Special Issue: Intelligence Augmentation and the Future Education: Transforming Learning Landscapes Across Modalities and Education Process

Intelligence Augmentation (IA) is significantly transforming the educational sector by enhancing traditional teaching and learning methods and advancing educational research. Leveraging advanced data analysis and interactive tools, IA supports educators by providing personalized learning paths tailored to individual students' preferences and challenges, thereby optimizing the pace and style of education (Lee & Perret, 2022). It also offers robust classroom management tools and predictive insights, facilitating better teaching strategies and decision-making (Shin et al., 2019). Furthermore, IA's real-time data analysis and feedback mechanisms enable continuous assessment and refinement of both learning and teaching methods (Saghiri et al., 2021). In educational research, IA enables precise analysis of large datasets, aids in tracking student behaviors, and evaluates the effectiveness of educational strategies (Zawacki-Richter et al., 2019). By building complex predictive models and simulating educational scenarios, IA enhances research accuracy and scope. The interdisciplinary nature of IA fosters collaborations across computer science, psychology, and education, enriching the research landscape and ensuring ethical research practices (Paranjape et al., 2019). Collectively, IA's integration into education and research influences policy-making and significantly improves the quality and equity of education globally.

The future of education will be transformed by technological advancements, especially through Intelligence Augmentation. This will lead to blended learning models that seamlessly combine online and offline elements, enhancing both flexibility and direct interaction. Education will become highly personalized, with intelligent systems customizing learning to fit individual needs and pace, while also making data-driven decisions to improve strategies. Intelligent assistants will support both students and teachers by handling routine tasks and facilitating academic engagement. Moreover, lifelong learning will be closely linked with career development to meet changing skill requirements. Additionally, as educational technology expands, there will be a stronger emphasis on addressing ethical and privacy issues to ensure fairness and data protection.

This special issue aims to deepen our understanding of Intelligence Augmentation, focusing on its applications, evidence-based practices, and transformative impact on future education.

Suggested Topics:

We welcome original research articles and theoretical papers that explore the potential of Intelligence Augmentation and the future education. We encourage submissions on (but not limited to) the following topics:

- Explore how Intelligence Augmentation automates data handling, enabling more efficient and accurate research on complex datasets.
- Explore how Intelligence Augmentation integrates with metaverse technologies to transform educational experiences, focusing on immersive and interactive learning environments.
- Discuss how VR and AR enhance learning through immersive simulations that help students understand complex subjects.
- Investigate how IA can be used to develop tools that enhance students' meta-cognitive skills, helping them to become more aware of their own learning processes and strategies.
- Examine the role of data-driven IA in education, with a specific focus on the stages of data preparation, data analytics, and even synthetic data generation, supporting the design and implementation of IA solutions for educators.
- Explore how IA help educators to introduce students to the risks of disinformation and misinformation deriving from the improper use of AI and Generative-AI solutions
- Investigate the role and the effectiveness of interactive data visualization in IA, from both educator's and student's perspective
- Investigate how IA tools enhance academic research efficiency and effectiveness, aiding in hypothesis generation, automating literature reviews, and synthesizing findings across studies.
- Examine how intelligent technologies facilitate interdisciplinary research by bridging gaps between fields to enhance innovation and discovery.
- Investigate how IA designs personalized learning plans and resources to enhance educational outcomes across various educational levels.
- Analyze how IA tools help educators manage courses, track progress, and automate tasks, thus improving teaching quality and efficiency.
- Explore how IA supports real-time and continuous assessment methods to provide accurate feedback and deepen understanding of student learning processes.
- Investigate how innovative IA-based assessment tools are developed to meet educational needs and challenges in diverse learning environments.
- Analyze how IA enhances lifelong learning for adults through personalized experiences and targeted support in career training and continuing education.

- Investigate how IA optimizes learning and resource allocation in educational settings that use diverse media types like video, audio, and text.
- Study the potential of IA to facilitate experiential, problem-based, and inquiry-driven learning models that cater to diverse learning needs and styles.
- Research how IA can aid in the development of meta-cognitive skills, helping students to become more aware of how they think, learn, and solve problems.

For our special issue, please be aware that the IEEE Transactions on Learning Technologies emphasizes the intersection of technology with learning and teaching. Rather than concentrating exclusively on technological advancements or merely reporting on educational trials, we encourage authors to submit evidence-based articles. These should focus on the integration of Intelligence Augmentation in educational contexts, thoroughly addressing applications, challenges, and issues. We also recommend investigating the implications for both practical applications and scholarly research.

Submission and Review Process

Full manuscripts should follow the writing style guidelines of IEEE Transactions on Learning Technologies, and submitted via the IEEE TLT AUTHOR PORTAL SUBMISSION SITE.

We would ask authors to kindly serve as reviewers of the submissions. Reviewers will also be recruited from the pool of TLT reviewers. Authors are strongly encouraged to recommend 3 reviewers at the time of submission

The Important Dates:

Full submission due: 10/31/2024

Final paper due: 1/10/2025

Final decision to authors: 2/10/2025

Early access: immediate

Please contact xuefan.li@mail.utoronto.ca with any questions, comments, or concerns.

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