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**Conference Program**

# 2022 4TH INTERNATIONAL WORKSHOP ON ARTIFICIAL INTELLIGENCE AND EDUCATION

November 11-13, 2022

Xiamen, China (Virtual)

Co-sponsored by

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厦門大學
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**The 4th International Workshop On**

**ARTIFICIAL INTELLIGENCE AND EDUCATION**

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# Welcome Message

WAIE 2022 VIRTUAL CONFERENCE

On behalf of the organizing committee, we warmly welcome you to attend 2022 4th International Workshop on Artificial Intelligence and Education (WAIE). WAIE 2022 is co-sponsored by Xiamen University, hosted by the School of Informatics Xiamen University (China). It is technically supported by Beijing University of Posts and Telecommunications (China) and Kharkiv National Medical University.

We would like to express our gratitude to the distinguished speakers, Prof. Yew-Soon Ong (NTU, Singapore), Prof. Abelardo Pardo (UniSA, Australia), and Prof. Zehui Zhan (SCNU, China) for giving a speech in the conference. Apart from that, we'd like to extend our thanks to all the authors for your contribution as well as the technical program committee members and external reviewers. Their high competence, enthusiasm, valuable time and expertise knowledge, enabled us to prepare the high-quality final program and helped to make the conference become a successful event. Lastly, we would like to thank all of the conference participants for their contributions which are the foundation of this conference.

We truly hope this conference will provide each one of you with a good platform for networking opportunities and interactions with other delegates from both the academics and industry. At last, we appreciate your participation and support.

With Warmest Regards,
Conference Organizing Committee, WAIE 2022
Xiamen

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# Conference Committee

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# Agenda Overview

## Friday, November 11, 2022

**Meeting ID:** 894 2234 0673   **Zoom Link:** https://us06web.zoom.us/j/89422340673

| 14:00-14:40 | 14:40-15:30 | 15:30-16:00 |
|---|---|---|
| A023 | A031 | 15:30-16:00: For participants who are unavailable at allocated time. |
| A1006 | A006 | |
| A010 | A020 | Note: |
| A003 | A026 | a) All the presenters are required to join the test on **Friday, November 11**, to ensure the next day meeting runs smoothly. |
| A024 | A007 | |
| A009-A | A013 | b) We will test control panel including screen sharing, audio, video and "Raise Hand" feature, etc. Please get your presentation slides and computer equipment prepared beforehand. |
| A030 | A028 | |
| A016 | A019 | |
| A021 | A022 | c) WAIE2022 Banner (jpg.) |
| A1003 | A012 | d) Zoom Background (jpg.) |
| | A029 | |

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# Agenda Overview

## Saturday, November 12, 2022

**Meeting ID: 894 2234 0673    Zoom Link: https://us06web.zoom.us/j/89422340673**

| SESSION TIME | ACTIVITY | SPEAKER |
|---|---|---|
| Chairman: Assoc. **Prof. Xiao Feng** (School of Informatics, Xiamen University, China) | | |
| 09:00-09:10 | Opening Speech by Organizing Chair | **Prof. Haixin Sun**, School of Informatics, Xiamen University, China |
| 09:10-09:55 | Keynote – "Insights on Multifactorial Evolution: One-Pass Learning of a Set of Machine Learning Model Sets from Foundation models with Neuroevolutionary Multitasking" | **Prof. Yew-Soon Ong** FIEEE, Nanyang Technological University, Singapore |
| 09:55-10:40 | Keynote – "Systematic Adoption of Learning Analytics in Higher Education" | **Prof. Abelardo Pardo** University of South Australia, Australia |
| 10:40-11:00 | | *Group Photo & Break Time* |
| 11:00-11:45 | Keynote – "C-STEAM Education and Technology-supported Collaborative Innovation" | **Prof. Zehui Zhan** South China Normal University, China |
| 11:45-13:00 | | *Break Time* |
| 13:00-15:30 | Session 1: AI based Teaching Management and Technology | A023  A1006  A010  A003  A024  A009-A  A030  A016  A021  A1003 |
| 15:30-15:45 | | *Session 1 Group Photo & Break Time* |
| 15:45-18:30 | Session 2: Teaching Mode and Course Learning | A031  A006  A020  A026  A007  A013  A028  A019  A022  A012 A029 |
| 18:30- | | *Session 2 Group Photo* |

