course of Compilers faces many challenges and needs for reform in terms of teaching content, teaching methods, and evaluation methods. In response to the pain points of "difficult understanding of curriculum knowledge, poor student learning initiative, and difficulty in timely feedback" in traditional teaching processes, this article is based on the revised version of Bloom's Taxonomy. It aims to achieve the fundamental goal of moral education, student-centered development, and output oriented, from "teaching centered" to "learning centered", and to achieve previewing before class, flipping online and offline, and expanding online and offline after class. It is carried out by 1+X+Y+Z. It achieves a transformation from a period to a "heuristic" question mark and then to an innovative "exclamation mark", which comprehensively carries out curriculum reform and multidimensional evaluation, and achieves practical results.
E3199 13:45-14:00	Blended Learning in College Foreign Language Study: Feedback and Implementation Zhanyang Gao Presenter: Zhanyang Gao, Tianjin Ren'ai College, China Abstract: In recent years, the application of internet technologies has become a growing tendency among students, which is considered efficient in studying foreign languages. Novel techniques are also inspiring for teachers to adjust and innovate their teaching methods to meet the needs of students. In this way, the integration of online resources with traditional classroom teaching seems to be worth of study as a popular area of research. In this paper, the author endeavors to investigate the practical aspects and strategies of blended learning (BL) in the context of An Integrated English Course under the framework of Community of Inquiry (COI). With concrete case studies on students, this paper reveals how online learning and offline learning jointly form BL. Moreover, it shows that how teachers should adjust the teaching strategies, and appropriately adopt BL in teaching. The study on BL is considered enlightening for both students and teachers. It helps students to understand the concept of BL and to use them better. Moreover, it is valuable for teachers to learn the practical use of online and offline learning, and offer valuable insights in language teaching.
E7004 14:00-14:15	Exploration of Flipped Classroom Blended Teaching Mode in the "Signal and System" Course Ce Ji, Rong Geng, Chunhong Cao, Man Li Presenter: Man Li, Northeastern University, China Abstract: "Signal and System" is a compulsory basic course for communication and electronics majors, which is characterized by abstract content, many mathematical formulas, and strong engineering applications, etc. In this paper, the concept of flipped classroom teaching is integrated into the teaching process, and the content of teaching and learning is divided into three aspects: pre-course learning, classroom activities, and post-course summarization. The practical results show that the method effectively improves the teaching effect, fully stimulates students' learning enthusiasm as well as independent learning ability, and improves students' ability to analyze and solve problems to a certain extent.
E1063 14:15-14:30	Research on Project-Driven Flipped Classroom Teaching Mode in the teaching of Hospital Information Systems Wei Liu, Heqing Zhan, Huirui Han, Jin Zhang Presenter: Wei Liu, Hainan Medical University, China

	Abstract: The flipped classroom teaching and project-driven approach have sparked widespread discussion and research in the field of education both domestically and internationally. This paper presents a case study of the implementation of these approaches in the teaching of Hospital Information Systems. Guided by the concept of the flipped classroom and integrated with a project-driven approach, a reform proposal for teaching design was developed and implemented in the actual teaching process. Considering the practical nature of the Hospital Information Systems course, a reform proposal for course design was introduced, encompassing the content, implementation plan, and assessment of the course design. The proposed course design was subsequently applied in the teaching process. The results indicated high evaluation scores and satisfaction levels, as well as increased student autonomy in learning and improved teaching quality.
E7002 14:30-14:45	Exploration and practice of blended teaching in the course of engineering drawing empowered by knowledge graph Yahong Xue, Haozhi Mu, Lijun Xue Presenter: Xue Yahong, Tianjin University of Technology, China Abstract: Under the current blended learning mode, students' ability to process, organize, and integrate knowledge is insufficient, and the ability to construct a complete knowledge system for autonomous learning is slightly weak. Taking the national first-class undergraduate course "Engineering Drawing" at Tianjin University of Technology as an example, this study explores and practices the teaching of online and offline hybrid courses based on knowledge graphs, and conducts a comprehensive effectiveness analysis. Practice has proven that the hybrid teaching empowered by knowledge graphs enables visualization of knowledge points and analysis of learning situations, allows for planned learning paths, intelligent resource recommendations, and can achieve targeted integration of data and teaching of key and difficult issues. It has reference significance for the construction of an open, personalized, and precise intelligent education system.
E1006 14:45-15:00	Research on Blended Learning of Piano Course for Preschool Education Major Yuanyang Yue, Yunqi Jing Presenter: Yuanyang yue, Shanghai Normal University Tianhua College, China Abstract: Abstract—The teaching of the music courses of preschool education of integrated secondary to higher education model is a hot topic for teaching discussion of this major in recent years. Based on what is the course "Piano", the experience in teaching practice, combined with the current needs of professional development and the process of educational development, this study discusses the objectives and methods of the teaching reform of this course, providing some effective methods and suggestions for teaching development in the future of this major. Based on "BOPPPS" blended learning model, students can achieve the final goal through "piano" course learning. The ways for solving difficulties of curriculum design are discussed. Several suggestions for how to find this joint point of multiple teaching and blended learning and realize the effective cooperation between students' learning and teachers' guidance are provided.
E3181 15:00-15:15	Research on Blended Learning Integrating Online and Offline Instruction- A Case Study of Cold Chain Logistics Course Fanfan Jia, Xia Yu Presenter: Fanfan Jia, Guangdong University of Science &Technology, China

