

IEEE Transactions on Consumer Electronics

Call for Papers

Special Section on “Physical Safety and Security for Outdoor Electronic Devices”

Theme:

Outdoor electronics utilizing rapidly developing technologies such as 5G, IoT, AIoT, Metaverse, Hyperautomation, Autonomic Systems, AI, and Generative AI are improving the global economy by enhancing urbanization, quality of life, and new markets and products. Various electronic devices are being deployed in outdoor scenarios to increase social benefits and eco-environmental loadings, such as solar insecticidal lamps in farmland, weed damage, and grain quality detectors in crop fields, wildfire monitoring UAVs in forests, and small-sized communication stations near countryside roads. However, the harsh outdoor environments and high-reliability requirements of these services and applications have raised concerns about the physical safety and security of outdoor electronic devices.

Academia and industry are increasingly concerned with protecting these devices from physical and cyber-based attacks due to their large number and wide deployment. Promising technologies have emerged in recent years, such as deep learning-based artificial intelligence, collaborative intelligence, Blockchain, and Digital Twin. These technologies can enhance the reliability and security of electronic devices and make them smarter to address the challenges posed by outdoor usage.

This special issue aims to explore the theory, practice, and new applications of providing physical safety, security, and reliable strategies for outdoor IoTs and IoT-enabled electronic devices. The focus is on electronic devices for outdoor IoT environments, including surveillance cameras, tracking devices for marine fishery and offshore aquaculture, UAVs for monitoring wildfires in forests, and small-sized cell stations for autonomic systems. We are seeking new designs, detection, prevention, and application of outdoor electronic devices for physical safety and security.

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

- AI in outdoor IoTs and electronic devices for physical safety and security
- Active defense systems for outdoor IoTs and electronic devices
- Structural reliability and safety analysis of outdoor IoTs and electronic devices
- New designs for outdoor IoTs and electronic devices for physical safety and security
- Classification of malicious attacks and faults on outdoor IoTs and electronic devices
- Cost-effective and intelligent monitoring designs for physical safety and security
- Gathering and reliable storing of criminal information on outdoor IoTs and electronic devices
- System-level design for reliable and fast recovery from malicious attacks
- Reliability analysis and information repair for outdoor electronic devices
- Enhanced anti-interference capability for outdoor electronic devices
- Artificial malicious behavior intention prediction (e.g., attitude recognition, face recognition, trajectory prediction) around outdoor IoTs and electronic devices
- Collaborative tracking and positioning of outdoor multi-sensing devices
- Advanced learning techniques (e.g., deep learning, federated learning, and collaborative intelligence) for physical safety and security in outdoor IoTs and electronic devices
- Blockchain or Digital Twin aided physical safety and security for outdoor IoTs and electronic devices
- Edge and cloud collaborative intelligence for the physical safety and security of outdoor IoTs and electronic devices

Important dates:

- End of submission of Manuscripts: January 31, 2024
- Expected publication date (tentative): 4th quarter 2024

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Instructions for authors:

Manuscripts should be prepared following guidelines at: <https://ctsoc.ieee.org/publications/ieee-transactions-onconsumer-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 **“Physical Safety and Security for Outdoor Electronic Devices”** should be selected.