## Yew-Soon Ong

Professor
Nanyang Technological University, Singapore

November 12 (Sat.) 09:10-09:55

# Insights on Multifactorial Evolution: One-Pass Learning of a Set of Machine Learning Model Sets from Foundation models with Neuroevolutionary Multitasking

Yew-Soon Ong (Fellow of IEEE) received the Ph.D. degree in artificial intelligence in complex design from the University of Southampton, U.K., in 2003. He is President's Chair Professor in Computer Science at Nanyang Technological University (NTU), and is the Chief Artificial Intelligence Scientist of the Agency for Science, Technology and Research in Singapore. At NTU, he also serves as Director of the Singtel-NTU Cognitive & Artificial Intelligence Joint Lab, and Director of the Data Science and Artificial Intelligence Research Center.

He was Chair of the School of Computer Science and Engineering at NTU from 2016-2018. His research interest is in artificial and computational intelligence, presently in Memetic and Transfer optimization. He is founding Editor-in-Chief of the IEEE Transactions on Emerging Topics in Computational Intelligence and AE of IEEE TNNLS, the IEEE Cybernetics, IEEE TEVC, IEEE TAI and others. He has received several IEEE outstanding paper awards, Nanyang Education Excellence Award and was listed as a Thomson Reuters highly cited researcher and among the World's Most Influential Scientific Minds.

Abstract: The human mind possesses the most remarkable ability to perform multiple tasks with apparent simultaneity. In fact, with the present-day explosion in the variety and volume of incoming information streams that must be absorbed and appropriately processed, the opportunity, tendency, and (even) the need to multitask is unprecedented. Thus, it comes as little surprise that the pursuit of intelligent optimization algorithms that are capable of efficient multitasking is rapidly gaining importance when faced with the increasing complexity of real-world problems. The design of optimization algorithms has traditionally been focused on efficiently solving a single optimization task at a time. Multifactorial optimization (MFO) is a new paradigm in evolutionary computation (EC) that was recently introduced to explore the potential of evolutionary multitasking optimization. The nomenclature signifies a multitasking search involving multiple optimization tasks at once, with each task contributing a unique factor influencing the evolution of a single population of individuals. MFO leverages the scope for implicit genetic transfer offered by the population in a simple and elegant manner, by exploiting underlying synergies between related tasks. In this talk, the formalization of the concept of MFO is introduced, particularly the Multifactorial Evolutionary Algorithm (MFEA) and its Multi-Objective variants (MO-MFEA, MO-MFEA-II) that are equipped to harness the genetic complementarity between tasks. Last but not least, a novel use-case of the MO-MFEA (in the context of neuroevolutionary multitasking) for tractable, one-pass learning of sets of machine learning model sets from foundation AI models is presented for the first time, leading to the creation of models that we collectively envision as 'Masters of All Trades'.

## Abelardo Pardo

Professor

University of South Australia

Dean of Programs (Engineering) at UniSA STEM

November 12 (Sat.) 09:55-10:40

Abelardo Pardo is Professor and Dean of Programs (Engineering) at UniSA STEM. His research interests include the design and deployment of technology to increase the understanding and improve digital learning experiences. More specifically, his work examines the areas of learning analytics, personalized active learning, and technology for student support.

He is the author of over 150 research papers in scholarly journals and international conferences in the area of educational technology and engineering education. He is currently member of the executive board and president of the Society for Learning Analytics Research (SoLAR).