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Abstract: With the continuous advancement of digital technologies, blended learning has increasingly become one of the mainstream teaching modes in modern educational systems. This paper systematically reviews relevant literature and constructs a set of evaluation indicators for online and offline blended teaching, taking the 'Cold Chain Logistics' course as a case to   analyze the strategies employed in implementing blended learning Furthermore, the study employs the Analytic Hierarchy Process (AHP) to allocate weights to various evaluation indices for blended teaching and uses the Fuzzy Comprehensive Evaluation Method to conduct a comprehensive assessment of the effectiveness of blended teaching in the course. Based on the assessment results, the study proposes improvement measures targeting the blended teaching approach in the 'Cold Chain Logistics' course, aiming to optimize its instructional practice and enhance teaching outcomes.

►Online Session D

► **Educational Data Mining, Data Analysis, and Knowledge Management**
► **Session Chair: Dr. Chau Kien Tsong, Universiti Sains Malaysia, Malaysia**
► 13:00-15:15 | March 24, 2024
► Zoom link: https://us02web.zoom.us/j/81518313078   Password: 032224
► E3158, E3147, E1080, E3133, E1107, E1001, E1111, E7008, E1014

E3158 13:00-13:15	Predicting E-learning Resource Quality Based on Multi-modal Data Yingxiang Lu, Yangzhen Ma Presenter: Yingxiang Lu, Jiangsu Normal University, China Abstract: While the open resource construction mode brings more autonomy to learners, it is also very likely to lead to the problem of uneven quality of resource content and bring considerable difficulties to resource management. Learners' comments based on e-learning resources are a true reflection of the quality of resource content, and through text analysis using natural language processing technology, we can analyze learners' likes and dislikes of resources and reveal the quality problems of resource content, so as to provide targeted early warning feedback and intervention, and ultimately improve the quality of resource content and management effectiveness. Based on this, this study mainly focuses on several aspects of the research content: the construction of e-learning resources content quality crisis early warning model. On the one hand, the content quality evaluation index system of e-learning resources is established. On the other hand, deep learning algorithms in natural language processing technology are used to construct ALBERT+TextCNN sentiment multi-classification model and ALBERT+Seq2Seq+Attention text multi-label classification model based on learners' comments, respectively, to depict the whole process of early warning of e-learning resources content quality crisis in early warning identification and early warning evaluation.
E3147 13:15-13:30	An analysis of employment in agricultural and forestry colleges based on logistic modelling Jiayi Guo, Lifen Song, Jialei Wang, Yuqi Wang, Shiyu Zhao Presenter: Jiayi Guo, China Agricultural University, China Abstract: Due to the rapid societal development and the impact of the novel coronavirus, the employment rate of graduates from agricultural and forestry colleges has been significantly affected. Considering the specialized nature of talent training in this field and the limited employment prospects, this issue has garnered substantial attention from society. This paper aims to address this concern by utilizing Python to crawl data pertaining to the "employment situation of graduates from agricultural and forestry colleges and universities" from major internet sources. The gathered text information is subsequently categorized using the LDA topic model, visualized through a word cloud map, and analyzed across seven categories: professional competence, social competence, concept of employment, attitude towards employment, intimate relationship, information channels, and discrimination. Additionally, the analysis is reinforced through a questionnaire survey and the implementation of a logistic regression model to explore factors influencing the employment outcomes of China Agricultural University graduates. By examining the significance of the seven key variables, this study establishes their impact on employment and determines their

