# Distributed Learning and Blockchain Enabled Infrastructures for Next Generation of Big Data Driven Cyber-Physical Systems

Distributed learning and blockchain techniques, envisioned as the bedrock of future intelligent networks and Internet-of-Things (IoT) technologies, have attracted tremendous attentions from both academy and industry due to the nature of decentralization, data security, and privacy benefits. The decentralized architectures, together with the ability to enable secured, trusted and decentralized autonomous ecosystems, revolutionize increasingly centralized Cyber-Physical System (CPS) for infrastructures and applications, as well as reshaping of traditional data mining and knowledge discovery patterns.

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**Special issue information:**

Modern Cyber-Physical System (CPS) is composed by integrating and networking the physical world, computational components, and Internet-of-Things (IoT) devices such as sensors, actuators, etc. Typical CPS applications include autonomous driving systems, smart home, robotics systems, smart healthcare systems, etc. With the prevalence of CPSs, the huge volume of ever-increasing data produced by heterogeneous IoT devices raise crucial challenges in both system architectures and data management. First, traditional centralized CPSs have the shortcomings of destitute transparency and scalability, making it difficult to scale with the ever-increasing volume of data generated across CPSs. Moreover, CPSs are often associated with sensitive data, while their centralized infrastructures expose them to vulnerability, data breaches, and denial of services.

Therefore, the decentralized CPS infrastructure becomes a potential solution, in particular, it is essential to explore new big data processing techniques with decentralized CPS infrastructures.

Distributed learning and blockchain techniques, envisioned as the bedrock of future intelligent networks and IoT technologies, have attracted tremendous attentions from both academy and industry due to the nature of decentralization, data security, and privacy benefits. The decentralized architectures, together with the ability to enable secured, trusted and decentralized autonomous ecosystems, revolutionize increasingly centralized CPSs for infrastructures and applications, as well as reshaping of traditional data mining and knowledge discovery patterns. However, adopting distributed learning and blockchain technologies in big data driven CPS applications requires essential insights with respect to concrete application domains, scalability, privacy issues, performance, and financial benefits as well.

In this special issue, we are looking for original submissions around all theoretical and application-oriented research of big data driven applications using distributed learning and blockchain technologies.

The potential topics include, but are not limited to:

- Data and transaction management on blockchain in CPSs
- Distributed data analytics in blockchain enabled CPSs
- Data mining and knowledge discovery over distributed learning in CPSs
- Novel distributed learning models with strict resource constraints in CPSs
- Distributed learning for emerging applications in CPSs
- Data security, privacy and trust on distributed learning and blockchain in CPSs
- Distributed learning and blockchain in cloud/edge/fog computing for CPSs
- Distributed learning and blockchain based lightweight data structure for CPS data
- Big data algorithms, tools and services using distributed learning and blockchain technologies in CPSs
- Performance optimization and energy efficiency for distributed learning and blockchain enabled big data applications in CPSs

**Important Dates:**

Submission deadline: 1st March 2023

Acceptance deadline: 30th September 2023

**Manuscript submission information:**

General information for submitting papers to JSA can be found at https://www.journals.elsevier.com/journal-of-systems-architecture. Submissions should be made online at https://www.editorialmanager.com/jsa/. Please select the "VSI:DL&BCforBDdrivenCPS" option as type of the paper.

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