# Systematic Adoption of Learning Analytics in Higher Education

Abstract: The presence of data collected through technology mediation in learning experience is now ubiquitous. Researchers have shown the potential of this data to enhance the support for instructors and institutions to increase the quality of the overall student experience. However, the deployment of this support at the institutional level is encountering significant barriers. This talk will discuss these barriers and provide insights about the structures and approaches that facilitate the adoption of analytics at the institutional level.

# C-STEAM Education and Technology-supported Collaborative Innovation

## Zehui Zhan

Professor
South China Normal University,
China

Zehui Zhan, Ph.D., Professor, Doctoral Supervisor in South China Normal University, Youth Pearl River Scholar, Hong Kong Scholar, PI of the Smart Educational Equipment Industry-University-Research Cooperation Base, 2013 Young Excellent Teacher in universities in Guangdong Province, 2020 Highly Cited Chinese Researcher (Education). Her Doctoral dissertation has been nominated as the national 100 excellent doctoral dissertations in China in 2012. She has got the annual award of youth excellent universities teacher from Fok Yingdong Education Foundation and Ministry of Education, the title of best teachers achieving highest teaching quality in SCNU, and the first prize of national educational software competition.

Her research interest includes Learning Science, STEAM education, Smart education, and Entrepreneurial education.

Abstract: C-STEAM is a typical kind of transdisciplinary education, with the goals of inheriting outstanding traditional culture and fostering learners' STEAM competency, which mainly has three potential core values: (1) the educational value of cultivating students'key competences; (2) the carrier value of inheriting traditional culture; (3) the social value of booming regional culture. In this presentation, the C-STEAM concept model and the related cases applied in primary and middle schools would be introduced (e.g., the Wooden Arch Bridge C-STEAM case, the Cantonese Slang C-STEAM case, the Dragon Boat C-STEAM case, the Ceremic Lights C-STEAM case, the P-CAR model, the Cultural Guangzhou C-STEAM case, etc.).

# Information for Presenter

## 01 — No-Show Policy

A paper not presented or presented by a non-author without prior written approval by the Conference TPC will be removed from the final conference proceedings.

No refund will be approved to authors of those papers.

## 02 — Duration of Presentation

15min each report, including 12min for presentation, and 2-3min for Q&A.

Presenter's certificate will be sent out by email, one week after the meeting.

## 03 — Report File

i.   PowerPoint file
ii.  PDF file

Please join the meeting at least 10min before your session starts and get your presentation prepared beforehand.

## 04 — "Best Presentation" Award

It will be selected from each session by the session chair.

Please check our official website a week after the meeting for information.

The presenter will receive a certificate of "Best Presentation".

# Technical Session

| TIME / PAPER ID | ABSTRACT |
|---|---|
| 13:00-13:15<br>A023 | Research on the Training Mode of Collaborative Innovation Talents under the Cloud Platform Environment<br>**Bo Li**, Communication University of China, China<br><br>Abstract—This research discusses the innovative talent training mode in which teachers, students and resources cooperate with each other in the ""cloud platform"" teaching environment. The construction mode of curriculum resources under the cloud platform has been constructed, the construction of ""fragmentation"" and ""micro curriculum"" of specific curriculum resources has been studied, various types of teaching resources suitable for mobile learning have been explored in depth, and a large number of ""micro resources"" have been created and released to the cloud platform, facilitating teachers and students to share learning resources; Through the cloud platform, real-time and non real-time teacher student interaction and student student communication are realized before, during and after class, forming a smart classroom teaching mode based on the cloud platform, realizing online micro class viewing before class, face-to-face discussion between teachers and students in class, online discussion, question answering and homework after class, and timely feedback, formative evaluation and peer mutual evaluation; At the same time, the mutual evaluation mechanism of teaching effect between students and teachers and the evaluation mechanism of resource utilization effect have been established, forming a scientific evaluation system of teaching effect. |
| 13:15-13:30<br>A1006 | Research and Application of Virtual Human Real-time Pose Reconstruction based on Extended Reality<br>**Shengzhi Yuan**, Naval University of Engineering, China<br><br>Abstract—Research of interactive and collaborative virtual training based on extended reality technology has become a hot issue in the field of equipment training. In order to meet the needs of interactive and collaborative virtual training for complex equipment, a real-time pose reconstruction method of virtual human based on HTC Vive hardware system was proposed in this paper, which verified in system practice. Through engineering applications, it was proved that the HTC Vive hardware system could meet the requirements of general collaborative interactive virtual training, and the virtual human pose real-time reconstruction method above had good operability and strong practicability, had certain practical significance. |