	interconnections. Finally, this paper proposes recommendations to alleviate the employment challenges faced by graduates of agricultural and forestry colleges and universities, considering perspectives from society, universities, and individuals.
E1080 13:30-13:45	Impact of Predictive Learning Analytics in Higher Education: A Systematic Literature Review John A. Bacus, Rhodessa Cascaro Presenter: John Astronomo Bacus, University of the Immaculate Conception, University of Mindanao, Philippines Abstract: This systematic literature review scrutinizes the role of Predictive Learning Analytics (PLA) in higher education from 2017 to 2023. Anchored by the PRISMA flowchart, the methodology involved a rigorous selection process from databases such as IEEE Xplore, Sage, ACM Digital Library, PubMed, Scopus, and ERIC. This systematic literature review filtered the studies based on inclusion criteria: peer-reviewed articles published in English, with full texts available, and excluded non-peer-reviewed sources, non-English publications, and those lacking definitive outcomes. The review addresses four questions in HEI's: the labeling and definition of PLA, its impact on student success, its role in enhancing teaching practices, and its influence on administrative functions. From the initial 142 records, 17 studies met the criteria, providing a comprehensive insight into PLA's role in shaping the academic landscape. The findings indicate that PLA is labeled as a strategic tool for leveraging student data to forecast and enhance learning outcomes. The analysis reveals PLA's significant contribution to student success through early identification of at-risk students and personalized intervention strategies. Furthermore, PLA has been instrumental in refining teaching methods and providing actionable insights to educators. For administrators, PLA informs resource allocation, curriculum development, and policy-making. This review emphasizes the transformative potential of PLA in optimizing higher education outcomes, signifying a paradigm shift towards data-driven educational strategies
E3133 13:45-14:00	Multidimensional Analysis of User Experience Factors and Their Impact on Satisfaction in Online Education Platforms Yujie Jiang Presenter: Yujie Jiang, Wuhan University of Technology, China Abstract: With the burgeoning development of online education platforms, a multidimensional analysis of user experience and its impact on user satisfaction has become a focal point of research. This study takes "Chinese University Student MOOC" as a case to explore the impact of five dimensions of user experience—sensory, emotional, cognitive, behavioral, and social experience—on overall user satisfaction within online education platforms. Employing exploratory and confirmatory factor analysis, the study constructs a structural equation model comprising multiple latent and observed variables to quantify the relationships between these experiential dimensions and user satisfaction. The results indicate that all five dimensions significantly positively affect user satisfaction, with sensory and social experiences having the most prominent impact. Additionally, personal background information such as gender, age, and educational level has limited influence on satisfaction. The findings of this study provide empirical strategies for enhancing user satisfaction and loyalty in online education platforms and are of significant importance for optimizing online learning experiences.
E1107	Predicting Student Performance to Boost Educational Outcomes: The Efficacy of a

14:00-14:15	Random Forest Approach Florlyn Mae C. Remegio Presenter: Florlyn Mae C. Remegio, Sultan Kudarat State University, Philippines Abstract: Predicting student performance is crucial for educational institutions aiming to enhance student achievement and academic readiness. This research, conducted at a university, utilizes machine learning algorithms, covering data from 2019 to 2022, to forecast academic performance. The study evaluates multiple regression models, with Random Forest Regression standing out with an R-squared score of 0.961. It emphasizes the importance of feature selection, identifying total units and subject grades as key predictors. These insights are essential for refining educational strategies and enabling targeted interventions and resource allocation to improve learning experiences and academic success directly. The findings provide a framework for applying educational analytics in other institutions. Future research will explore a broader range of characteristics, temporal analysis, and hybrid models, aligning with the needs of contemporary educational systems for data-driven, personalized learning.
E1001 14:15-14:30	Exploration of Statistical Methods for Distribution of Graduation Scores in Engineering Education Professional Certification Lijun Xue, Haozhi Mu, Yahong Xue Presenter: Lijun Xue, Tianjin University of Technology, China Abstract: According to the requirements of the engineering education professional certification, this paper analyzes the characteristics of the graduation score data table. For the unclear scores in the table, their validity is determined by synthesizing other information. Effective method for processing this data table is provided, and a computer program is developed to directly obtain the distribution table and chart of the scores of the past three years graduates. This provides a basis for analyzing the degree of achievement of graduation requirement and meets the requirements of the engineering education professional certification.
E1111 14:30-14:45	Exploration of Precision Instruction Model Based on Knowledge Graph Xu Li, Fan Chunlong Presenter: Xu Li, Shenyang Aerospace University, China Abstract: In order to accurately grasp student status and create an efficient teaching model, this paper proposes a precision instruction model that carries out continuous fine-grained assessments of students based on the precise curriculum knowledge graph, and analyzes the coverage of students' mastery on the knowledge graph according to the assessment results, then teachers adjust the design and implementation strategies of teaching activities such as teaching process, tutor and assessment methods, and achieve the effective control of students learning status. Taking programming design course as an application example, this model significantly improves the teaching effect on the course, and improves the individualized services and supervision capabilities for students.
E7008 14:45-15:00	Constructing a Knowledge Graph for the Database Course Group via Deep Learning Xianxia Zhou, Haodong Lin, Jingping Wu, Cenyu Zheng, Quanlong Guan Presenter: Cenyu Zheng, Jinan University, China Abstract: Elevating proactive and innovative learning abilities in students is crucial for modern education. Our research develops an adaptive learning system, a key tool for

	delivering customized educational experiences. Focusing on database course groups, we leverage specific deep learning models and advanced natural language processing techniques. We have constructed a multimodal educational knowledge graph, integrating data from authoritative textbooks and Chinese University MOOC Resources. This graph significantly enhances data storage, visualization, and querying capabilities, thereby facilitating the digital transformation of traditional textbooks. Our approach showcases not only improved efficiency and precision but also provides robust knowledge support for adaptive learning platforms, thereby advancing tailored educational recommendations significantly.
E1014 15:00-15:15	Research on Knowledge Discovery Service in Digital Libraries Based on Deep Learning Ning Dong Presenter: Ning Dong, Shandong Technology and Business University, China Abstract: Deep learning technology has superior learning, computing and expression capabilities based on deep structure and surface structure, which helps to mine and process complex information resources. On the basis of elaborating on the theory of deep learning, and its correlation with knowledge discovery, this study concludes that introducing deep learning technology into digital library knowledge discovery service can improve the efficiency of digital resource integration, knowledge discovery level, and knowledge service function. Therefore, this article constructs a knowledge discovery system architecture with corresponding implementation path, and further proposes innovative knowledge discovery services for digital libraries based on deep learning, aiming to improve the efficiency of digital resource integration and optimize the knowledge discovery service function of libraries.

