IEIR 2025
WUHAN

Conference Brochure

IEIR 2025

The 4th International Conference on
Intelligent Education and Intelligent Research

November 7 – 10, 2025
Central China Normal University
Hubei Society of Artificial Intelligence for Research and Education
WUHAN, CHINA

华中师范大学人工智能教育学部
Faculty of Artificial Intelligence in Education, CCNU

华中师范大学伍伦贡联合研究院
Central China Normal University Wollongong Joint Institute
UNIVERSITY OF WOLLONGONG AUSTRALIA

湖北省智能科教研究会
Hubei Society of Artificial Intelligence for Research and Education

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BINGO

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📘 Guidance to Attend IEIR 2025

✧ IEIR 2025 will be held from November 7th to 10th, 2025 on the campus of Central China Normal University (CCNU), Wuhan, China.

✧ The conference also can be accessed via Tencent meeting:

Conference Hall, Building 9 Conference Hall A (9101)	Tencent meeting ID： 994-7229-7784 Password: 2025
Conference Hall B (9102)	Tencent meeting ID： 782-7992-8895 Password: 2025

✧ Each Oral presentation, **10 minutes for presentation and 5 minutes for Q&A.**

✧ Posters are required to be printed by author and displayed at the conference, please see details for poster production instructions on the website: **https://www.ieir2025.org/posters.html**

✧ **Please note that all accepted papers must meet the camera-ready requirements and must give an on-site/online oral or poster presentation as required before they can be published.**

📘 Join WeChat Group for IEIR 2025

✧ WeChat Group for IEIR2025 is set up to provide prompt responses for issues related with this conference. Two example issues are network disconnection and announcement.

✧ Please scan the QR code below to join the WeChat group.

✧ Joining the WeChat group is highly recommended; however, it is not compulsory.

✧ Announcements will also be posted on the IEIR2025 website.

✧ Best paper and best student paper will be announced during the conference.
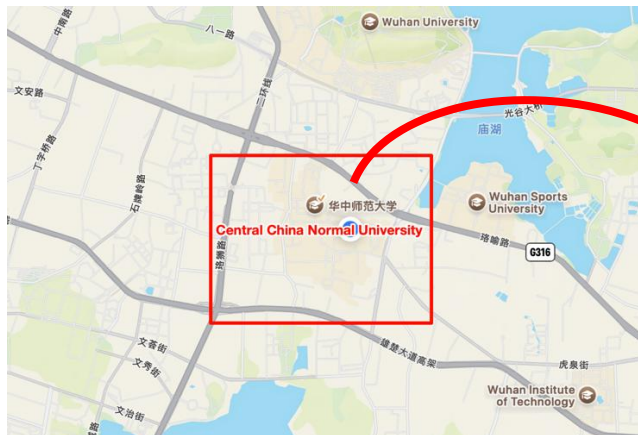
The QR code of the WeChat Group

Group: IEIR 2025 Participants

Valid until 11/10 and will update upon joining group

📘 Conference Venue

➢ **Lecture Hall on the 1st floor of No. 9 Teaching Building, Main Campus, Central China Normal University**

➢ **The guideline to conference venue - No. 9 Teaching Building**

Notes:

❖ Registration at the lecture hall on the 1st floor of No. 9 Teaching Building, Main Campus, Central China Normal University

❖ The guidelines for transportation, please see more details on the website: https://www.ieir2025.org/conference_ts.html

❖ Participants can enter the campus of Central China Normal University by showing their ID cards at the entrance.

❖ Participants who drive by car can only enter and exit the main campus through the **north gate** (near Luoyu Road).

📖 Conference Agenda

IEIR 2025 Conference Agenda	
November 7ᵗʰ Registration	
14:00 – 18:00	**Registration, Device & Connection Test** **Conference Hall, Building 9**
November 8ᵗʰ	
8:30 – 8:50	**Opening Ceremony Host: Jingying Chen** **Conference Hall, Building 9**
8:50 – 9:50	**Keynote Speech Prof. Sheng Wang Host: Jingying Chen** Title: **Powering the Future: How Multi-Model Databases Empower Intelligent Education and Scientific Discovery?** **Conference Hall, Building 9**
9:55 – 10:25	**Invited Talk Prof. Hon Wai Leong Host: Jingying Chen** Title: **Problem Formulation: An Important Skill to Teach in the Age of GAI** **Conference Hall, Building 9**
10:30 – 10:45	**Invited Talk Dr. Wei Cui Host: Jingying Chen** Title: **Integrated Solutions for Advancing Future Schools** **Conference Hall, Building 9**
10:45 – 11:15	**Take Group Photo & Tea Break**
11:15 – 12:00	**Session 1: Best Paper Session Host: Chao Sun** Oral presentation of 3 papers **Conference Hall, Building 9**
12:00 – 14:00	**Lunch(3rd Floor, Guixiang Yuan)**

14:00 – 16:00	**Session 2 Host: Bin He** Topic: **AI for Innovative Learning and STEM Education** Oral presentation of 8 papers **Conference Hall A (9101)**	**Session 3 Host: Ting Zhang** Topic: **AI-Driven Cognitive Strategies and Intelligent Instruction** Oral presentation of 8 papers **Conference Hall B (9102)**
16:00 – 16:30	**Tea break**	
16:30 – 18:00	**Session 4 Host: Longji Zhang** Topic: **AI Tools and Frameworks Empowering Educators** Oral presentation of 6 papers **Conference Hall A (9101)**	**Session 5 Host: Hao Ming** Topic: **Personalized and Neuro-Adaptive Learning with AI** Oral presentation of 6 papers **Conference Hall B (9102)**
18:00 – 20:00	**Dinner(3rd Floor, Guixiang Yuan)**	

November 9ᵗʰ	
8:00 – 8:50	**Keynote Speech Prof. Yizhou Fan Host: Xinguo Yu** Title: **Beware of Metacognitive Laziness When Learning and Teaching with Generative Artificial Intelligence** **Conference Hall, Building 9**
8:55 – 9:25	**Invited Talk Prof. Xiaoshu Xu Host: Xinguo Yu** Title: **Tackle Diversified Academic Writing Challenges: A Personal Learning Environment–Supported Group Academic Writing (PLE-GAW) Approach** **Conference Hall, Building 9**
9:30 – 10:00	**Invited Talk Prof. Zhifeng Wang Host: Xinguo Yu** Title: **Learning Behavior Analytics in Smart Classrooms: Closed-Set, Open-Set, and Open-Vocabulary Progression** **Conference Hall, Building 9**