| TIME / PAPER ID | ABSTRACT |
|---|---|
| 13:30-13:45<br>A010 | Using AI to Predict Caregiver Ability to Self-Manage Chronic Illness When Caring For Children With Special Health Care Needs<br>**Jordan Rayle**, University of North Carolina Wilmington, USA<br><br>Abstract—Children with special health care needs, in most cases, can easily be treated with a combination of medication and parental care. However, the requirements involved can be pushed further when the parent caring for the child must also treat an illness while caring for their own illness. In many instances, this leads to an inability of the parent to be able to manage their own illness while also trying to manage their child's care. Through surveys given out, data was collected to analyze the correlation between both the severity of a child's chronic illness, the intrusiveness felt by a caregiver, and the impact those factors both have on the caregiver's management of their own chronic illness. Through various machine learning algorithms, it was found that there was a fair amount of accuracy when attempting to predict the overall intrusiveness of illness care for parents. However, the results show that the algorithms analyzed could accurately predict this parental intrusiveness of care within as mall margin of error. |
| 13:45-14:00<br>A003 | Progressive Project-Based Learning for the Sustainable Development of Product Design Competences<br>**Shuang Lin**, Taizhou university, China<br><br>Abstract—Product design is a compound knowledge creation that integrates knowledge from multiple disciplines and is a process of mutual transformation between tacit knowledge and explicit knowledge. In order to solve the connection between static explicit knowledge and dynamic tacit knowledge in product design, as well as the progressive dynamic creation of knowledge, progressive projects are introduced into the course of product design, and students' learning experience are tracked since their sophomore year. Based on the SECI model, this paper explores the embedding of the introduction of competition projects and enterprise projects into class, as well as internship in enterprises and graduation project, into the socialized, externalized, combined and internalized external spiral, so as to form the internal and external double spiral model of product design knowledge creation, which not only improves the connection and transition between professional core courses, but also facilitates the formation of students' critical, creative and systematic thinking, the continuity of knowledge creation and the sustainable development of their learning ability. |

| TIME / PAPER ID | ABSTRACT |
| --- | --- |
| 14:00-14:15<br>A024 | Research On Teaching Data Construction Based On Intelligent Information System<br>**Shiqiang Yuan**, Army Logistics Academy of PLA, China<br><br>Abstract—Focusing on serving the remodeling of the teaching system and cultivating the innovation ability of high-end talents, this paper explores the establishment of the teaching data management system of colleges and universities, promotes the orderly management of teaching data through intelligent means, improves the quality and efficiency of college management, builds an open, inclusive, intelligent and innovative teaching data system based on intelligent information system, provides support for the cultivation of intelligent talents, and accelerates the improvement of the informatization level of colleges and universities, Realize the leapfrog development of college management. |
| 14:15-14:30<br>A009-A | Employment of Artificial Intelligence on College Students' Attitudes and Assistance Willingness Toward Shaping Age-friendly Environment<br>**Chia-Wen Liu**, Asia University, Taiwan<br><br>Abstract—Background : With increasing age and deteriorating physical functions, the risk of developing multiple chronic diseases and the need for medical care also increase (World Health Organization, 2015). How young people can create an age-friendly environment based on the three pillars of active aging (i.e., health, participation, and safety) with an inclusiveness and empathy has become emerging issues need to be addressed in the face of aged population structure and subsequent political, technical, and economic impacts. Based on the fact that universities play a pivotal role in ideological guidance on college graduate walking off campus, and fulfill their social responsibilities through humanistic care and assisting disadvantaged groups, this research adopts an innovative cross-disciplinary approach, intending to use artificial intelligence to explore the prediction of college students' the attitude on willingness to assist the elderly to shape a friendly environment, as well as to analyze the keys for the inclusive generation. Method : This study is a secondary database analysis with a retrospectively cross-sectional research design. The source of the survey data with good validity and reliability was collected from the largest social network website in Taiwan and was conducted by Professor Hung-En Liao in 2014. The original research sample was 390 people. From the original database, we selected eight attitude variables, including "Outdoor spaces and buildings", "Transportation", "Housing", 'Social participation", "Respect and social inclusion", Civic participation and employment", "Communication and information", "Community support and health services" as input variables, while we selected "The score of willingness to assist" as output variables.. The analyses tools employed the supervised machine learning algorithm to analyze the data, and adopted the CHAID algorithm of the decision tree as well as through the R language i386 version 3.6.2 to anal. |