►Online Session E

► **Digital Transformation of Education and Educational Innovation**
► **Session Chair: Prof. Yun Li, Sichuan University, China**
► 15:30-18:00 | March 24, 2024
► Zoom link: https://us02web.zoom.us/j/89827262038   Password: 032224
► E3156, E1099-A, E1084, E1004, E504, E4224, E1009, E1057, E3124, E3119

Invited Speech 15:30-15:50	Speech Title: Genetic Algorithms on Quantum Computers Speaker: Manolis Vavalis & Charalampos Peteinarelis, University of Thessaly, Greece Abstract: The rise of interest in Quantum Computing over the last years is not only a motivation to create new algorithms, but most importantly to adapt the already existing ones to a Quantum Computing environment, and to do so in a way that defends their supremacy over their classical versions across many applications. Since optimization boasts a cemented position in the backbone of engineering, it is one of the most important applications that will be affected, especially with respect to stochastic algorithms that match and can exploit the fuzziness of Quantum Computing, such as Evolutionary Metaheuristics, and more specifically Genetic Algorithms. The purpose of this study is to introduce the reader to Genetic Algorithms and provide a review of the most popular techniques used by their quantum counterparts to process information.
E3156 15:50-16:05	Production and Teaching Application of Micro-Video Resources for University Physics Experiments Chao-Chang Chen, Fang-Fang Wang, Zhen-Lin Huang, Ze-Xuan Li, Dong-Min Zhao, Li-Hong Zhang Presenter: Chaochang Chen, Dongguan City University, China Abstract: This study aims to explore the production and teaching application of micro-video resources for university physics experiments. With the development of mobile internet and digital production technology, micro-video has become a new type of teaching medium. Particularly in physics experimental teaching, its advantages are more obvious. Micro-videos can effectively present the operation process of physics experiments, enabling students to clearly master the experimental steps and methods while understanding physical principles. Initially, this study deeply investigates the production of microvideo resources, including script planning, shooting techniques, and post-editing, to ensure the quality and teaching effectiveness of the micro-videos. Subsequently, these micro-video resources are introduced into the university physics experimental course to observe and analyze their application effects in teaching. Through questionnaires and empirical research, we found that using micro-video resources can enhance students' learning interest, improve their experimental skills, and help deepen their understanding of physics concepts. Meanwhile, micro-video also provides a convenient platform for students to review and learn experimental content outside the classroom. In summary, the production and teaching application of microvideo resources for university physics experiments can not only enhance teaching effectiveness but also help cultivate students' independent learning abilities and innovative thinking. In the future, we will further optimize the production process and teaching strategies of micro-videos to better serve the cause of physics education.
E1099-A 16:05-16:20	The relationship between students' engagement in learner-learner interaction and learning performance in MOOCs learning process

	Xinyue Tian Presenter: Xinyue Tian, Shanghai International Studies University, China Abstract: Under the current social background, education reformation brought by the epidemic is inevitable. Students' demand for flexible learning is also growing, which encourages universities to reform their education and develop new learning modes such as online learning and blended learning to provide students with more choices. As one of the most popular online learning ways, MOOC has its unique advantages, but there are also problems such as poor interaction and learning effects. Starting from one of the most important elements in MOOC – learner-learner interaction, this study analyzes learner-learner interaction from the perspective of school engagement, and then explores the impact on learning performance, and internal impact mechanism. By drawing on the existing research achievements, this study constructs a theoretical model of learner-learner interaction, between behavioral engagement, emotional engagement, cognitive engagement, and learning performance. Based on the MOOC platform of Chinese universities, the study used the method of questionnaire survey. And then the structural equation model is used to carry out empirical research. The main conclusions are: behavioral engagement and emotional engagement have a direct positive impact on learning performance, among which emotional engagement has the greatest impact. Cognitive engagement has a direct positive impact on behavioral and emotional engagement. Although cognitive engagement has no direct impact on learning performance, the indirect effect is significant and in which emotional and behavioral engagement play an important role. According to the research conclusion, relevant practical strategies are put forward to promote the discussion area and condense into a learning community.
E1084 16:20-16:35	Research and Practice of the Course Ideological and Political Education in the Case-Driven "Principles and Applications of Big Data Analysis" Course Mo Hai, Haifeng Li Presenter: Mo Hai, Central University of Finance and Economics, China Abstract: Taking the case driven "Principles and Applications of Big Data Analysis" course ideological and political education as the research object, we analyze the current problems of ideological and political education in science and engineering courses in universities, and proposes an overall design framework for course ideological and political education. The principles and criteria for case selection were provided, while typical cases were provided for the four ideological and political elements of science and technology: serving the country, scientific thinking, engineering ethics, and craftsmanship spirit. The specific implementation methods of case discussions were also introduced in detail. Through a questionnaire survey, it was found that case driven curriculum ideological and political education has a positive impact on students' learning effectiveness and ideological and political literacy. This study provides new ideas and methods for the ideological and political education of science and engineering courses in universities, and has certain significance for the practice of ideological and political education in science and engineering courses in universities.
E1004 16:35-16:50	Developing Teacher Technology leadership in Digital Transformation: Perspectives from Professional Learning Community in One Chinese university Huisi Chen Presenter: Huisi Chen, Guangdong University of Foreign Studies, China

