Call for Papers
IEEE Internet of Things Journal Special Issue on
Distributed Edge Intelligence empowered Internet-of-Vehicles

Internet-of-Vehicles (IoV) aims to seamlessly connect smart vehicles, road infrastructures, network facilities, and users to offer a comprehensive perception of environment, enhance transportation efficiency, and reduce road accidents. It is a consensus that Artificial Intelligence (AI) especially Machine Learning (ML) technology will be essential for the successful development and deployment of future IoV, utilising the huge amount of raw data available from vehicles and roadside units (RSUs). However, collecting and gathering this data centrally at the Cloud can cause severe data privacy concerns as well as huge communication overheads. To address this challenge, a promising approach is distributed edge intelligence (DEI), which enables distributed ML among smart vehicles and RSUs at the network edge that is close to the data sources. In DEI, edge servers cooperate with a number of edge clients to jointly train effective ML models for various applications while preserving clients' data privacy. The excellent prospect of DEI has attracted researchers to tackle a wide range of challenging problems (e.g., network orchestration and resource management) in IoV systems by exploring different learning methods (e.g., hierarchical Federated Learning). The application of DEI can enhance the security, reliability, and performance of IoV while cutting its operational costs. Despite its great potential for intelligent IoV, many domain-specific issues of DEI should be further investigated. For example, the trade-off optimisation between performance and energy-efficiency in DEI-empowered IoV, the design of efficient learning models in DEI for critical IoV applications, and the security and privacy issues of DEI under the complex IoV environment. This special issue aims to assemble high-quality research papers on emerging theories, architectures, protocols, algorithms, and hardware for solving the challenging problems pertinent to DEI empowered IoV. Meanwhile, this SI will offer an open platform for scholars and engineers to exchange their recent novel ideas and explore the potential convergence of existing IoV systems and advanced DEI technologies.

Topics include, but are not limited to the following:

- Novel deep learning and reinforcement learning algorithms for intelligent IoV
- System architectures and models for DEI empowered IoV
- Communication theory and network protocols for DEI empowered IoV
- Network resource management for DEI empowered IoV
- Privacy-preserving data analytics in DEI empowered IoV
- Network status prediction in DEI empowered IoV
- System optimization for DEI empowered IoV
- Energy-efficiency and Energy management in DEI empowered IoV
- Security, privacy, and trust in DEI empowered IoV
- Convergence of distributed ledger technology and DEI empowered IoV
- Case studies and real-world experiments for DEI empowered IoV

Submission:

All original manuscripts or revisions to the IEEE IoT Journal must be submitted electronically through IEEE Manuscript Central, http://mc.manuscriptcentral.com/iot. When the authors reach the "Article Type" step in the submission process, they should select SI: Distributed Edge Intelligence empowered Internet-of-Vehicles. Solicited original submissions must not be currently under consideration for publication in other venues. Author guidelines and submission information can be found at http://ieee-iotj.org/guidelines-for-authors/.

Important Dates:

- Submission Deadline: August 31st, 2024
- First Round Review Decision: 15th Oct 2024
- Revision Due: 15th Nov 2024
- Second Reviews Due/Notification: 15th Dec 2024
- Final Manuscript Due: January 15th, 2025
- Publication Date: February 2025

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