IEEE Internet of Things Journal Special Issue on

Data and Knowledge-Empowered Distributed Learning for Internet of Unmanned Agents

With the rapid development of ubiquitous networks and unmanned devices, numerous unmanned devices are interconnected via wireless networks to form a powerful distributed unmanned system, i.e., Internet of Unmanned Agents (IUA). By leveraging network communication technology for data transmission and sharing across the unmanned agents in the IUA, individual agents within the IUA can collect environmental data to identify targets or perform other important tasks. The learning information is aggregated and analyzed to support IUA decision-making and operations, and IUA can effectively monitor and comprehend their environment, thereby enabling smarter and more flexible behaviors.

The learning results of the IUA by data-driven approaches heavily depend on the quality of the data. If the data contains issues such as missing, erroneous, duplicated, or biased information, it may lead to inaccurate or distorted learning results. Knowledge-driven learning approaches rely heavily on existing knowledge bases. If the available knowledge is limited, outdated, or incorrect, it may impact the effectiveness and accuracy of the learning approaches. Much valuable knowledge exists in tacit form, which can be challenging to capture and represent formally. This may result in gaps in knowledge-driven systems, limiting their ability to address complex and nuanced problems. The data-knowledge dual-driven approach combines the strengths of both learning methods, enabling the comprehensive utilization of data and domain knowledge to fully leverage their roles in problem-solving and decision support. By integrating data analysis with domain expertise, it enhances the comprehensiveness and accuracy of problem-solving solutions. The objective of this special issue is to solicit high-quality original research papers, which address open issues in data and knowledge-empowered distributed learning for IUA from both academia and industry.

Topics include, but are not limited to the following:

- Data and knowledge-empowered distributed learning architectures for IUA
- Data and knowledge-empowered distributed learning algorithms for IUA
- Design of lightweight data and knowledge-empowered distributed learning algorithm for IUA
- Resource management based on data and knowledge-empowered distributed learning for IUA
- Practical application based on data and knowledge-empowered distributed learning for IUA
- Test and evaluation tools for data and knowledge-empowered distributed learning for IUA
- Data and knowledge-empowered distributed learning platforms in IUA
- Future of data and knowledge-empowered distributed learning for IUA

Submission:

All original manuscripts or revisions to the IEEE IoT Journal must be submitted electronically through IEEE Manuscript Central, http://mc.manuscriptcentral.com/iot. Author guidelines and submission information can be found at http://ieee-iotj.org/.

Important dates:

Submission Deadline: April 30th, 2025 First Round Review Due: June 30th, 2025

Final Manuscript Due: September 15th, 2025 Publication Date: November 2025

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