Applied and Computational Mathematics

Special Issue on **Artificial Intelligence and Computational Methods for the Medical Cyber-Physical Systems (MCPS)**

Medical Cyber-Physical Systems (MCPS) represent the convergence of physical processes with networked computational resources in healthcare. As these systems continue to evolve, Artificial Intelligence (AI) is playing an increasingly pivotal role in enabling intelligent sensing, adaptive decision-making, predictive analytics, and real-time control across medical applications. This special issue aims to explore the transformative potential of AI in MCPS, highlighting novel methods, frameworks, and applications that enhance safety, efficiency, personalization, and automation in healthcare delivery.

This special issue will focus on the theoretical foundations, system-level innovations, and practical implementations of Artificial Intelligence (AI) in the context of Medical Cyber-Physical Systems (MCPS). It aims to cover a broad range of AI techniques that enhance the intelligence, adaptability, resilience, and autonomy of MCPS used in diagnostics, monitoring, therapy, and rehabilitation.

Scope of the Special Issue (but not limited to):

- **AI-driven modeling and control** of physiological processes in MCPS
- **Machine learning and deep learning** for patient monitoring and diagnosis
- **Edge AI and federated learning** in wearable and implantable medical devices
- **Intelligent decision support systems** for clinical environments
- **Real-time data analytics** for critical care and emergency response
- **Security, privacy, and trust** in AI-integrated MCPS
- **Explainable and interpretable AI** in clinical applications
- **Digital twins** and AI-based simulation for personalized medicine
- **AI-enhanced medical robotics** and autonomous surgical systems
- **Applications of reinforcement learning** in MCPS feedback loops
- **Natural language processing (NLP) in electronic health record (EHR) integration**

Guidelines

Authors can submit their manuscripts through the online submission system www.acmij.az. They have to use ***"Special Issue on Artificial Intelligence and Computational Methods for the Medical Cyber-Physical Systems (MCPS)"*** for the submission. Only papers with new and outstanding results, or review papers with an authoritative and scholarly historical perspective, related to the scope of Special Issue will be considered for review. For questions, please contact chief_ed@acmij.az or deputy_editor@acmij.az. Please note that papers will have to adhere to the journal's space and style requirements.

Important Dates:

• Deadline for Submissions: **November 30, 2025**
• Initial Decisions: **January 30, 2026**
• Submission of revised manuscript: **March 30, 2026**
• Final notification: **May 30, 2026**

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