| TIME / PAPER ID | ABSTRACT |
|---|---|
| 14:30-14:45<br>A030 | Advances Research in Speech Emotion Recognition based on Multi-task Learning<br>**Yiping Ma**, Nanjing Normal University, China<br><br>Abstract—In recent years, the powerful feature learning capability of deep learning has boosted the development of speech emotion recognition. However, issues like model overfitting or unbalanced feature distribution across corpora still challenge this area. Therefore, multi-task learning methods have been applied to speech emotion recognition, which shares valuable information among multiple related tasks to improve model performance. Given its sufficiently learning effect, this paper outlines and summarizes the recent literature on speech emotion recognition based on multi-task learning. Our contributions can be organized as follows: (1) we briefly review the current status of speech emotion recognition research and provide an overview of multi-task learning, (2) highlight the current multi-task speech emotion recognition algorithms, and (3) finally summarize the challenges and opportunities by analyzing the performance of different methods. We believe our review can summarize the related field's development and inspire discussion of future research. |
| 14:45-15:00<br>A016 | Multi-Scale Attentive Knowledge Tracing<br>**Feifan Fan**, Xiamen University, China<br><br>Abstract—Learning is a dynamic, complex, and time-seriesprocess. Knowledge tracing (KT) aims to simulate learners'learning process by using learners' behavioral performance inpast learning activities. In recent years, self-attentive mechanismshave been widely used in KT model. The literature shows thatattention-based KT models generally outperform traditional deepknowledge tracing models. In order to simulate the learningprocess of learners more effectively we propose a new multiscaleattentive knowledge tracing model for KT. Specifically, themodel uses multi-scale multi-head attention to capture learnerfeatures at different time scales and use them to model learners'learning behaviors. We also use relative position encoding tomaintain the consistency of location information across multiplescales of attention. Experiments on real datasets show that ourmodel outperforms state-of-the-art KT methods. |

| TIME / PAPER ID | ABSTRACT |
|---|---|
| 15:00-15:15<br>A021 | An Innovative Judge Monitoring Algorithm for the Online Defense<br>**Yangzhen Zhao**, Dalian University of Technology, China<br><br>Abstract—Since the outbreak of COVID-19, teaching and learning activities have gradually shifted online. In addition to traditional teaching, the student defense, thesis proposal, interim inspection, admission and other defense processes are also online. Online teaching and online assessment methods are facing challenges in student engagement. At the same time, for teaching executors (teachers), there are also participation and emotional initiative problems. Especially in the defense process, it is not easy to adequately monitor the teacher evaluation process because of the use of secret ballots. In this paper, we propose a defense monitoring algorithm that analyzes the working status of the judges from the defense score data given by the judges in order to identify judges who are not working seriously and remove their scores. A large amount of measured and simulated data is available to justify the algorithm. |
| 15:15-15:30<br>A1003 | Enlightenment and research on the application of big data in the joint operations of the U.S. military to the talent training of colleges and universities in China<br>**WANG Zhan**, Dalian Naval Academy, China<br><br>Abstract—With the arrival of the information age, big data technology is booming, bringing reform and innovation to all walks of life. The talent training system of colleges and universities in China is relatively traditional. The students' learning in class is poorly matched with the social needs after graduation, which cannot meet the social needs for higher talents, resulting in a waste of resources. Starting with the application of big data in joint operations by the U.S. military, this paper explores a new path for talent training in Colleges and universities in China. This paper uses big data technology to analyze social needs, clarify students' characteristics, determine key objects, calculate the matching degree, and conduct in-depth research on the selection of monitoring and evaluation, process optimization and management decision-making methods with systematic ideas. At last, this paper improves the matching degree between society and colleges and universities, Solve the problem of resource waste from the root. |