	Abstract: Literature has tended to describe principal leadership practices during national education digital transformation as a strategic and rational process with clear roles. Principal who are often regarded as someone who is the most importance of implementation and use of new digital technologies to enable major school improvement. While this study has identified how teacher developed their technology leadership through professional learning community (PLC) to achieve digital transformation, which is a less rational and emergent process. The findings reveal that teachers are a crucial factor in determining whether the use of technology can either be a major catalyst for change or a waste of valuable resources. And the study has testified that teacher technology leadership can be understood as distributed leadership, which enables a more holistic approach to mobilizing and sustaining digital transformation.
E504 16:50-17:05	Instructional Design of electronic Information Courses led by subject Competition Ting Xu, Fengshan Bai, Yongxin Liu Presenter: Ting Xu, Pioneer College, Inner Mongolia University, China Abstract: In traditional experimental teaching of electronic information courses, students have limited participation and poor innovation skills. Even if students learn the theoretical knowledge of microcontrollers, it is challenging for them to integrate theory with practice and apply it to real engineering projects. In the experimental course, the subject competition is taken as the leading part, and the design of intelligent obstacle avoidance tracking car project is taken as an example to teach, and a new scoring mechanism is constructed. Replacing the experiment box with the smart car throughout the experimental course teaching can not only stimulate their interest in learning this course, but also help students better grasp the core knowledge points of the course. Practice has proved that the teaching reform led by subject competition has obvious effects. Students have achieved good results in all kinds of electronic competitions, and have achieved new breakthroughs in national innovation and entrepreneurship projects.
E4224 17:05-17:20	Research on the Training Model and Evaluation System of Interdisciplinary Professional Master Degree Education Based on Fuzzy Comprehensive Evaluation Method ShilongJia, Li Liu, Jiaxin Xiao, Lei Zhao Presenter: Jiaxin Xiao, Shenyang Jianzhu University, China Abstract: This paper aims to establish a comprehensive interdisciplinary graduate training model and improve the model in three stages: enrollment, training, and degree granting. The Analytic Hierarchy Process is used to establish a comprehensive evaluation index system for interdisciplinary graduate innovation and practical capabilities, and a specific quantitative evaluation method is proposed. Taking the School of Civil Engineering at Shenyang Jianzhu University as an example, a questionnaire survey is conducted to analyze the reasons for students' choice of interdisciplinary studies, and the quantitative evaluation system is applied to evaluate the learning, innovation, and practical capabilities of interdisciplinary graduate students.
E1009 17:20-17:35	Exploring the Reform of Mechanical Drawing Teaching and Undergraduate Training Based on the "Integration of Competition-Oriented Education and Industry-University Collaboration" ZHANG Runfeng, MING Yankun, LIU Zhenzhong, WU Jianguo, WANG Xiaofei, SUN Yanfang Presenter: Runfeng Zhang, Tianjin University of Technology, China Abstract: This study aims to explore the reform of mechanical drawing teaching and the

	undergraduate training model with the goal of cultivating high-quality mechanical engineering undergraduate students. Grounded in the concepts of "synergy between science and education" and "integration of competition-oriented education and industry-university collaboration," this research places talent cultivation as the central focus, linking it with discipline construction and emphasizing scientific research. The study promotes the reform of a collaborative education mechanism known as "integration of competition-oriented education and industry-university collaboration," effectively establishing a multi-level and multi-dimensional undergraduate training model for mechanical engineering students that incorporates the "dual mentor system" and integrates theory, practice, and application. To apply this model in teaching practice, this research has undertaken the reform of traditional engineering drawing education, specifically addressing the issue of the gap between theory and practice in conventional teaching approaches. The proposed training program not only facilitates the development of innovative mechanical engineering professionals but also offers insights for the reform of undergraduate teaching models in the context of constructing "new engineering disciplines".
E1057 17:35-17:50	Research on the Construction of Intelligent Classroom Teaching Evaluation Model Based on the Concept of OBE Education Zhijun Yang, Long Xue, Zijia Ren, Tongtong Lu, Guimei Fan Presenter: Zhijun Yang, Educational Department of Yunnan Province, China Abstract: With the rise of artificial intelligence in education and its application in teaching, the traditional classroom evaluation model can no longer adapt to today's talent cultivation mode. As a product of social development in the new era, the smart classroom fully combines advanced information technology such as Internet of Things, cloud computing, etc., to revolutionize the original traditional classroom equipment and create a modern electronic informationized teaching environment, which has been welcomed by primary and secondary schools in recent years and has become a hot topic for researchers to study. With the support of smart classroom, it plays an important role and value for realizing teaching goals and conducting teaching evaluation. This study will take OBE (Outcome Based Education) education concept as the theoretical basis, address the current problems and dilemmas faced by teaching evaluation in primary and secondary schools, combine the application advantages of the smart classroom, and utilize the new generation of information technology to construct a new type of highly efficient evaluation system in order to achieve efficient teaching evaluation.
E3124 17:50-18:05	An Empirical Study of the Contribution of Higher Vocational Education to Economic Growth and Industrial Upgrading in China Jiali Jin, Sike Jin Presenter: Jiali JIN, Taizhou Vocational and Technical College, China Abstract: As an important part of the Chinese education system, higher vocational education shoulders the mission to train hundreds of millions of high-caliber workers and tens of millions of talent with special skills, laying a solid foundation for the national economy and social development. Studying the important contribution of higher vocational education to economic growth and industrial development is of great theoretical and practical significance to better giving play to the economic function of higher vocational education and better facilitating socioeconomic construction of China. This paper mainly studied the contribution of higher vocational education to the gross

