SAC Symposium: Aerial Communications

Co-Chair

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Scope and Motivation

Aerial communications refer to systems that involve aerial nodes (such as manned and unmanned aircrafts, floating balloons, and airships) with significantly higher altitudes than their terrestrial counterparts. On the 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 missions (such as package delivery, aerial photography, and surveillance) 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 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 The track solicits original, previously unpublished papers pertaining to the theoretical and practical aspects of aerial communications.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

Original research articles are solicited in, but not limited to, the following topics:

- Networking architectures and communication protocols for aerial communications
- Agile, intelligent, and resilient aerial communications
- Air-ground and air-air channel modelling & measurements
- Spectrum management and multiple access schemes for aerial communications
- Interference mitigation for aerial communications
- Manned and unmanned aerial systems communication

- Aerial swarm communications and control
- Machine Learning and Artificial Intelligence for aerial communications
- Mobile edge computing for UAVs
- 3D aerial node placement and trajectory optimization
- Joint trajectory design and resource allocation
- Internet connectivity using aerial platforms
- UAV-supported data offloading
- Physical and cyber security in UAV communications
- Energy consumption and energy supplying methods for aerial communications
- UAV-assisted broadband services
- Cyber-physical models for aerial communications
- Integration of UAVs in 5G and 6G mobile networks
- Human and machine teaming in UAV
- Wireless power transfer for UAVs
- Digital twins for UAVs
- Experiments, demonstrations, and field-tests for aerial communications
- Economic frameworks and business models for aerial communications
- Regulation, standards, and best practices for aerial communications
- Security and Privacy for aerial communications
- UAV-supported emergency communications

Biography of the Co-Chair

Kuljeet Kaur works as an Assistant Professor at École de technologie supérieure (ÉTS), Montreal since 2020. Her research interests are cybersecurity, Cloud/Edge Computing, the Internet of Things (IoT), applied machine learning and artificial intelligence, Communications, and Smart Grids. She published over 75 scientific/technical articles and 2 books. She has secured research funding from various sources such as the Natural Sciences and Engineering Research Council of Canada (NSERC), Fonds de Recherche du Québec Nature et technologies (FRQNT), Department of Science and Technology (DST), and TCS Innovations Labs. Dr. Kaur is the recipient of the 2021 IEEE Technical Committee on Scalable Computing (TCSC) Award for Excellence in Scalable Computing for Early Career Researchers. She was also awarded the 2021 IEEE System Journal and 2018 IEEE ICC best paper awards. She also received the Best Research Paper Awards from the Thapar Institute of Engineering & Technology in 2022 and 2019. She has been serving as an Editor/Guest Editor for various international journals of repute, such as IEEE Transactions of Industrial Informatics, Wiley Security and Privacy Journal, Journal of Information Processing Systems, Springer Human‑centric Computing and Information Sciences, and Frontiers in Communications and Networking. She has been organizing international workshops for several flagship conferences such as IEEE INFOCOM, IEEE ICC, ACM MOBICOM and others. She served as a technical program committee (TPC) member for several international conferences, including IEEE GLOBECOM and IEEE ICC. She serves as the Faculty Representative for the IEEE ÉTS student branch and Deputy Secretary for the IEEE ComSoc Women in Communications Engineering (WICE). She served as the Vice‑Chair (2020‑22) of the IEEE Montreal Young Professionals Affinity Group and the Website co‑chair (2020‑22) for the Networking Networking Women (N2Women), a discipline‑specific community for female researchers.

How to Submit a Paper

All papers for technical symposia should be submitted via EDAS. Full instructions on how to submit papers and important deadlines are posted at https://globecom2023.ieee-globecom.org/