SmartEduPP: ICA3PP Workshop on Smart Education Powered by Parallel and Distributed Processing

In the era of rapid advances in artificial intelligence (AI), the education sector is undergoing a profound transformation. Emerging technologies such as large language models (LLMs), machine learning, natural language processing, and multimodal AI systems are reshaping how knowledge is delivered, acquired, and managed. Smart education, empowered by these innovations, is moving beyond digitalization toward truly intelligent and adaptive learning ecosystems.

The integration of AI with educational platforms enables real-time learner modeling, personalized content generation, automated assessment, and intelligent feedback, significantly enhancing the efficiency and engagement of learning processes. However, the deployment of these intelligent systems presents unprecedented challenges. The vast volume, velocity, and variety of data generated in real-time learning environments demand robust computational capabilities, low-latency processing, and dynamic resource management.

Parallel and Distributed Processing (PDP) technologies are becoming essential infrastructure in supporting AI-driven education. From model inference at the edge to large-scale knowledge graph construction and optimization in the cloud, PDP underpins the scalability, responsiveness, and reliability of intelligent learning systems.

This workshop seeks to bring together researchers and practitioners to discuss the design and implementation of scalable, intelligent, and secure education platforms powered by PDP. It aims to explore how parallel and distributed architectures can support core functions in AI-enhanced education, such as personalized learning, real-time analytics, intelligent resource allocation, and adaptive system optimization.

The specific objectives of this workshop include, but are not limited to:

◆ Scalable distributed architectures for smart education platforms

◆ Resource scheduling and load balancing for educational systems

◆ Edge/fog/cloud-based architectures for ubiquitous learning

◆ Federated learning and privacy-preserving infrastructures

◆ System-level optimizations for education-related services

- Parallel algorithms for personalized learning and adaptive content delivery

- Real-time analytics for learning behavior tracking and prediction

- Big data management in smart campuses

- AI-enhanced diagnosis and feedback systems

- Knowledge graphs and semantic reasoning for educational content

- LLM-based educational assistants and generative AI in classrooms

- Gamification and immersive learning experiences via PDP

- System interoperability and integration across smart learning environments

- Ethical, legal, and fairness considerations in smart education systems

- Intelligent assessment and autonomous feedback mechanisms

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