	national product (GDP) and industrial structure upgrading of China, for the purpose of obtaining the contribution rate of higher vocational education in economic growth and industrial structure upgrading by analyzing data such as educational expenditure on higher vocational education, the scale of education, economic growth and industrial development in China since 2000.
E3119 18:05-18:20	Exploring the Ideological and Political Model of Graduate Computer Courses under the Background of "Three Comprehensive Education" Chunhong Cao, Yuqiao Chen, Ce Ji, Rong Geng Presenter: Chunhong Cao, Northeastern University, China Abstract: This paper expounds the path exploration of constructing the cooperative education mechanism of "Curriculum Ideological and Political" in Computer Courses as the main content. Combined with the fundamental tasks and requirements of "establishing morality and cultivating people" and "Three Comprehensive education", this paper analyzes and explores how to integrate "Curriculum Ideological and Political" in Computer Courses into the education process of engineering postgraduates, in order to realize the value of collaborative education mechanism in curriculum ideological and political teaching. And provide reference value for training new engineering comprehensive talents with reliable politics, rich humanistic literacy, excellent professional skills and good professional ethics.

►Online Session F

► **Artificial Intelligence in Education and Personalized Learning**
► **Session Chair: Prof. Patrick D. Cerna, MAPUA Malayan College Mindanao, Philippines**
► 15:30-18:15 | March 24, 2024
► Zoom link: https://us02web.zoom.us/j/81518313078   Password: 032224
► E4236, E3136, E3155, E3198, E3197, E503, E1028, E4233, E1085, E1090, E3175

E4236 **15:30-15:45**	Transcribing and Translating Bilingual Text using OCR Tesseract and Deep Learning Patrick D. Cerna, Rhodessa J. Cascaro, Deus William B Carino, Joshua Victor B Cabahug, Khing Dave E Laurente, Jakob Hans Maraguinot Presenter: Patrick D. Cerna, MAPUA Malayan College Mindanao, Philippines Abstract: This study investigates the efficacy of integrating OCR Tesseract and deep learning methodologies for the transcription and translation of bilingual text. Leveraging OCR Tesseract as the foundation, we employ deep learning models to enhance the accuracy and reliability of bilingual text processing. The textual and image data for the OCR model are collected from diverse sources, including bilingual-language documents and images. The machine learning techniques are trained on Tesseract OCR, an open-source OCR engine, to enhance recognition accuracy for bilingual text. Deeply, a neural machine translation tool, is used for machine translation, with customization tailored to diverse contextual requirements. The process involves collecting Bilingual text and image data, organizing them into training and validation sets for OCR and machine translation models. The data is then cleaned, normalized, and feature engineered to ensure consistency across the dataset. This process includes removing irrelevant characters, punctuation, formatting inconsistencies, and extracting relevant features like document length and language complexity. Our findings underscore the potential of deep learning-driven approaches in bridging the gap between source and target languages effectively, facilitating better preservation of contextual meaning and semantic coherence. Despite certain challenges and limitations, our research lays a solid foundation for further advancements in bilingual text processing, with implications for document digitization, language localization, and cross-cultural communication
E3136 15:45-16:00	A Comparative Analysis of Different Large Language Models in Evaluating Student-Generated Questions Zejia Mi, Kangkang Li Presenter: Zejia Mi, Jiangsu Normal University, China Abstract: Student-generated questions (SGQs) have proven to be a meaningful learning tool, fostering advanced thinking skills in students and aiding teachers in understanding student learning progress. However, grading the quality of SGQs demands significant effort from teachers. In this study, we explore the suitability of large language models in evaluating SGQs and identify which models can effectively replace expert evaluation of practical teaching problems. We devised a five-dimension scale, using expert ratings as the gold standard, and employed Kendall's W consistency analysis to systematically compare different large language model evaluations against expert ratings from six aspects of the scale. The research confirmed the applicability of large language models (LLMs) for the evaluation of SGQs and the exceptional performance of ChatGPT 4.0, which can assist experts in evaluating SGQs. This study aims to facilitate the implementation of artificial intelligence generated content (AIGC) in education and

