Call for Papers

AI Agents for Next-Generation Telecommunication Systems (AI4TEL)—Hybrid

The 22nd International Conference on Wireless Communications and Mobile Computing
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Scope:

The telecommunication sector is undergoing a paradigm shift with the advent of 5G, 6G, IoT ecosystems, V2X communication, and satellite networks. These infrastructures are becoming increasingly complex, large-scale, and heterogeneous, supporting billions of connected devices and mission-critical services. Traditional network management techniques often fall short when facing challenges such as dynamic spectrum allocation, ultra-low latency requirements, fault tolerance, cybersecurity threats, and sustainable energy consumption. This complexity creates a pressing need for intelligent, adaptive, and autonomous solutions that can operate reliably in real time.

In this context, AI agents, ranging from reinforcement learning (RL) agents and multi-agent systems (MAS) to large language model (LLM)-based autonomous systems, offer a promising new paradigm. Unlike conventional AI models that are often static and domain-specific, AI agents can perceive, reason, act, and learn continuously in dynamic telecom environments. They enable self-organizing networks (Self-X: self-healing, self-optimizing, self-configuring, and self-protecting), provide collaborative intelligence through multi-agent coordination, and enhance resilience against sophisticated cyberattacks. Furthermore, the integration of agents into telecom opens new opportunities for predictive maintenance of critical infrastructure, intelligent service management, customer experience personalization, and energy-efficient network operations.

Topics:

Accepted papers will be published in the IEEE IWCMC 2026 proceedings and will be submitted to the IEEE digital library (IEEE Xplore). Authors are welcome to submit original papers (not published before or simultaneously to another venue) with topics that include but are not limited to:

- Resource allocation, load balancing, and **dynamic spectrum sharing** in 5G/6G.
- **Network slicing orchestration** and lifecycle management with AI agents.
- Adaptive and energy-efficient agents for **green networking**.
- **Self-X capabilities**: self-healing, self-optimizing, and self-protecting networks.
- AI-driven **network traffic forecasting** and demand prediction.
- **Intrusion detection, anomaly detection, and zero-day attack prediction** in telecom.
- AI agents for **fraud detection** and billing protection.
- **Secure multi-agent collaboration** for telecom cybersecurity defense.
- **Privacy-preserving AI agents** in telecom infrastructures.
- **Trust, explainability, accountability, and ethics** in critical telecom deployments.
- **V2X communication** and intelligent transportation systems.
- Multi-agent coordination in **IoT and smart city networks**.
- AI agents for **satellite and space communications**.
- Autonomous agents for **edge-cloud orchestration** in telecom.
- AI agents for **predictive maintenance** and failure prevention in telecom equipment.
- Intelligent **chatbots and virtual assistants**.
- **QoE/QoS monitoring**, personalization, and customer experience optimization.
- AI-driven **fraud detection, subscription optimization, and billing management**.
- **Benchmarks, simulators, and datasets** for AI agents in telecom.
- Integration of **LLM-based agents** (e.g., LangChain, AutoGen) in telecom applications.
- **Digital twins** for telecom networks powered by multi-agent systems.
- **Standardization, interoperability, and regulatory frameworks** for AI agents.

Submitted papers are encouraged to address novel technical challenges or industrial and standard aspects of key technologies for sustainable and green communication solutions using LLMs.

Important Dates

All deadlines are the same as those of the main conference.

Note: Within this Workshop, there will be one Best Paper Award.