IEEE Transactions on Consumer Electronics

Call for Papers

Special Section on "Improving transport safety and operator's situational awareness via emerging ambient intelligence and human-machine interaction using consumer electronics"

Theme:

The emerging development of smart sensing technology advances consumer electronics (CE) to support next generation of intelligent transportation. The artificial intelligence (AI)-based ambient intelligence and human-machine interaction are now able to acquire the (i) environment data from wireless sensing technologies, including GPS, Beidou, gyroscope, accelerometer, thermometer, (ii) mobile-driven biometric data such as EEG, ECG (heart beat rate, heart rate variability (HRV), VO2 max estimate), EMG, eye-tracking, and blood (blood oxygenation level, blood pressure), and (iii) voice recognition and control via intelligent personal assistance system. These are usually made in a digital form through mobile phones, smart watches, tablets, and other wearables. These novel AI-based human-centred solutions can further support human decision-making. For instance, outdoor positioning and navigation, object/image recognition, and point cloud can further support the design of a surveillance system, a tracking and monitoring system, a head-up guidance system, etc. These could particularly help in the event of emergency take-over and manual/semi-/automated pilot to achieve safe and efficient transportation services. Nevertheless, we observed that the non-critical components in the cockpit of civil aircraft, helicopters, motor vehicles, taxis, subways, and yachts have been reduced to a minimal scale. The decision support aids are replaced by CE applications, including navigation and positioning, live traffic, weather forecast, atmospheric condition prediction, and dynamic route advisory, etc. With the continuous upgrade of the CE wireless sensing technology, these applications will evolve and offer great functions with emerging ambient intelligence and human-automation interaction without modifying the cockpit design. Given these opportunities, the design solutions can ultimately improve transport safety, situational awareness, quality of decision-making while minimising human error, mental workload, as well as severity and occurrence of accident. To promote CE advancement to support a safe and sustainable transport, this special section will offer a platform for research and industrial practitioners to exchange the latest research findings, novel ideas, and/or real-world applications of AI-driven CE solutions for betterment of transport safety and operator's situational awareness.

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

- AI-driven CE design solutions of ambient intelligence and human-machine interactions in transportation.
- Development of innovative methodologies and deep learning solutions via CE for human performance assessment/enhancement in transportation.
- Improving driving safety, human safety and situational awareness via wearable technologies and biosensing solutions.
- CE-oriented solutions to support operational decision-making in aviation, road transport, and railways.
- Cost-effective single-operator solutions in managing multi-operator's tasks.
- Enhanced human-computer/machine/automation interface towards seamless interactions.
- Human-autonomy/AI teaming with CE applications.

Important dates:

- Submissions Deadline: **June 30, 2024**
- Tentative Publication Date: 1st 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 **"Improving transport safety and operator's situational awareness via emerging ambient intelligence and human-machine interaction using consumer electronics"** should be selected.