

# IEEE Internet of Things Special Issue on AI and Blockchain powered IoT sustainable computing

Due to advancements in semiconductor technologies, Internet of Things (IoT) applications have penetrated into a wide spectrum of aspects of human lives. This widespread penetration also thanks to significant contributions from many emerging technologies, e.g., artificial intelligence (AI) and blockchain. The fast development of AI technologies like deep learning is a promising approach for extracting accurate information from massive raw sensor data in IoT applications. In addition, due to its tamper-proof characteristic and distributed nature, blockchain has received increasing attentions in emerging IoT applications to tackle security and privacy issues. AI and blockchain have become killer technologies to advance fast development of IoT eco-systems with incredible growth, impact and potential.

Sustainable computing, providing the environment for reduction of energy requirement, is a key factor for energy constrained IoT devices. However, the AI and blockchain paradigms were not originally developed for this kind of IoT environment. Both technologies are computationally expensive and can introduce high bandwidth overhead and delays. These demanding performance and power requirements are not suitable for most IoT devices. Although emerging computing paradigms like edge computing have been introduced to offload computation-intensive tasks from low-power IoT devices, many deep learning models still require to be executed in IoT devices due to security and privacy concerns (i.e., keep data locally). The research on new computing architecture, light-weight deep learning and blockchain technologies has received increasing attention in recent years.

This special issue is devoted to the most recent developments and research outcomes addressing the related theoretical and practical aspects on sustainable computing for emerging IoT applications powered by AI and blockchain. It also aims to provide worldwide researchers and practitioners an ideal platform to innovate new solutions targeting at the corresponding key challenges.

## Technical Scope of the Proposal

- Lightweight deep learning models and blockchain based architectures for IoT sustainable computing
- Convergence of AI and blockchain for sustainable IoT
- AI-enabled blockchain for sustainable computing in emerging IoT applications
- Blockchain based AI models for sustainable computing in emerging IoT applications
- Privacy and accountability of AI-enabled sustainable IoT systems
- New computing architecture for sustainable IoT
- Power-efficient computing architecture for IoT applications
- AI and blockchain powered sustainable architectures for IoT applications
- Theoretical aspects of AI and blockchain converged sustainable IoT
- Energy-efficient communication protocols for IoT systems powered by AI and blockchain
- Security and privacy of sustainable computing for IoT applications
- Case studies of sustainable Computing for emerging IoT applications powered by AI and blockchain
- Blockchain for IoT sustainable computing security and privacy

## Important Dates:

Submission Deadline: September 15, 2021

First Review Due: November 1, 2021

Revision Due: December 15, 2021

Sec. Reviews Due/Notification: January 15, 2022

Final Manuscript Due: February 1, 2022

Publication Data: 2022

## Submission Guidelines:

The original manuscripts to be submitted need to follow the guidelines described at: <http://ieeetj.org/guidelines-for-authors/>, which should not be concurrently submitted for publication in other venues. Authors should submit their manuscripts through the IEEE Manuscript Central at: <https://mc.manuscriptcentral.com/iot>. The authors must select as "SI: AI and Blockchain powered IoT sustainable computing" when they reach the "Article Type" step in the submission process.

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