# Technical Session

| TIME / PAPER ID | ABSTRACT |
|---|---|
| 15:45-16:00<br>A031 | A New Uncertain Reasoning Approach For Example Selection in the Example-Based Problem Solving Tutoring<br>**Fang Yu**, Jinan University, China<br><br>Abstract—This paper proposes EBT, an example-based tutoring tool which helps learners to work out their own solutions to specific problems. It provides adaptive suggestions on problem solving in the sense that it guides the user through the entire problem solving path based on their individual problem solving ability and performance along the problem solving path steps. On request of assistance on solving a problem, the EBT tool sifts out students with "similar" ability to the user in solving this problem and presents to him/her solutions of these students as examples in an order dependent on their similarity values. Example solutions are cut into slices. Appropriate slices are presented dependent on the stage of the problem solving path. At any stage of the path the user may choose to accept assistance or try to give an answer on his/her own. The tool is built within a first-order reasoning system with an uncertain reasoning function. The problem solving abilities of students are carefully analyzed on the basis of facts and rules in database. A detailed description of the EBT tool, including its model and the deduction process, as well as it simple mentation using the Haskell language, a leading functional programming language, is given. |
| 16:00-16:15<br>A006 | Color-gameplay, global-local processing tradeoffs: Towards personalized/generative HCI playfulness<br>**Wui-Lee Kok**, Sunway University, Malaysia<br><br>Abstract—Cognitive aging is inherent to everyone. Brain-training games are found to help seniors' attention span, processing speed, logical reasoning, and spatial ability. Hence, in this study, we present QuizMap, aimed at developing games, which are fun, new and adaptive/generative, for both young and old. We hypothesize that with architectural/design patterns and structure/behaviour/ function as pivot, color/color coding-gameplay refactoring/trade-offs can result in dynamically-generated computer playfulness, and enhance attention, memory, problem-solving, UX. Gameplay would require broader multi-variate modelling/processing. In QuizMap, seniors can switch between a digital matching card game and a digital Monopoly game, with physical exercise suggestions in chance cards. User feedback highlights the games' perceived strengths/weaknesses, that color/color codes do help shift centrality to gameplay. Furthermore, pragmatic factors, are slightly more important than hedonistic factors, in influencing attractiveness/UX. Though episodicity is designed into the games, we have no data as yet, to infer its effects on attention/memory/global-local processing. |