	reinforces the belief in the substantial potential of large language models for future applications and research in the field of education.
E3155 16:00-16:15	Enhancing AI Education Through Educational Games: Evidence from a Meta-analysis Study Yingxiang Lu, Jiaming Lan, Kangkang Li Presenter: Yingxiang Lu, Jiangsu Normal University, China Abstract: The purpose of this paper is to examine the effects of educational games in AI education through a meta-analysis of 22 empirical studies published over the last decade. We examined the effects of different school segment, experimental period, experimental scales, game types, knowledge types, and teacher interventions on students' knowledge achievement, motivation, and thinking skills. The results of the study proved that educational games have an overall positive impact on AI education. Moderator analyses indicated that the games have a greater impact on students' motivation and knowledge achievement, and a lesser impact on thinking skills. Unexpectedly, the longer the experimental period, the smaller the experimental period, and the program with teacher intervention, the better the teaching and learning outcomes. In terms of game types, puzzle and robotics games were the most effective. And on the type of AI knowledge, the study found that games were most effective when used as content to teach AI algorithms.
E3198 16:15-16:30	Annotation of International Chinese Classroom Components Based on Large Language Model Siting Chen, Ni Cao, Ziyu Wang, Jimei Li Presenter: Siting Chen, Beijing Language and Culture University, China Abstract: The paper aims to explore the differences in the field of smart education by comparing and analyzing the annotation results of international Chinese classroom data. Applying Professor Yanqun Zheng's International Chinese Teaching Components Model, further annotation work was carried out based on the research of its structure and process. First, we carefully annotated the data from the international Chinese education classroom of Beijing Language and Culture University. Then we explored the differences in the application of Large Language Models (LLMs) in the field of education through the results of manual annotation. The experimental results show that the Annotation of SparkDesk is more consistent with the results annotated by people. It may contribute to the development of LLMs in educational classroom data annotation and analysis, as well as their application in the field of education.
E3197 16:30-16:45	Development of an Artificial Intelligence based Counseling Assistance Platform for College Students Guohua Zhu, Yanci Zhou, Hui Wei Presenter: Hui Wei, Jianghan University, China Abstract: The demand for psychological counseling among college students is constantly increasing, while the availability of traditional counseling services remains limited. To address this gap, this study presents the development of an artificial intelligence (AI)-based counseling assistance platform tailored for college students. The platform is designed to enhance psychological counseling services through the integration of AI and related network technologies. The research focuses on psychological counseling dialogue mode, ontology graph construction, user intention understanding, and an intelligent conversation engine. Key technologies and algorithms

	utilized in the development of the platform are introduced, including a psychological counseling dialogue structure model, an ontology extraction algorithm based on the BERT model, a joint extraction strategy for discovering entities and relationships in psychology, and a hybrid network intent recognition model. The platform aims to enhance students' counseling experience, making it more accessible, timely, and personalized.
E503 16:45-17:00	eBaybayMo: An E-Learning Mobile Application Tool for Transliterating Baybayin Characters to Latin Letters using kNN Algorithm Max Angelo Dapitilla Perin, Darrel Abuyabor Cardaña, Cecilia Tabel Gumanoy Presenter: Max Angelo Dapitilla Perin, Bohol Island State University-Bilar Campus, Philippines Abstract: Writing systems have played an essential role in human communication, evolving uniquely within various cultures and societies. One such writing system is Baybayin, an ancient script for writing Philippine languages that has recently rekindled interest. This study dedicates itself to developing a Baybayin Character Recognition and Transliteration mobile application that utilizes the k-Nearest Neighbors (k-NN) Algorithm. The primary objective of this mobile application is to enhance the accessibility of Baybayin by enabling users to recognize and transliterate images of fundamental Baybayin characters. Utilizing the k-NN algorithm within the API enhances accuracy through machine learning techniques. Before we make the app available to users, we will test images of primary Baybayin characters captured on mobile phones for accuracy. After assessing the machine learning model API using a 2x2 confusion matrix, it achieved an accuracy rate of 95.47%. The researchers recommend implementing the developed system in schools that teach Baybayin. Further, future researchers may conduct studies using empirical evidence and impact assessment of utilizing the developed system correlated with students' efficiency and performance.
E1028 17:00-17:15	MobaCare: Development of Mobile Application as an Assistive Tool for Speech Therapy Carlito Jr. Loyola, Marlon Diloy and Leandro De Luna, Presenter: Carlito O. Loyola Jr., National University Abstract: Mobile applications for speech therapy are becoming dominant in clinical practice or therapy sessions. For children diagnosed with speech delay, the mobile application provides a chance to increase the practice outside the classroom settings. However, the amount and prompt explosion available for mobile applications poses challenges for speech therapists and clients on how to find this mobile application and, more importantly, to determine which one is the best to use. Therefore, to recognize where the improvement of the assistive mobile application is required, an evaluation needs to be led. The study's main purpose was to find answers to a series of formulated problems to fill a gap in designing and developing an assistive mobile application that was used in the development of preschool. Moreover, the scope of this study was primarily aimed at designing the element for an assistive mobile application. For the researchers to complete it, the researchers applied the ADDIE model in the development process. The data gathered according to the speech therapists were collected with the use of interviews and observation and later analyzed by the researchers utilizing the content analysis coding scheme. As a result, the assistive mobile application elements such as responsive, communicative, comprehensive, and language expressive were included in the design of MobaCare which revealed suitable to the needs of the speech therapists. Wherein, the assistive mobile application

