

# IEEE Transactions on Consumer Electronics

## Call for Papers

### Special Section on Blockchain-based Secure Computing in Consumer Electronics

#### Theme:

Consumer electronic devices are used every day to make our daily life comfortable. There are different consumer electronic devices for specific purposes, such as medical devices, wearable devices, devices for business and entertainment, and many more. Although these devices provide advanced capabilities and services to consumers, they also bring new challenges. In particular, security and privacy issues concerning these devices are critical. Many consumer electronic devices have wireless interfaces that increase susceptibility to security attacks. Recently, the Internet of Things (IoT) has become a part of consumer electronics in which devices are connected to the Internet. This internet connectivity further increases these products' security and privacy challenges because of the presence of malicious users and attackers over the internet.

Blockchain technology is one of the emerging technologies to solve the above-mentioned issues of consumer electronics. Blockchain is a distributed ledger technology that stores data immutably in a decentralized, distributed, and immutable database. Instead of relying on a centralized system, blockchain supports trust among participants depending on the agreed-upon consensus algorithms. The decentralized nature of blockchain technology supports various capabilities of consumer electronics, starting from storing data immutably to maintaining transparency. Here, once information is added to the blockchain network through a block, it cannot be altered. Blockchain offers a higher degree of protection for consumer electronic devices and secure data sharing using its cryptographic features. By using smart contracts, it automatically takes actions, when some predefined criteria are satisfied. In consumer electronics, consensus algorithms are used to agree on some aspects. Furthermore, blockchain technology offers to securely execute transactions of consumer electronics, as well as to achieve an efficient and secure supply chain management system, without the need for an intermediary or extra delay. Thus, blockchain technology supports end users of consumer electronics to have a better experience

This special section provides a platform for researchers, academics, and industry professionals to present their research works on blockchain-based secure computing in consumer electronics. It aims to address the challenges and vulnerabilities faced by consumer electronic devices with the help of blockchain-based distributed applications.

#### Topics of interest in this Special Section include (but are not limited to):

- Role of blockchain in protecting consumer data
- Blockchain-based secure protocols for consumer electronics
- Novel access control models using blockchain technology
- Blockchain-based security and privacy solutions for consumer electronics
- Detecting malicious smart contracts in consumer electronics
- Improving transparency in consumer electronics using blockchain-based supply chain systems
- Securing and managing IoT-based consumer electronics devices using blockchain
- Blockchain-based distributed applications and services for consumer electronics
- Blockchain-enabled digital signature and authentication mechanisms for consumer electronics
- Consensus mechanisms for improving security in consumer electronics

#### Important dates:

- End of submission of Manuscripts: **April 30, 2024**
- Expected publication date (tentative): 1<sup>st</sup> Quarter 2025

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### Instructions for authors:

Manuscripts should be prepared following guidelines at: <https://ctsoc.ieee.org/publications/ieee-transactions-on-consumer-electronics.html> and must be submitted online following the IEEE Transactions on Consumer Electronics instructions: <https://ctsoc.ieee.org/publications/ieee-transactions-on-consumer-electronics.html>. During submission, the Special Section on **“Blockchain-based Secure Computing in Consumer Electronics”** should be selected.