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| TIME / PAPER ID | ABSTRACT |
|---|---|
| 16:15-16:30<br>A020 | Design and Implementation of a Teaching Verbal Behavior Analysis Aid in Instructional Videos<br>**Lijun Yang**, Central China Normal University, China<br><br>Abstract—With the rapid development of artificial intelligence technology and its deep integration with education, the use of intelligent means to analyze and study teaching behaviors has become a research hotspot. Teaching behavior can be divided into verbal behavior and non-verbal behavior, among which verbal behavior is the main way of classroom teacher-student interaction, accounting for about 80% of all teaching behaviors. At present, teaching researchers mainly use manual annotation to code and analyze teaching verbal behaviors, which has the problems of low efficiency and individual subjectivity, and it is difficult to collect a large amount of teaching verbal behavior data to analyze teaching patterns. This paper designs and implements a teaching verbal behavior analysis tool using teaching verbal behavior recognition algorithm. It provides the functions of speech transcription of teaching videos, automatic recognition and analysis of teaching verbal behaviors, and analysis of teaching verbal contents, with a view to providing assistance to teaching researchers in analyzing teaching verbal behaviors in instructional videos by using intelligent technology. |
| 16:30-16:45<br>A026 | Machine Learning based Big Data Analysis for Tourism Management Professional Ability Demand<br>**Lijie Yin**, Wuhan Business University, China<br><br>Abstract—In recent years, the development of the tourism industry presents a new trend, which brings new challenges to students' training in tourism management major. In this context, analyzing the characteristics and structure of tourism management professionals ' vocational ability demand is the primary part of tourism management professionals' training. In this paper, the crawler software is used to obtain the recruitment information of students in the tourism industry from the main recruitment platforms in China such as Zhilian Recruitment and 51job. Based on the statistical analysis of job types, recruitment number, industry/regional distribution, and other aspects, multi-dimensional cluster analysis and principal component factor analysis are used to analyze the demand structure of professional ability and the demand structure of core professional ability for different types of occupations, to provide a reference for the construction of the training system of tourism management professionals.. |

| TIME / PAPER ID | ABSTRACT |
| --- | --- |
| 16:45-17:00<br>A007 | MOOCs learning pathways recommendation based on sequence alignment<br>**Jinze Liu**, National University of Defense Technology, China<br><br>Abstract—In MOOC education, users often have difficulty understanding courses due to insufficient prerequisite knowledge, which makes it easy to give up learning. Therefore, when recommending MOOCs to users, they also want to be told in what order these courses should be taken. However, the learning pathways of courses generally need to be determined by professionals, which is lacking in online education such as MOOC. In this paper, we propose a MOOCs learning pathways recommendation method based on sequence alignment, which runs without any prior knowledge from professionals. The method analyzes historical behavior data of users in the learning platform, obtains the common choice of multiple users on the order of course learning through sequence alignment, and constructs a graph of MOOCs learning pathways. We verify that our work is useful by conducting experiments based on real data from an online learning platform, and the results show that the learning pathways recommended by our method are in line with experts' teaching experience. |
| 17:00-17:15<br>A013 | Project-based Curriculum Development Model Based on ICAP Framework<br>**Haopeng Niu**, Northwest Normal University, China<br><br>Abstract—Project-based curriculum is based on constructivism, which expects to equip students with the required knowledge and skills in a specific project. It is widely used in the field of vocational education. However, the current project-based curriculum development has problems such as vague teaching objectives and formal project activities. In recent years, project-based curriculum development has been combined with new technology and ideas, producing good teaching effects. This paper combines project-based curriculum development with ICAP (Interactive, Constructive, Active, Passive) framework theory and constructs a ""project-based curriculum development model based on ICAP framework."" The project-based curriculum is designed hierarchically, and the effect of teaching is studied empirically using Nvivo software to solve the problems of vague teaching objectives and formal project activities. |