10:00 – 10:10	**Tea Break**
10:10 – 10:40	**Invited Talk** **Prof. Yifan Zhu** Host: **Xinguo Yu** Title: **Overtime for Large Models: Intelligent Knowledge Service Applications Deeply Integrated with Human Knowledge** **Conference Hall, Building 9**
10:45 – 11:05	**Invited Talk** Host: **Xinguo Yu** Title: **Reshaping the Future of Learning: AI-Driven Transformation in Higher Education** **Dr. Fai Man Chan** **Conference Hall, Building 9**
11:10 – 12:10	**Session 6** Host: **Zhenquan Shen** Topic: **Intelligent Systems, Platforms, and Future Directions** Oral presentation of 4 papers **Conference Hall, Building 9**
12:10 – 14:00	**Lunch(3rd Floor, Guixiang Yuan)**
14:00 – 16:00	**Session 7** Host: **Shengbin Tang** Topic: **Symbolic and Mathematical Reasoning in AI Education** Oral presentation of 8 papers **Conference Hall A (9101)** **Workshop** Host: **Quan Zhang** Topic: **Item Analysis and Test Equating in the Age of AI** **Conference Hall B (9102)**
16:00 – 16:10	**Tea break**
16:10 – 18:00	**Session 8** Host: **Hao Meng** Topic: **AI for Education and Research** Oral presentation of 5 papers and Poster **Conference Hall A (9101)** **Workshop** Host: **Quan Zhang** Topic: **Item Analysis and Test Equating in the Age of AI** **Conference Hall B (9102)**
18:00 – 20:00	**Award & Closing Ceremony [Banquet] (3rd Floor, Guixiang Yuan)**

2025年湖北省智能科教研究会学术年会 Conference Agenda

November 9th

10:00-14:00	**Registration**
14:00–14:10	**Opening Ceremony** Host: **Guangyou Zhou** **Conference Hall, Building 9**
14:10–14:40	**Keynote Speech** Host: **Guangyou Zhou** Title: **Deep Learning: Simply a Large-Scale Computation Based on Human Algorithms** **Prof. Yulin Wang** **Conference Hall, Building 9**
14:40–15:10	**Keynote Speech** Host: **Guangyou Zhou** Title: 教育服务行业知识付费的认知与实操 湖北华素杯教育创始人：童伟 **Conference Hall, Building 9**
15:15–16:00	**Paper Session part1** Host: **Guangyou Zhou** Oral presentation of 3 papers **Conference Hall, Building 9**
16:00–16:10	**Tea break**
16:10–17:10	**Paper Session part2** Host: **Guangyou Zhou** Oral presentation of 4 papers **Conference Hall, Building 9**
18:00 – 20:00	**Award & Closing Ceremony [Banquet] (3rd Floor, Guixiang Yuan)**

📘 Keynote Speech

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Keynote Speaker

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Prof. Sheng Wang

Professor, School of Computer Science, Wuhan University;

Core member, Research Center for Digital and Intelligent Teaching and Education, Wuhan University

Speech Title: Powering the Future: How Multi-Model Databases Empower Intelligent Education and Scientific Discovery?

Abstract: The next frontier in education and scientific discovery is not limited by our ability to generate data, but by our capacity to understand and leverage it. The rise of AI-driven learning platforms, immersive educational experiences, and data-intensive scientific research has created a critical demand for a new generation of data management solutions. Traditional, siloed databases are fundamentally ill-equipped to handle the complex, interconnected, and multi-modal nature of modern data, which includes everything from structured student records and assessment scores to unstructured text, knowledge graphs, sensor data, video lectures, and genomic sequences. This keynote address will explore how multi-model databases are emerging as the foundational technology to overcome these challenges and truly empower intelligent education and scientific discovery. We will delve into how a unified database that natively supports documents, graphs, vectors, and relational models within a single, integrated backend eliminates data silos, reduces architectural complexity, and unlocks unprecedented performance for complex queries.

Biography: Sheng Wang is a Professor in the School of Computer Science and a core member in the Research Center for Digital and Intelligent Teaching and Education at Wuhan University. He received his Ph.D. from RMIT University, M.E., and B.E. from NUAA. His primary research interests are multi-model database theory and systems with applications to Scientific Discovery, Digital Education. His research has been funded by NSFC, MOST, and various industries. He has published over 30 peer-reviewed articles in leading conferences and journals, such as SIGMOD and PVLDB. He received several awards for his research work, including the Best Presentation Award of CCF Wuhan Young Faculty Academic Forum in 2021, the Best Paper Award at ADC in 2017, and the school-level Winner of 3 Minute Thesis Competition in 2016. He regularly serves as a senior PC at CIKM and PCs at KDD, PVLDB, ICDE, and was recognized as an excellent reviewer of KDD 2025 and an associate chair of CIKM 2025, and elected as the current Secretary-General of the CCF Wuhan Chapter.

Keynote Speaker

Prof. Yizhou Fan

Assistant Professor and Research Fellow, Graduate School of

Education, Peking University;

Adjunct Research Fellow, Monash University

Speech Title: **Beware of Metacognitive Laziness When Learning and Teaching with Generative Artificial Intelligence**

Abstract: With the rise of generative AI tools such as ChatGPT, learners and educators face new opportunities—and risks—in hybrid human–AI learning environments. This talk reports findings from studies comparing learning and teaching with different agents (AI, human experts, analytic tools, or none). While AI support boosted performance, it did not consistently enhance knowledge gain, raising concerns about over-reliance and "metacognitive laziness". The talk will highlight these findings and discuss their implications for designing effective and balanced human–AI collaboration in education.

Biography: Dr. Yizhou Fan is an Assistant Professor and Research Fellow at the Graduate School of Education, Peking University, and an Adjunct Research Fellow at Monash University. He earned his Ph.D. in Educational Technology from Peking University and completed postdoctoral training at the University of Edinburgh. His research focuses on AI in Education and Science, AI literacy, learning analytics, and self-regulated learning. Dr. Fan has received multiple national and international honors, including the QS Reimagine Education Award and the Emerging Scholar Award from SoLAR. He is recognized for pioneering work in learning design and AI-enhanced educational innovation.

📘 Invited Speech

Invited Speaker

Prof. Hon Wai Leong

Emeritus Associate Professor, Department of Computer Science,

National University of Singapore;

Speech Title: Problem Formulation: An Important Skill to Teach in the Age of GAI

Abstract: The current widespread use of GAI in almost all sectors has given rise to this common phrase: "AI won't steal your job, but the person who uses AI will". This raises the question: What are the important skillsets to teach students so that they can function more effectively with AI?" In this talk, I argue that "Problem Formulation" is a very important (yet, often neglected) skillset to teach to effectively use GAI in any job/task. Learning to do a proper problem statement, learning to define the scope, specify precise goals, give proper evaluation criteria/metrics, etc are key to effectively use GAI. We illustrate with one or two case studies.

