

2019

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

Kai Yang

Chair IEEE TCCN SIG on AICN
Distinguished Professor
Computer Science Department
Tongji University



IEEE Internet of Things Journal Special Issue on AI Enabled Cognitive Communications and Networking April 2019

1906

IEEE INTERNET OF THINGS JOURNAL, VOL. 6, NO. 2, APRIL 2019

Guest Editorial Special Issue on AI Enabled Cognitive Communication and Networking for IoT

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, data processing, and intelligent decision making. AI tech-

artificial neural networks at a remote site. Finally, analysis results and compiled medical information of each user are stored on cloud storage for sharing with domain experts, such as clinicians, doctors, and personal caregivers.

In the paper, "A Feature-Based Learning System for Internet of Things Applications," the authors proposed a new feature-based learning system for IoT applications, which can effec-

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 Bat 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.

KAI YANG, *Lead Guest Editor*
Department of Computer Science
Tongji University
Shanghai 201804, China

SIJIA LIU, *Guest Editor*
MIT-IBM Watson AI Lab
IBM Research
Yorktown Heights, NY 10598 USA

LIN CAI, *Guest Editor*
Department of Electrical and Computer Engineering
University of Victoria
Victoria, BC V8W 2Y2, Canada

YASIN YILMAZ, *Guest Editor*
Electrical Engineering Department
University of South Florida
Tampa, FL 33620 USA

PIN-YU CHEN, *Guest Editor*
AI Foundations Learning Group
IBM Thomas J. Watson Research Center
Yorktown Heights, NY 10598 USA

ANWAR WALID, *Guest Editor*
Nokia Bell Labs
Murray Hill, NJ 07974 USA

Activities (cont'd)



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**

2019

Thanks