

# IEEE JOURNAL OF BIOMEDICAL AND HEALTH INFORMATICS

## J-BHI Special Issue on “Cognitive Cyber-Physical Systems with AI Based Solutions in Medical Informatics”

Cognitive Cyber-Physical Systems (CCPS) are witnessing in rapid transformation as an interdisciplinary technology that blends physical components and computing devices to enable the Artificial Intelligence (AI) based solutions. CCPS will be playing a significant role that integrates machine learning/AI techniques and resulted in dramatic improvements for medical informatics and the future of human-augmentation i.e., Cyber-Physical-Human Medical Systems (CPHMS). CPHMS are coordinating supervisory medical systems and medical resource everywhere; there is a great scope towards health consciousness and healthy society. Medical Cyber-Physical Systems (MCPS) in healthcare towards critical integration in network of medical devices. MCPS is the next generation computing that is comprised of tightly-coupled computational and communication components of medical automation systems such as clinical decision, early detection of health infectious, disease prevention, rapid analysis of health hazards and so on. CCPS and MCPS research would be created new models, new design, and integration models for large scale systems in comprehensive, holistic medical automation systems. With recent enlargements in the big data processing, cognitive data science and AI, it is now possible to create even more realistic digital twins that properly model different operating situations and characteristics to process the medical intelligence systems. Existing models are using graph-theoretic formulations to enhance continuous-state models that support modeling and analysis through augmented state machine models. However, this special issue more empathized on CCPS & MCPS would be analyzed the ongoing challenges and extension research to handle network, and multi-core systems further research applicability on medical informatics.

The purpose of this special issue is to explore the research output in the enabling technologies of the Internet of Things, Block-Chain, Cloud computing, Big Data Analytics and other technology pillars of Industry 4.0 in the context of CCPS and MCPS. In this special issue, we seek to provide a forum for researchers to report on the state of the art developments in CCPS with data rich infrastructures and AI paradigms for facilitating the medical IoT systems. Topics of interest include but are not limited to the following:

- Cognitive Cyber-Physical Systems with AI Based Solutions in Medical Informatics
- Design and Challenges in building Cognitive Cyber-Medical Systems
- New architectures and models for Cognitive Cyber-Physical Systems
- Technology pillars for Industry 4.0 for CCPS & CPMS
- Cyber-Physical Human System for medical informatics
- Cognitive Data and knowledge management in Cloud/Big Data/ IoT/Fog
- Cognitive learning and Theories for CCPS & CPMS
- Trustworthiness, Consistency, fault tolerance/reliability model management models for CCPS & CPMS
- IoT and Connected Devices in CCPS & CPMS
- Machine Learning Algorithms for building CCPS & CPMS
- Intelligent and Multi-Modal Cognitive System for industrial informatics
- Cognitive Ambient Intelligence and Humanized Computing

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### Key Dates

- Submission deadline: **December 15<sup>th</sup>, 2021**
- First reviews due: **March 15<sup>th</sup>, 2022**
- Revised manuscript due: **May 15<sup>th</sup>, 2022**
- Final decision: **August 15<sup>th</sup>, 2022**
- Camera ready version: **September 15<sup>th</sup>, 2022**