Biography: Prof. LEONG Hon Wai (梁汉槐) is an Emeritus Associate Professor in the Department of Computer Science of the National University of Singapore. His research interest is in the design and analysis of algorithms for optimization problems from diverse application domains including VLSI-CAD, transportation logistics, multimedia systems, and computational biology. As a teacher, he specializes in finding simple ways to explain complicated subject matters. He often gives outreach workshops and talks for students and teachers on creative problem solving in math and science. His workshops are interesting and FUN. They integrate computational thinking with Polya problem solving process, growth mindset, and some FUN MatheMAGIC activities. He often mentors youths and guide them in developing growth mindset and finding their real interests. His most recent course is on "Solving Real World Problems with Computational Thinking".
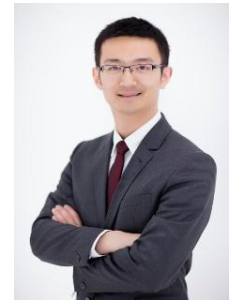
Invited Speaker

Dr. WeiCui

Ph.D. and Postdoctoral Fellow in Artificial Intelligence;

Professorate Senior Engineer;

Founder of Yuanqi AI;

Speech Title: Integrated Solutions for Advancing Future Schools

Abstract: China's basic education has entered a new stage of high-quality connotative development, but there exists a profound contradiction between the "class-based, uniform instruction" model originating from the industrial era and the intelligent era's demand for personalized and innovative talents. We have concretized this macro-level contradiction into four major scenario pain points: ① Teacher Role Conflict – Over 60% of teachers' time and energy are occupied by repetitive tasks; ② Teaching Supply Conflict – Standardized teaching fails to match students' stratified learning needs; ③ Evaluation and Feedback Conflict – Current evaluation emphasizes results over process, with delayed feedback; ④ Home–School Collaboration Conflict – Information asymmetry leads to low efficiency in collaborative education. Taisu Yuanqi AI uses AI as a "neural nexus" to break down the barriers among teaching, learning, evaluation, management, and education cultivation, and to build a new educational ecosystem where data can flow, burdens can be reduced, home and school can work in harmony, and education retains its human warmth. The value and significance of this achievement lie in the fact that it is not only a proactive response to the national strategies of "Education Digitalization" and "AI Plus", but also a systematic exploration of the ideal of "large-scale personalized education." It aims to provide a practical, replicable, and integrated solution to address the development bottlenecks of basic education.

Biography: Cui Wei, Ph.D. and Postdoctoral Fellow in Artificial Intelligence, was selected as one of the "MIT Technology Review Innovators Under 35 (MIT TR35)" in 2019. He is a professorate senior engineer, with 28 international academic papers published in the fields of AI and educational big data, and holds dozens of patents and authored works in educational technology. He has led multiple research projects in intelligent education and has received honors such as the IEEE-CIFEr Best Academic Paper Award, the National Award for Outstanding Self-financed Students Abroad, and the Ireland National Scholarship. Dr. Cui has delivered more than 40 academic presentations at international conferences worldwide. He led the end-to-end R&D of AI-powered learning products such as Squirrel AI and YiXue AI. As the founder of Yuanqi AI, he successfully co-built and co-created the "Alliance of 100 Future Schools."

Invited Speaker

Prof. Xiaoshu Xu

Associate Professor, Wenzhou University;

Ph.D. supervisor, Macao Polytechnic University;

Speech Title: ***Tackle Diversified Academic Writing Challenges: A Personal Learning Environment–Supported Group Academic Writing (PLE-GAW) Approach***

Abstract: Learners at different academic stages face distinct barriers in academic writing that cluster into Cognition, Logic, Ability, and Process Management (CLAM). Using a survey and semi-structured interviews with 200 master's, doctoral, and early-career scholars, we identified the largest gaps in Cognition and Ability (pronounced among postgraduates) and in Process Management (acute among early-career scholars), alongside comparable levels of stress and ambivalence across cohorts. To address these needs, we designed a Personal Learning Environment–supported Group Academic Writing (PLE-GAW) intervention integrated with face-to-face instruction and evaluated it in a mixed-methods quasi-experiment: 99 first-year postgraduates used PLE-GAW, while 98 controls received traditional instruction. Thematic analysis and inferential statistics (independent-samples t-tests; Mann–Whitney U) show that PLE-GAW mitigates persistent challenges in topic selection, literature review, research methods, and data analysis via tailored scaffolds (targeted guidance, curated resources, analytic tools, self-assessment). The experimental cohort achieved significantly higher thesis scores, reported greater satisfaction, and experienced reduced writing stress. Findings indicate that a PLE-based, group-oriented design systematically decomposes CLAM-level obstacles and strengthens KSA outcomes, confidence, and collaboration; ongoing work examines agile, checklist-mediated scaffolding with LLM support to further personalize guidance and enhance transfer to publication-oriented tasks.

Biography: Xiaoshu Xu (PhD), is an associate professor at Wenzhou University and a Ph.D. supervisor at Macao Polytechnic University and Stamford International University (Thailand). She also serves as a member of the doctoral dissertation committee at City University of Macau. Dr. Xu is currently the Executive Editor of the Journal of Educational Technology and Innovation (JETI). She has guided over 20 master's and doctoral students, led or participated in three National Social Science Fund projects, and undertaken over ten provincial and ministerial-level research topics. She has published over 70 academic papers in journals such as the Journal of English for Academic Purposes, Assessment & Evaluation in Higher Education, and Educational Technology & Society. She is the author of four academic books. Her research spans Personal Learning Environments, educational informatization, artificial intelligence in education, and EFL teaching. In recent years, she has been dedicated to mentoring young scholars and promoting the development of the JETI journal.

Invited Speaker

Prof. Zhifeng Wang

Associate Professor, Ph.D. supervisor, Central China Normal University;

Speech Title: *Learning Behavior Analytics in Smart Classrooms: Closed-Set, Open-Set, and Open-Vocabulary Progression*

Abstract: This study proposes a next-generation visual analytics framework for learning behaviors in smart-education settings, advancing along a three-stage trajectory from closed-set to open-set to open-vocabulary capability and forming a closed-loop pipeline of "precise visual perception–active cognition–semantic understanding." First, at the closed-set stage, we build a highly robust behavior representation system that addresses classroom complexities such as viewpoint variation, occlusion, and group interactions, thereby overcoming the performance bottlenecks of traditional models in dynamic environments. Second, at the open-set stage, we introduce discriminative modeling of a behavioral semantic space with dynamic decision boundaries to jointly enable accurate recognition of known behaviors and proactive rejection of unknowns, shifting the system from a static, closed paradigm to an open, adaptive one. Third, at the open-vocabulary stage, we establish vision-centric cross-modal collaboration that integrates auxiliary textual cues to bridge the semantic gap between behavior representations and language, endowing the system with zero-shot inference for previously undefined educational behaviors and enhancing generalization and interpretability. Together, these advances support trustworthy deployment, functional expansion, and continual evolution of intelligent educational assessment in real classrooms, steering educational AI from "visual perceptual intelligence" toward "comprehensive cognitive intelligence."

