IEEE Transactions on Consumer Electronics

Call for Papers

Special Section on "Large-Scale Knowledge Discovery in Consumer Electronics through Computational Intelligence"

Theme:

In the evolving landscape of Consumer Electronics (CE), the burgeoning volume of data generated by interconnected devices presents both opportunities and challenges. Computational Intelligence (CI) emerges as a key interdisciplinary domain, applying techniques inspired by natural intelligence to tackle complex, large-scale data problems in CE. These techniques, including artificial neural networks, fuzzy systems, evolutionary computation, and swarm intelligence, enable machines to learn, adapt, and make decisions akin to human cognition, particularly in scenarios where traditional algorithmic approaches may not suffice. Knowledge discovery, the process of extracting significant insights and patterns from vast datasets, is increasingly crucial in unveiling hidden structures, relationships, and trends in CE. It involves stages such as data preprocessing, feature selection, pattern identification, and result interpretation. In CE, the application of CI to large-scale knowledge discovery is transformative, enabling the development of intelligent algorithms that parse through extensive datasets to identify patterns and insights, driving innovation.

The profound significance of CI-driven techniques in CE is evident as they lead to the creation of smarter, more responsive devices. This shift from conventional electronics to highly intelligent, adaptive, and user-centric products enhances user experiences in smart homes, wearable health monitors, personalized entertainment systems, and energy-efficient appliances. However, integrating CI for large-scale knowledge discovery in CE presents notable challenges, particularly in managing and analyzing vast data volumes. This special section aims to address these challenges by focusing on novel approaches to data scalability, real-time processing, data privacy, and ethical data utilization. The objective is to advance the field of intelligent consumer electronics by developing strategies that address the complexities of large-scale data, ensuring smarter, more adaptive devices that also adhere to privacy and ethical standards.

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

- Advanced algorithms for large-scale consumer data analysis
- Techniques for processing and analyzing vast volumes of CE data
- Real-time analytics and stream processing in large-scale CE environments
- Application of CI in parallel and distributed systems for handling large-scale CE data
- Scalable computational intelligence techniques for CE applications
- Neural networks and deep learning models for large-scale data in CE
- Knowledge graph modeling and management for extensive CE datasets
- Ethical and privacy considerations in handling large-scale data in CE

Important dates:

- End of submission of Manuscripts: **July 31, 2024**
- Expected publication date (tentative): 2nd Quarter, 2025

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Instructions for authors:

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