	presents the potential to allow a more interesting result in treating children with speech delays. Furthermore, MobaCare performed as an assistive tool accomplished as a channel provided help to the speech therapist to transfer various knowledge in delivering the content for the children to have intuitive learning activities for communication development.
E4233 17:15-17:30	Designing and Implementing Adaptive Learning Management System to Improve Programming Proficiency: A Study at Ama Computerlearning College (Aclc), Ormoc Campus Ibona L. Panto, Larmie Feliscuzo, Cheryl B. Pantaleon Presenter: Ibona Lunzaga Panto, Aclc College Ormoc/Cebu Institute of Technology University, Philippines Abstract: The adaptive Learning Management System (LMS) is a platform that integrates adaptive learning principles and technologies. It has become an indispensable tool in contemporary education, transforming how students interact with course material and personalized learning experiences. This study examined the design and implementation of an adaptive Learning Management System at ACLC College, Ormoc campus, to improve students' proficiency in computer programming. The objective was to provide an enhanced learning experience that caters to the diverse learning styles of the students enrolled in computer programming. This adaptive Learning Management System promotes a highly interactive and customized online learning environment. The study included 20 participants in the qualitative phase. The qualitative analysis revealed significant challenges experienced by the students with the current teaching approach of the instructors teaching computer programming subjects. These include a uniform curriculum, non-adaptive content delivery, lack of immediate feedback and progress tracking, ineffective group learning, traditional assessment, and conventional learning methods. Conversely, 78 participants took part in the quantitative phase of this study. The study's quantitative analysis showed that the adaptive Learning Management System features were perceived positively and substantially impacted students' proficiency in computer programming. These findings highlight the crucial importance of technology in modern education and propose a revolutionary approach to programming education.
E1085 17:30-17:45	Recommendations for personalised learning paths Zhijun Yang, Yurong Zheng, Ying Yang Presenter: Zhijun Yang, Educational Department of Yunnan Province, China Abstract: Contemporary education systems face the challenge of meeting diverse learning needs. Traditional standardized curricula often fail to accommodate the unique learning pace and academic abilities of students, thus leading to the pursuit of personalized learning paths. This paper extensively investigates personalized learning path recommendation algorithms, addressing gaps and deficiencies in prior research. By combining collaborative filtering and deep learning models, we propose a novel personalized learning path recommendation algorithm. Experimental results demonstrate that the recommendation algorithm employing deep learning models outperforms traditional collaborative filtering methods in accuracy and recall. Our research fills existing gaps in the field and provides valuable insights and solutions for future developments in personalized learning path recommendation algorithms.
E1090 17:45-18:00	Research on the Application of Knowledge Graph in Teaching --- Taking "Edge Computing and Intelligent Vision Application" Course as an Example

	Ming Hui Zhang, Ming chao Zhang Presenter: Minghui Zhang, Sanda University, China Abstract: In the process of digital transformation of higher education teaching, knowledge graph technology is applied to the construction and reform of curriculum teaching. This paper analyzes the current situation and problems of online and offline blended courses, expounds the advantages of course construction based on knowledge graph technology, and applies knowledge graph technology to the course construction and reform of Edge Computing and Intelligent Vision Application. The curriculum knowledge graph optimizes the course content, integrates high-quality educational resources, reforms the students' learning as the center, meets the needs of students' personalized learning, cultivates students' thinking and ability, builds a diversified evaluation system, and promotes the improvement of teachers' teaching ability.
E3175 18:00-18:15	Exploration of Virtual-real Mixed Experimental Teaching Based on Experimental Phenomenon Analysis Fengqiang Deng, Xiaoyang Xu, Jiazheng Ding, Zhidong Wang, Jun Xiao, Ling Yang Presenter: Deng fengqiang, South China University of Technology, China Abstract: Experimental teaching plays a very important role in electrical engineering majors in universities and is an important link in cultivating students' innovative abilities. In response to the current situation that there are significant differences between equipment in traditional experimental teaching, which makes it difficult for students to analyze and find the reasons. This paper proposes exploration of virtual-real mixed experimental teaching based on experimental phenomenon analysis. Firstly, introduce a hybrid experimental teaching approach that combines virtual simulation and offline experiments. Secondly, taking electrical engineering experimental teaching as an example, based on the current offline experimental teaching. Students are encouraged to use simulation software for corresponding modeling and simulation, and then compare and analyze the differences in experimental phenomena. Finally, the mixed experimental teaching of a certain electrical engineering experimental project explored the benefits of this experimental teaching, which is crucial for cultivating students' innovative abilities and laying a foundation for modeling and simulation in subsequent graduation projects. In addition, considering the universality and generalizability of experimental teaching, this article has broad reference significance for other disciplines and majors.