Biography: Zhifeng Wang is an Associate Professor and Ph.D. supervisor in the Faculty of Artificial Intelligence in Education at Central China Normal University. He received a jointly trained Ph.D. from South China University of Technology and Carnegie Mellon University's School of Computer Science. He was selected for Guangzhou's "Elite Program," serves as an Honorary Associate Professor at the University of Wollongong (Australia), is a council member of the Hubei Association for Intelligent Science and Education, and is a member of IEEE, ACM, and CCF. He has served on the Program Committee of the Global Chinese Conference on Computers in Education (GCCCE) from 2019 to 2025. His research interests include educational big data, adaptive learning, learning analytics, and generative artificial intelligence. As principal investigator, he has led three projects funded by the National Natural Science Foundation of China and two funded by the Hubei Provincial Natural Science Foundation. He has published over 150 papers in international and domestic venues, including 50+ SCI/SSCI journal articles, 10 CSSCI papers, and 40 EI-indexed papers; authored five scholarly monographs; holds 25 granted invention patents as first inventor; and has registered 39 software copyrights.

Invited Speaker

Prof. Yifan Zhu

Assistant Professor, Beijing University of Posts and Telecommunications;

Speech Title: ***Overtime for Large Models: Intelligent Knowledge Service Applications Deeply Integrated with Human Knowledge***

Abstract: This report addresses a series of issues encountered during the practical application of large models, such as "frequent basic errors, poor reproducibility, and weak interactive experiences." It explores how to integrate explicit and tacit domain knowledge in the era of intelligent agents to build intelligent knowledge service applications that meet the demands of "professional tasks." The report begins by examining the current challenges in the implementation of large models, analyzing the gap between existing capabilities and actual needs. It then combines the problems encountered and solutions developed by the reporting team to share a proposed framework for constructing intelligent knowledge service applications under current artificial intelligence conditions.

Biography: Dr. Yifan Zhu is currently an assistant professor at Beijing University of Posts and Telecommunications. Before that, he served as a Postdoctoral Research Fellow in the Department of Computer Science and Technology at Tsinghua University from 2021 to 2023. He earned his Ph.D. from Beijing Institute of Technology in 2021. His research interests include AIGC-powered data mining, LLM safety, parameter-efficient fine-tuning of LLMs, graph representation learning, recommendation systems, and related areas.

Invited Speaker

Dr. Fai Man Chan

Vice President of The Professional Civil Servants Association of Macao;

Director of the Information Center at Macao Polytechnic Institute;

Speech Title: ***Reshaping the Future of Learning: AI-Driven Transformation in Higher Education***

Abstract: Higher education is at a critical juncture, propelled by the rapid ascent of Artificial Intelligence (AI). This presentation explores the transformative journey from standardized models of the past to the dynamic, human-centric future of "Education 5.0."

We begin by examining how deep-seated cultural philosophies in the East and West have shaped divergent educational values, influencing teaching methods and learner expectations. The discussion then addresses the immense pressure that digital technology has exerted on the academic ecosystem over the past few decades, highlighting both opportunities and challenges. A central focus is the modern learner, who is no longer a passive vessel but an active "knowledge seeker," equipped with the skills and tools to navigate an increasingly complex information landscape. The emergence of generative AI serves as a critical stress test, fundamentally challenging our approaches to assessment, teaching methodologies, and the competencies we prioritize.

This sharing concludes by outlining a concrete agenda for future exploration, emphasizing the need for collaborative efforts to address the multifaceted challenges we face. Together, we can reshape the future of learning into a more adaptive, inclusive, and innovative ecosystem that prepares learners for the demands of tomorrow.

Biography: Chan Fai Man is a distinguished professional with over 30 years of experience in information and communication technology (ICT), including two decades dedicated to the education sector. He served as the Director of the Information Center at Macao Polytechnic Institute and was recognized as one of Asia's top 100 IT leaders by CIO-Asia magazine in 2013. Chan holds a Bachelor's degree in Computer Science and a Master's degree in Internet Computing from Queen Mary University of London, along with a PhD in Education from Macao City University, where he focused on the application of ICT in educational contexts, particularly in Personal Learning Environments. With strong skills in project management and software development, he created Macau's first mobile map application in 2002.

In addition to his professional accomplishments, Chan is actively involved with several non-profit organizations and has made significant contributions to various research topics at the intersection of education and technology.

Workshop

Prof. Quan Zhang

Adjunct Professor, Guangdong University of Foreign Studies (SCBC);

Workshop Title: *Rasch-GZ: Item Analysis and Test Equating in the Age of AI*

Overview: The purpose of this workshop is to introduce two important aspects of language testing: CTT-based Item Analysis and Rasch-based Test Equating via the Rasch-GZ. This workshop fits the IEIR theme of applications in education and research.

Content: The workshop falls into three parts:

1. **Introduction to the Rasch-GZ**

    ➢   Research background: Classical Test Theory (CTT) and the Rasch model. In particular, the ten-year (1990–1999) MET equating project in China.

    ➢   What is item analysis and what is test equating?

    ➢   The significance of these two aspects.

2. **Demonstration of the Rasch-GZ software**

    ➢   CTT-based item analysis with detailed interpretations.

    ➢   Rasch-based test equating with detailed interpretations.

    ➢   For classroom practice (participants may bring their own data for on-site analysis).

    ➢   For academic research (MA or PhD) (participants may bring their own data for further guidance).

3. **Q & A**

    ➢   English will be used. If necessary, we can switch to English and/or Mandarin.

Biography: Prof. Zhang earned his PhD in Applied Linguistics in 1993 under Prof. Gui Shichun (1930–2017). He was invited by ETS (2002) to study test equating, and later conducted research with Prof. Lyle F. Bachman at UCLA (2006–2009). With 30+ years of experience, he has served as dean/chair at several universities and was involved in the national MET Equating Project (1990–1999, MOE China). He has supervised PhD students and served as reviewer for international journals. During 2019–2022, he led a team that developed the Rasch-GZ system. More: PROMS proceedings (Springer Nature) doi.org/10.2991/978-94-6463-494-5-25 Official site: rasch-gz.com.
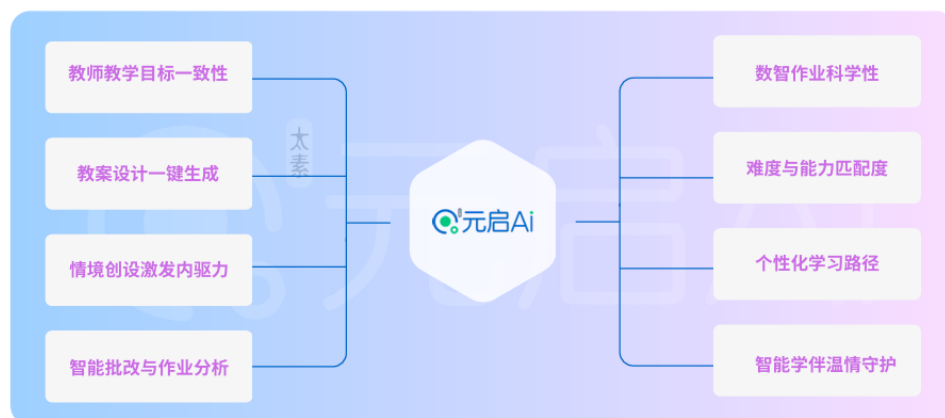
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历经 12 年 AI 教育积淀与 3 年一线沉浸式共创，我们构建出一套覆盖"教、学、评、管"全场景及课前、课中、课后全流程的一体化解决方案。该方案以 AI 平台为智能底座，推动教学经验驱动迈向数据智能驱动，深度赋能教育核心场域：为教师赋能增效，减轻其重复性工作负担；为学生减负提质，提供个性化的成长路径；为学校管理提供科学决策依据。

