Sustainable Communications for Renaissance

Call for Papers
Symposium on Selected Areas in Communications: Aerial Communications Track

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Scope and Motivation

Aerial communications refer to systems that involve aerial nodes (such as manned and unmanned aerial vehicles or UAVs, floating balloons, airships) with significantly higher altitude than their terrestrial counterparts. On one hand, those aerial nodes could be deployed as aerial base stations, relays, or access points, to provide wireless connectivity for ground users from the sky. Thanks to their appealing features such as wide coverage with elevated altitude, the ability of on-demand deployment and fast responses, aerial-assisted wireless communications have found many promising applications, such as data traffic offloading, public safety, disaster relief, information dissemination and data collection. On the other hand, aerial nodes with their own missions (such as transportation of people and goods) may also be connected to ground networks as new aerial users. Network-connected aerial nodes are expected to not only enable their truly remote command and control (C&C) with unlimited operation range, but also to support their high-capacity payload communications. However, aerial communications are significantly different from conventional terrestrial communications, due to the high altitude and/or high mobility of aerial nodes, the unique channel characteristics of air-ground and air-to-air links, the asymmetric quality of service (QoS) requirements for C&C and mission-related payload communications, the stringent constraints imposed by the size, weight, and power (SWAP) limitations of aerial nodes, as well as the additional design degrees of freedom enabled by joint aerial mobility control and communication resource allocation. This track aims to foster research and innovation surrounding the study, design and development of aerial communications. The track solicits original, previously unpublished papers pertaining to the theoretical and practical aspects of aerial communications.

Topics of Interest

Topics of interest include but not limited to the following:

- Networking architectures and communication protocols
- Spectrum management and multiple access schemes
- Manned and unmanned aerial systems communication
- Machine learning and artificial intelligence
- 3D aerial node placement and trajectory optimization
- Internet connectivity using aerial platforms
- UAV-supported data offloading
- Physical and cyber security in UAV communications
- UAV-assisted broadband services
- Energy consumption and energy supplying methods
- Digital twins for UAVs
- Experiments, demonstrations, and field-tests
- Economic frameworks and business models
- Air-air & air-ground channel modeling & measurements
- Interference mitigation
- Aerial swarm communications and control
- Agile, intelligent, and resilient aerial communications
- Joint trajectory design and resource allocation
- UAV-assisted emergency communications
- Mobile edge computing for UAVs
- Integration of UAVs in 5G and 6G mobile networks
- Human and machine teaming in UAV
- Wireless power transfer for UAVs
- Cyber-physical models
- Regulations, standards, and best practices
- Safety and privacy

Submission procedures are available at icc2023.ieee-icc.org.