Cognitive Radio and AI-Enabled Networks

SYMPOSIUM CHAIRS AND CO-CHAIRS

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SCOPE AND MOTIVATION

Recent advances on cognitive radio and artificial intelligence (AI)-enabled networking technologies have been taken as promising solutions to efficient spectrum utilization and intelligent resource allocation in wireless networks. The ultimate goal of AI-enabled radio and networks is to make the future generation systems autonomous, self-reconfigurable, self-adaptive, and truly cognitive across all ranges of spectrum (few MHz up to mmWave, Optical and THz frequencies). The aim of the Cognitive Radio and AI-Enabled Networks (CRAEN) Symposium at IEEE Globecom 2024 is to consolidate and disseminate the latest developments and advances that address various aspects of modeling, optimization, design, implementation, standardization, and applications of AI-enabled radio and coexistence technologies. This symposium invites participation from academic, industry, and government researchers working in the broad area of cognitive radio and AI-enabled networks, including methodologies, techniques, theories, services, architectures, and protocols. The CRAEN Symposium will provide a forum for researchers to get together, to present the latest snapshot of the cutting-edge research, and to foster technical debate on future directions in this exciting area.

TOPICS OF INTEREST

Topics of interests for the Cognitive Radio and AI-Enabled Networks (CRAEN) Symposium include, but are not limited to, the following areas:

- Challenges and issues in designing AI-enabled radio communications
- Architectures and building blocks of AI-enabled radio and networks
- Spectrum sensing, spectrum sharing, and spectrum learning and prediction
- Spectrum measurements and statistical modeling and learning of spectrum usage
- AI-enabled cognitive medium access control, interference management, resource allocation
- Energy-efficient cognitive radio communications and networking
- Self-configuration, interoperability and co-existence issues
- Waveform design, modulation, and interference aggregation for cognitive radio and AI-enabled networks
- Deep learning techniques for cognitive radio and networks
- Reinforcement learning and transfer learning for cognitive radio and networks
- Distributed and federated learning for cognitive radio and networks
- Architecture and implementation of database-based cognitive radio networks
- Distributed adaptation and optimization in cognitive radio and networks
- Handoff and routing protocols for AI-enabled radio and networks

- Economic aspects of spectrum sharing
· Regulatory policies and their interactions with communications and networking
· Privacy and security of cognitive radio and spectrum sharing
· Attack modeling, prevention, mitigation, and defense in cognitive radio systems
· Security, robustness and resilience of AI and ML techniques in cognitive radio and networks
· Modeling and performance evaluation for AI-enabled radio and networks
· Quality of service provisioning in AI-enabled radio and networks
· Spectrum sensing, learning, sharing, and access for millimeter-wave (mmWave) and Terahertz systems
· Cognitive radio and AI-enabled network standards, testbeds, simulation tools, and hardware prototypes
· Cognitive radio and AI techniques for spectrum coexistence of active and passive systems
· Cognitive radio and AI techniques for Advanced Aerial Access Networks (e.g., UAV and satellites)
· Cognitive radio and AI techniques for 5G and Beyond 5G (B5G) systems
· Cognitive radio and AI techniques for Space-Air-Ground integrated Network (SAGIN) architecture for intelligent networking
· Integration with other emerging techniques (such as massive MIMO, NOMA, reconfigurable intelligent surfaces, full-duplex, and blockchain)

IMPORTANT DATES

Deadline for paper submission: 1 April 2024

Date for notification: 1 August 2024

Deadline for final paper submission: 1 September 2024

SUBMISSION INSTRUCTIONS

All papers for technical symposia should be submitted via EDAS through the following link:

https://edas.info/N31420