我们的核心优势源于教育理论与 AI 算法的深度融合，以及全场景一体化的数据闭环。我们支持课 堂样态的多元发展，摒弃僵化的教育模式，旨在构建一个能激发每个生命潜能的数智化成长共同体， 让技术真正服务于因材施教的理想，让每个生命都能绽放光彩。

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北京爱宾果科技有限公司成立于 2015 年，属中国人工智能教育的头部企业，是中国首家将人工智能机器人应用于教育服务的国家高新技术企业，核心团队来自清华大学人工智能国家重点实验室。产品和服务体系包括:AI 教学服务机器人、3-15 岁儿童人工智能课程体系、人工智能创新实验室解决方案及智慧校园 IOT 管理平台等。旨在建立以机器人硬件为载体的全景智能化教育服务平台，打造中国最具权威的儿童教育、成长大数据体系。

📘 IEIR2025 Conference Program

November 7th	
14:00 – 18:00	**Registration, Device & Connection Test** **Conference Hall, Building 9**
November 8th	
8:30 – 8:50	**Opening Ceremony** Host: **Jingying Chen** **Conference Hall, Building 9**
8:50 – 9:50	**Keynote Speech** Title: **Powering the Future: How Multi-Model Databases Empower Intelligent Education and Scientific Discovery?** **Prof. Sheng Wang** Host: **Jingying Chen** **Conference Hall, Building 9**
9:55 – 10:25	**Invited Talk** Title: **Problem Formulation: An Important Skill to Teach in the Age of GAI** **Prof. Hon Wai Leong** Host: **Jingying Chen** **Conference Hall, Building 9**
10:30 – 10:45	**Invited Talk** Title: **Integrated Solutions for Advancing Future Schools** **Dr. Wei Cui** Host: **Jingying Chen** **Conference Hall, Building 9**
10:45 – 11:15	**Take Group Photo & Tea Break**
11:15 – 12:00	**Session 1: Best Paper Session** Host: **Chao Sun** **Conference Hall, Building 9**
11:15 – 11:30	**Geometry Problem Solving based on Structured Formal Language Encoding and Theorem-Aware Formula Generation** Motian Zhou; Chao Sun
11:30 – 11:45	**From Knowledge Tracing to Literacy Tracing: A Question Aware Transformer for Modeling Learners' Proficiency** Zhifeng Wang; Yaowei Dong; Chunyan Zeng
11:45 – 12:00	**Head-Up Rate: An X-Ray of Classroom Learning Engagement** Jinyi Gan; Yiwen Chen; Zekun Huang; Chi Wu; Wei Xu
12:00 – 14:00	**Lunch (3rd Floor, Guixiang Yuan)**
14:00 – 16:00	**Conference Hall A (9101)** **Session 2** Topic: **AI for Innovative Learning and STEM Education** Host: **Bin He**	**Conference Hall B (9102)** **Session 3** Topic: **AI-Driven Cognitive Strategies and Intelligent Instruction** Host: **Ting Zhang**

14:00 – 14:15	**Cognitive Modeling of Creativity in Drama-Based Teacher Education: Insights from AI-Assisted Reflection** Yaxin Hu; Jack Shu	**Classroom Quality Evaluation in Higher Education: A Multimodal Learning Analytics Approach** Chi Zhou; Fenghua Shao; Wen Cai; Min Chen
14:15 – 14:30	**A Polymorphic Homework System for Supporting Educational Management and Personalized Learning** ChengJun He; Xinguo Yu; Hao Meng	**Research on Recognition of Emotional Support Behavior in Classroom Based on Teachers' Verbal and its Application** Qingtang Liu; Junji Xiao; Xinyu Jiang; Ruyi Jiang; Zhenshang Wu
14:30 – 14:45	**MCoder: Enhancing Math Reasoning of Large Language Models by Integrating Mathematica Code with Natural Language Rationales** Yu Liu; Chao Sun	**A Study on the Differential Analysis of Learners' Cognitive Strategies in GAI-Supported Learning Peer Online Collaborative Discussions** Qingtang Liu; Zhuan Pan; Enhui Miao; Yubei Chang
14:45 – 15:00	**Multi-Feature Fusion and Boundary-Enhanced Model for Mathematical Entity Recognition** Gaohong Li; Xin Yang; Hao Ming; Xinguo Yu	**MathQBR Framework for Personalized Learning: Exercise-Knowledge Point Retrieval Optimization in Primary School Math** Xin Yang; Hao Ming; Xinguo Yu
15:00 – 15:15	**An Educational Robot with Interactive Projection for Collaborative STEM Learning** Guanghu Zhang; Xinguo Yu	**Progressive Training and Selective Fine-Tuning of Behavior Foundation Models for Instructional Behavior Imitation** Yixiang Yang; Bin He; Ting Zhang; Shilian Pan; Yanshu Du; Yang Zeng
15:15 – 15:30	**CC-RAG: A Collaborative-Critical Dual-Agent Framework for Enhanced Retrieval-Augmented Generation***[online]* Yihao Fang; Yihang Cheng; Wei Zhang	**A Three-Stage Framework for Navigating AI Empowered Scientific Research** Feng Xiong; Xinguo Yu; Hao Wu
15:30 – 15:45	**Application of BP Neural Network in Undergraduate Performance Prediction Modeling***[online]* Zixuan Gu	**A Manim-based Automatic Video Generation System for Explaining Visual-Spatial Mathematics Problems** Xin Liu; Hao Ming; Xinguo Yu

