Report by IEEE TCCN SIG on AI Embedded Cognitive Networks (AICN)

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Guest Editorial
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As we enter the Internet of Things (IoT) era in which the communication network is becoming increasingly dynamic, heterogeneous, and complex, it is desirable to have cognitive communication systems and networks that possess multiple interacting capabilities for situation assessment, resource management, online/distributed learning, network reconfiguration, and intelligent decision-making. AI-based artificial neural networks at a remote site. Finally, analysis results and compiled medical information of each user are stored in cloud storage for sharing with remote experts, such as clinicians, doctors, and personal caregivers.

In the paper, “A Feature-Based Learning System for Internet of Things Applications,” the authors propose a new feature-based learning system for IoT environments, which can efficiently computer interface and IoT objects. Their framework extracts inter-dimensional dependency among the input signal of the human brain activities via a reinforcement learning-based selective attention mechanism and a modified long short-term memory network. Real-world experiments are conducted to evaluate the proposed framework and the numerical clearly demonstrate the advantages of the proposed method.

With the rapid growth in services and applications, software-defined IoT is vulnerable to possible attacks and face severe security challenges. In the paper “AI-Based Two-Stage Intrusion Detection for Software Defined IoT Networks,” an AI-based two-stage intrusion detection empowered by software-defined technology is proposed. It first selects features using the Fast algorithm, a metaheuristic algorithm for achieving global optimization, with swarm division and binary differential mutation, and then classify flows using the Random Forest algorithm with the weighted voting mechanism. Implementation of this approach in a real network for traffic classification is envisioned as a future work.

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AICN Chair Kai Yang was invited to serve as the symposium Co-Chair of IEEE ICC 2020.

AICN Vice-Chair Sijia Liu (IBM Research) and Pin-Yu Chen (IBM research) was invited to give a tutorial on IEEE 2018 International Conference on Big Data.
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Thanks