| TIME / PAPER ID | ABSTRACT |
|---|---|
| 17:15-17:30<br>A028 | Should Physical Education be Taught Online Post Covid-19?<br>**Thao Thi Thu Trinh**, FPT University – FPT Polytechnic, Vietnam<br><br>Abstract—The purpose of this study is to collect students' opinions at a vocational college in Vietnam and find out students' preferences about online learning which was an alternative method as a consequence of the COVID-19 pandemic. This shift in education from traditional classroom learning to online learning at nearly all levels of education in Vietnam can be considered as the biggest teaching method change to date.  As online learning has become more popular in Vietnam due to the COVID-19 pandemic, research is needed to understand student experiences and most importantly reveal views on students' online learning preferences. This study is designed to understand the views, challenges and attitudes about online learning being carried out in a vocational college with simple descriptive statistics research method. Data were collected from 140 students via an online survey system. The survey results show that students face many challenges in terms of networking, interaction between lecturers and students as well as limited direct contact with friends and the percentage of students who do not like online learning is rather high. However, according to the students in this survey, online learning provides many advantages in terms of increasing students' autonomy as well as increasing the number of tech-savvy students. |
| 17:30-17:45<br>A019 | Application of BOPPPS Teaching Mode in the Course of Agricultural Product Logistics<br>**He Siyuan**, Guangdong University of Science and Technology, China<br><br>Abstract—Objective: Explore the BOPPPS teaching mode influence in the course of ""Agricultural Product Logistics"", in order to provide a reference for promoting the teaching reform of logistics management. Methods: Select students from Classes 1 to 3 of the senior year of logistics Management in our college as the research objects. Classes 1 and 2 are the experimental group, and Class 3 is the control group. During the agricultural products logistics course, the control group adopts the conventional teaching method, while the experimental group adopts the BOPPPS teaching mode. The teaching effect and satisfaction were evaluated by examination and questionnaire surveys. Results: The scores of experimental group were significantly higher than those of control group ($t = 2.264$, $P = 0.027$). Experimental group was more satisfied in many ways: understanding emotions and values related with this course, improving professional quality, teaching methods and informationization which plays a promoting role in learning, and stimulating interest in education to encourage active participation, positive interaction with teachers and classmates, and to improve ability of practice and innovation ($P < 0.05$). The students in the experimental group have high recognition of BOPPPS teaching indicate that the BOPPPS teaching model is helpful in improving their learning efficiency. Conclusion: BOPPPS teaching model can effectively promote the teaching effect of ""Agricultural Product Logistics"" course. |

| TIME / PAPER ID | ABSTRACT |
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| 17:45-18:00<br>A022 | Applying Virtual Reality Scenery in C-STEAM Courses: A Case Study of "Lantern Festival" Virtual Venue<br>**Siyuan Lyu**, South China Normal University, China<br><br>Abstract—C-STEAM is a kind of STEM education oriented toward cultural heritage, which aims to enhance students' humanistic literacy and cultural identity while developing their scientific spirit by creating authentic cultural contexts to highly integrate cross-disciplinary knowledge, so as to cultivate innovative talents with both character and ability. Virtual reality scenery, as an effective way of context construction, can provide students with immersive experiences. In this study, we have developed a teaching aid software based on virtual cultural venues to verify the positive role of virtual scenery in C-STEAM education by taking the Lantern Festival as an example. According to the implementation of the project, we clarify the usage and effects of virtual scenery in C-STEAM curriculums based on situated learning, which provides resource support and practical experience for the development of C-STEAM education practice. |
| 18:00-18:15<br>A012 | Teaching exploration of project-based teaching based on OBE-SC-CIPP framework in computer practice course<br>**Shiyin Chen**, Northwest Normal University, China<br><br>Abstract—Most of the computer practice teaching adopts project-based teaching, which takes the completion of the project as the course goal, but neglects to pay attention to the students themselves. This paper analyzes three drawbacks in the current computer practice courses. Taking the computer practice course "JavaWeb Programming Practice" as an example, this report proposes a project-based teaching mode based on the OBE-SC-CIPP framework. The exploration of this new teaching mode for computer practice courses has certain guiding significance for the teaching reform of computer practice courses. |
| 18:15-18:30<br>A029 | Exploration of Higher Mathematics Teaching Model Based on BOPPPS and PAD class<br>**GAO Cuicui**, National Defense University of Science and Technology, China<br><br>Abstract—In order to improve the present situation of higher mathematics teaching and improve the effect of classroom teaching, a new model of higher mathematics teaching based on BOPPPS model and PAD class is put forward, and explored from four aspects: elaborately designing teaching links, enriching and improving teaching resources, continuously innovating methods and means, and constructing teaching cases. The practice shows that the new teaching mode has realized deep interaction and effective evaluation, and optimized the classroom teaching efficiency. |

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