15:45 – 16:00	**Personalized learning strategies based on convolutional knowledge tracking models in the context of disciplinary knowledge graphs***[online]* Yimei Xu; Chen Zhang; Xing Hu; Xiangben Hu; Meiya Xu	**Distributed Cognitive Diagnosis through Multi-Agent Reinforcement and Reasoning***[online]* Yihang Cheng; Yihao Fang; Wei Zhang
16:00 – 16:30	**Tea break**	
	Conference Hall A (9101)	**Conference Hall B (9102)**
16:30 – 18:00	**Session 4** Topic: **AI Tools and Frameworks Empowering Educators** Host: **Longji Zhang**	**Session 5** Topic: **Personalized and Neuro-Adaptive Learning with AI** Host: **Hao Ming**
16:30 – 16:45	**A Documentation-Driven Framework for AI-Assisted Full-circle Agile Software Development** Hao Meng; Xinguo Yu; Xu Miao; Wenbo Zhang	**Study on C Language Learning Difficulty Diagnosis Based on Multi-Agent Collaboration** Yanwen Wu; Zhoufei Wen; Xiao Zhang; Fenghua Shao; Ning Wang
16:45 – 17:00	**A Metamodel-based Framework for Algebraic Problem Generation** Chuanzhi Yang; Xinguo Yu	**Self-Adaptive Technology in Autism Intervention: A Literature Review** Kun Zhang; Wenhui Li; Jingying Chen; Ruoyu Yang; Jialing Ren
17:00 – 17:15	**Semantic-Aware Cross-Attention for Joint Text and Diagram Understanding in Geometry Problems** Lei Wu; Yanli Wang; Pengpeng Jian; Xuhui Zhang	**EduLoop-Agent: An End-to-End Personalized Learning Agent with Diagnosis–Recommendation–Feedback Loop for Intelligent Education** Zhifeng Wang; Xinyue Zheng; Chunyan Zeng
17:15 – 17:30	**Research on a Practical Teaching Model for Film and Television Production Driven by Generative AI and Large Models** Jingru Fan; Jiajie Li; Wang Ran; Cong Jin	**Human-AI Synergy in Medical Education: A Conceptual Framework for Neuro-Adaptive Learning using EEG and LLMs** Feng Chen
17:30 – 17:45	**Evaluation and application of multi-objective decision data mining method** Yiting Li; Shengbin Liao	**DomoticaBrain: A Precision-Oriented LLM Inference Approach for Smart Home Devices** Yuan Zheng; Liang Xue; Longji Zhang; Gaohong Li

17:45 – 18:00	**AI Competency in Chinese Postgraduates Through the UNESCO Framework**[online] Yi Kong; Xiaoshu Xu; Siyi Bai; Chen Lin; Aifeng Jiang	**AI Augmented Research Task Computing: Automating Literature Discovery and Knowledge Mapping** JAFAR MAHMOUD
18:00 – 20:00	**Dinner(3rd Floor, Guixiang Yuan)**	

November 9th

8:00 – 8:50	**Keynote Speech** Title: **Beware of Metacognitive Laziness When Learning and Teaching with Generative Artificial Intelligence** **Prof. Yizhou Fan** Host: **Xinguo Yu** **Conference Hall, Building 9**
8:55 – 9:25	**Invited Talk** Title: **Tackle Diversified Academic Writing Challenges: A Personal Learning Environment–Supported Group Academic Writing (PLE-GAW) Approach** **Prof. Xiaoshu Xu** Host: **Xinguo Yu** **Conference Hall, Building 9**
9:30 – 10:00	**Invited Talk** Title: **Learning Behavior Analytics in Smart Classrooms: Closed-Set, Open-Set, and Open-Vocabulary Progression** **Prof. Zhifeng Wang** Host: **Xinguo Yu** **Conference Hall, Building 9**
10:00 – 10:10	**Tea Break**
10:10 – 10:40	**Invited Talk** Title: **Overtime for Large Models: Intelligent Knowledge Service Applications Deeply Integrated with Human Knowledge** **Prof. Yifan Zhu** Host: **Xinguo Yu** **Conference Hall, Building 9**
10:45 – 11:05	**Invited Talk** Title: **Reshaping the Future of Learning: AI-Driven Transformation in Higher Education** **Dr. Fai Man Chan** Host: **Xinguo Yu** **Conference Hall, Building 9**

11:10 – 12:10	**Session 6** Topic: **Intelligent Systems, Platforms, and Future Directions** Host: **Zhenquan Shen** **Conference Hall, Building 9**	
11:10 – 11:25	**A Pedagogical Image Generation Framework for Math Word Problems Based on Situation Decomposition** Yanshu Du; Qingyang Li; Bin He; Shilian Pan; Ting Zhang; Yixiang Yang	
11:25 – 11:40	**Research on the Empowerment of Digital Transformation in Vocational Education Teaching and Research through the Central Institute's Smart Training Platform** Yu Yueru; Xiong Huanlin; Huang Shiqin; Huang Juehong; Liu Zhongxiang; Liu Jianzhong	
11:40 – 11:55	**Artificial Intelligence for Research (AI4R): From Success Stories to Principles** Xinguo Yu; Jing Xia	
11:55 – 12:10	**From Tool to Agent: Review of AI's Paradigm Shift and Proposal for a Tiered Human-AI Healing Ecosystem in Mental Health** Anran Ma; Jingying Chen; Zhiyi Yang	
12:10 – 14:00	**Lunch(3rd Floor, Guixiang Yuan)**	
	Conference Hall A (9101)	**Conference Hall B (9102)**
14:00 – 16:00	**Session 7** Topic: **Symbolic and Mathematical Reasoning in AI Education** Host: **Shengbin Tang**	**Workshop** Topic: **Rasch-GZ** Host: **Quan Zhang**
14:00 – 14:15	**A Unified Framework for Evaluating Mathematical Problem Solving Ability of Large Language Models** Liangding Quan; Chao Sun	**Item Analysis and Test Equating in the Age of AI** Prof. Quan Zhang
14:15 – 14:30	**Solving Math Word Problems by Math Operators Classification** Mingshu Wang; Kebin Huang; Guozhu Song; Hui Ma; Luolin Yang	

14:30 – 14:45	**Structured Reasoning for Geometry Problems: A Chain-of-Knowledge Approach with Structurally Retrieved Examples** Chen Wu; Chao Sun	
14:45 – 15:00	**Generating Math Word Problems Aligned with Pupil Ability and Item Difficulty** Jie Wang; Xinguo Yu	
15:00 – 15:15	**A Knowledge-Completion–Integrated Dynamic Graph Modeling Approach for Reasoning over Elementary Math Word Problems** Guohui Wang; Xinguo Yu	
15:15 – 15:30	**AI-Driven Pedagogy in Ideological Education at Medical Universities: A Case Study of the Course of Introduction to Mao Zedong Thought and the Theoretical System of Socialism with Chinese Characteristics** Weiwei Sun; Yutong Wu; Weihao Xie; Feng Chen; Chao Li; Chaojie Wang	
15:30 – 15:45	**Solving Shaded Area Problems by Deduction-Guided Symbolic Reasoning** Jinghao Dou; Wenhao Wang; Xinguo Yu; Jinyu Zhang	
15:45 – 16:00	**A Review on Auxiliary Constructions in Geometry Problem Solving** Wenhao Wang; Litian Huang; Xinguo Yu	
16:00 – 16:10	**Tea Break**	
16:10 – 18:00	**Conference Hall A (9101)** Session 8 Topic: **AI for Education and Research** Host: **Hao Meng**	**Conference Hall B (9102)** Workshop Topic: **Rasch-GZ** Host: **Quan Zhang**
16:10 – 16:25	**Research on Intelligent Operation and Maintenance System Based on user experience perception and GenAI—Taking University Operation Platform as an Example** Zichen Bai; Zhenyu Shu; Kang Tan; Yusen You	**Item Analysis and Test Equating in the Age of AI** Prof. Quan Zhang

16:25 – 16:40	**A Review of Intelligent Tutoring Systems: Research Landscape, Technological Frameworks, and Stakeholder Perspectives** Tongbang Wang; Xinguo Yu; Yiduo Cheng	
16:40 – 16:55	**End-to-End Multi-Stream U-Net for Enhanced Brain Tumor Segmentation** Anwar Ullah; Mujahid Khan; Zhang Xing; Abdul Majid	
16:55 – 17:10	**A Study on the Satisfaction of Vocational College Teachers with the Use of Teaching and Research Platform** Chen Jiucheng; Ruan Hang; Pan Ziqing; Liao Xianqiong; Zhao Ming; Liu Zhongqi	
17:10 – 17:25	**UAVobstacle avoidance algorithm based on multi sensor point cloud fusion***[online]* XueYang Hua; Yong Zhang; Lei Liu	
17:25 – 18:00	**Poster&Discussion**	
18:00 – 20:00	**Award & Closing Ceremony [Banquet] (3rd Floor, Guixiang Yuan)**	

📘2025 年湖北省智能科教研究会学术年会

一、会议主题

本届年会以"**人工智能推动教育、科技、人才高质量发展**"为主题，围绕但不限于以下主题：

- 智能科教中的认知计算
- 教育机器人/教育智能体
- 智能科教中的隐私计算
- 智能科教范式研究
- 人工智能赋能教育教学
- 人工智能赋能科技创新
- 人工智能再造科研范式
- 人工智能赋能科学研究
- 人工智能赋能科技人才发展
- 人工智能与教育数字化转型
- 人工智能与数字人文
- 技术赋能教育的理论与实践
- 学习科学、认知科学、教育神经科学新进展

二、组织单位

主办单位：

- 湖北省智能科教研究会
- 华中师范大学人工智能教育学部

承办单位：

- 华中师范大学人工智能教育学部

支持单位：

- 《现代远距离教育》（CSSCI期刊）
- 《大学教育科学》（CSSCI期刊）
- 《华中师范大学学报》（自然科学版）

Keynote Speaker

Prof. Yulin Wang

英国伦敦大学博士；武汉大学计算机学院教授、博士生导师

民进湖北省科技委员会 副主任；湖北智能科教学会 副会长

Speech Title: Deep Learning: Simply a Large-Scale Computation Based on Human Algorithms

Abstract: Deep learning has become a popular technology in recent years, from undergraduate theses to professors' scientific papers, all involve deep learning. Even some humanities scholars have joined this field and made unrealistic and exaggerated claims, as if they feel that deep learning can endow machines with omnipotent intelligence. This report will introduce the origin of deep learning and its essence - data-driven algorithm fitting. We will conduct a thorough analysis of its strengths and weaknesses, and summarize the types of problems it is suitable for solving and the types of problems it is not suitable for solving. By comparing human instinct (i.e., thinking) with machine instinct (i.e., calculation), it is pointed out that both humans and machines have their own strengths and weaknesses. Deep learning is a powerful hierarchical feature extraction and nonlinear function approximation method driven by massive datasets and computational scales. Based on a human-set computing framework, machines "discover" complex patterns in high-dimensional data through massive computations. This end-to-end learning paradigm eliminates the need for manual feature engineering and allows models to expand with data and computing power, achieving advanced performance in fields such as computer vision, natural language processing, and reinforcement learning. However, the dependence of deep learning on data and computing resources, the opacity of decision-making, and the sensitivity to bias and adversarial attacks make us view deep learning as an independent computing method rather than an all-encompassing artificial intelligence solution. Only when deep learning can be properly integrated with other paradigms, such as symbolic reasoning and causal reasoning, can it be expected to achieve general artificial intelligence that benchmarks human intelligence.

Biography: 王玉林，留英归国博士，武汉大学引进人才。现任武汉大学计算机学院教授、博士生导师。2005 年他在英国伦敦大学获得博士学位。在此之前，他曾在国家重点研究机构和华为工作了十多年。他参与了 20 多个科研项目和 IT 产品研发，拥有 8 项发明专利。他于 1987 年和 1990 年分别在西安电子科技大学和华中科技大学获得学士和硕士学位。他的研究兴趣包括计算机视觉、信号处理、网络和信息安全、人工智能。近 15 年来，王教授主持完成了国家重点研发计划项目、国防前沿技术课题等 7 项。作为第一作者，他出版了 3 本科技专著，发表 45 篇期刊论文，包括在 IEEE Transactions 和 ACM Transactions 期刊上发表的论文。王教授于 2010 年担任《国际多媒体进展杂志》主编。他曾担任许多期刊的审稿人，包括《IEEE 图像处理汇刊》、《IEEE CSVP 汇刊》和《IEEE 多媒体汇刊》。他担任多项国家研究基金和人才计划的会评专家，包括国家重点研发计划和海外优秀青年人才的评审以及国家科技奖的评审。王教授在 2013 年至 2016 年期间担任爱尔兰都柏林城市大学的外部博士顾问。自 2008 年以来，他在 30 多个国际会议上担任主席和主旨发言人。2014 年，他被选为武汉市 "3551" 科技创新人才。自 2012 年以来，他一直担任民主湖北省科学技术委员会副主任。

Keynote Speaker

华素杯教育：童伟

湖北华素杯教育创始人，硕士项目运营人。

Speech Title: 教育服务行业知识付费的认知与实操

Abstract: 互联网时代教育服务行业知识付费的认知、基本原理，实操、个案分析与启示。

Biography: 童伟，湖北华素杯教育创始人，硕士项目运营人。主要社会兼职有湖北省素质教育研究会副会长，湖北省中小企业协会副会长，北京大学 AI 人才学业生涯战略规划研修班课程教师，湖北经济学院客座教授。著有《硕士宝典》《硕士宝典 2：保研星球》《考研兵法》《刺激：写给招生办》等行业专著，开办有童伟考研师资班，在业内有广泛影响。

2025 年湖北省智能科教研究会学术年会 Program

November 9th	
10:00-14:00	Registration
14:00–14:10	**Opening Ceremony** Host: **Guangyou Zhou** **Conference Hall, Building 9**
14:10–14:40	**Keynote Speech** Title: **Deep Learning: Simply a Large-Scale Computation Based on Human Algorithms** **Prof. Yulin Wang** Host: **Guangyou Zhou** **Conference Hall, Building 9**
14:40–15:10	**Keynote Speech** Title: 教育服务行业知识付费的认知与实操 湖北华素杯教育创始人：童伟 Host: **Guangyou Zhou** **Conference Hall, Building 9**
15:15–17:10	**Paper Session** Host: **Guangyou Zhou** **Conference Hall, Building 9**
15:15 – 15:30	**A Diagnostic-Driven Multi-Agent Socratic Teaching System**
15:30 – 15:45	央馆智能研修平台赋能中职教研数字化转型研究
15:45 – 16:00	高职教师使用智能研修平台的满意度研究
16:00 – 16:10	**Tea Break**
16:10 – 16:25	未来教师与在职教师智能研修共同体构建研究
16:25 – 16:40	智能精准教研赋能数字艺术技能人才培养：理论逻辑与案例分析
16:40 – 16:55	知识图谱与大模型赋能的 C++实验教学系统设计
16:55 – 17:10	人智协同的短视频生成框架与学科应用
18:00 – 20:00	**Award & Closing Ceremony [Banquet] (3rd Floor, Guixiang Yuan)**

📘 Omni-Math

Omni-Math 诞生于智能教育发展的前沿。我们以"从被动评测到主动学习陪伴"为核心理念，致力于将先进的教育理论与 AI 技术深度融合，重塑数学学习体验。我们坚信，教育的未来需要科技与人文的协同共创。因此，我们始终秉持开放合作的精神，与教育工作者、学校机构携手共进，共同探索个性化教学的新路径，推动数学教育迈向更精准、更高效的新阶段。

角色	功能/职责
Students（学生）	完成作业，进行自学，使用符号推荐解决数学表达问题，可请求自动批改获取反馈
Teachers（教师）	布置作业、批改作业（自动 / 半自动）、查看错误模式、提供补救教学
Parents（家长）	参与家庭学习、陪伴监督
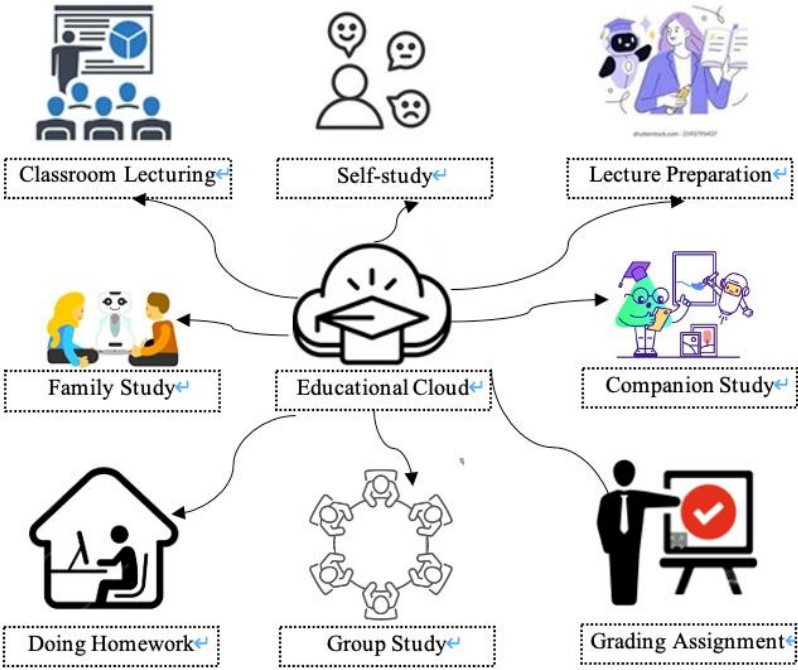
学习场景	Omni-Math 所使用的系统智能功能
Classroom Lecturing（课堂讲授）	学生可以实时使用 AI 求解引擎辅助理解
Self-Study（自学）	求解引擎、动态符号推荐、作业管理
Lecture Preparation（课前备课）	教师可引用求解引擎、作业管理系统设计教学内容
Family Study（家庭学习）	动态符号推荐、求解引擎帮助家长与学生学习
Companion Study（同伴学习/同伴互助）	多人协作，支持求解引擎、动态符号推荐
Group Study（小组学习）	小组内容输出，AI 辅助复杂问题求解
Doing Homework（完成作业）	作业管理、符号推荐、自动批改
Grading Assignment（批改作业）	自动批改 + 错误模式分析 + 个性化补救反馈

📘 Wuhan Visitor Information

The following information is provided as a guide to Wuhan. If you have any queries, please visit the registration desk.

Getting around

Public Transportation

Subway and Metro are highly recommended if you want to get around Wuhan. Bus fare costs ¥2, metro fare is between ¥2 and ¥7. Buses begin about 6am and end about 10pm depending on the route. The metro, depending on the line and direction, begins around 6am and can end any time between 10.30pm and 11.30pm. You can also find bike sharing services easily in this city.

Taxi

Taxis can be hard to find in crowded areas or at busy times. Fare should not cost more than ¥70 to get from one side of the city to another.

Leisure

Yellow Crane Tower Bordering on Yangtze River and crouching on the top of the Snake Hill, the Yellow Crane Tower is one of the three most famous towers on the south bank of Yangtze River First built in 223 AD. The tower has a history of over 1700 years. It is not only an important scenic spot, but also a symbol of "piping times of peace" in people's minds.

Wuhan Yangtze River Bridge Completed in 1957, this engineering marvel is 1,670 meters long and has one level for automobiles and another for trains. The construction of this bridge provided direct rail service between north and south China for the first time.

Wuhan East Lake Scenic Area East Lake is located on the south bank of the Yangtze River and in the east suburb of Wuchang, Wuhan city. It is the biggest scenery tourist attraction in Wuhan and also the largest lake within a city in China.

Special Food

Hot Dry Noodles

Hot dry noodles, Henan stewed noodles, Shanxi Daoxiao Noodles, and Sichuan Dandan noodles are called the four famous noodles in China and one of the most famous snacks in Wuhan, Hubei.

Steamed Wuchang Bream Fish

Wuchang Fish is a famous dish in Hubei Province. Steamed Wuchang bream is usually made of fresh Wuchang bream fish, with mushrooms and bamboo shoots, and seasoned with chicken broth. The characteristics of the finished dish are smooth and tender in taste, with a delicate fragrance and delicious taste.

Spare Ribs and Lotus Root Soup

Spareribs and lotus root soup is a famous dish in Hubei. It has both the sweetness of lotus root and the strong aroma of pork ribs, making it a great choice for a warm and delicious soup.

Organizer:

Central China Normal University
Faculty of Artificial Intelligence in Education, CCNU
Central China Normal University Wollongong Joint Institute
Hubei Society of Artificial Intelligence for Research and Education