

IEEE International Workshop on 4th “Integrating UAVs into 5G and Beyond”

June 14, 2021
Montreal, Canada



General Co-chairs

Prof. Jie Xu, The Chinese University of Hong Kong, Shenzhen, China
Prof. Yong Zeng, Southeast University, China
Dr. Giovanni Geraci, Universitat Pompeu Fabra, Spain
Prof. Qingqing Wu, University of Macau, China
Dr. Adrian Garcia-Rodriguez, Huawei R&D, France

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Prof. Rui Zhang, National University of Singapore, Singapore
Prof. Wei Zhang, The University of New South Wales, Australia

Invited Keynote Speakers:

Prof. Sundeep Rangan, New York University (NYU), USA
Prof. Ismail Guvenc, North Carolina State University, USA

Main contact

Jie Xu, xujie@cuhk.edu.cn

Important Dates

- ❖ Paper submission deadline:
January 20, 2021
- ❖ Notification of acceptance: February 20, 2021
- ❖ Camera-ready papers:
March 1, 2021

Submission link

<https://edas.info/N27513>

Webpage link

<https://icc2021.ieee-icc.org/workshop/ws-4-4th-workshop-integrating-uavs-5g-and-beyond>

Scope

Unmanned aerial vehicles (UAVs) have found fast growing applications during the past few years. As such, it is imperative to develop innovative communication technologies for supporting reliable UAV command and control (C&C), as well as mission-related payload communication. However, traditional UAV systems mainly rely on the simple direct communication between the UAV and the ground pilot over unlicensed spectrum (e.g., ISM 2.4GHz), which is typically of low data rate, unreliable, insecure, vulnerable to interference, difficult to legitimately monitor and manage, and can only operate within the visual line of sight (LoS) range. To overcome the above limitations, there has been significant interest in integrating UAVs into cellular communication systems. On the one hand, UAVs with their own missions could be connected into cellular networks as new aerial users. Thanks to the advanced cellular technologies and almost ubiquitous accessibility of cellular networks, cellular-connected UAVs are expected to achieve orders-of-magnitude performance improvement over the existing point-to-point UAV communications. It also offers an effective option to strengthen the legitimate UAV monitoring and management, and achieve more robust UAV navigation by utilizing cellular signals as a complement to GPS (Global Position System). On the other hand, dedicated UAVs could be deployed as aerial base stations (BSs), access points (APs), or relays, to assist terrestrial wireless communications from the sky, leading to another paradigm known as UAV-assisted communications. UAV-assisted communications have several promising advantages, such as the ability to facilitate on-demand deployment, high flexibility in network reconfiguration, high chance of having LoS communication links, and enable numerous applications such as BS traffic offloading, information dissemination and collection for Internet of Things (IoT).

UAV communications are significantly different from conventional communication systems, due to the high altitude and high mobility of UAVs, the unique channel of UAV-ground links, the asymmetric quality of service (QoS) requirements for downlink C&C and uplink mission-related data transmission, the stringent constraints imposed by the size, weight, and power (SWaP) limitations of UAVs, as well as the additional design degrees of freedom enabled by joint UAV mobility control and communication resource allocation.

Considering the great success of the previous three workshops at ICC 2018, ICC 2019, and ICC 2020, we aim to organize the 4th Workshop on “Integrating UAVs into 5G and Beyond” at ICC 2021 to bring together academic researchers, industrial practitioners, and individuals working on this emerging exciting research areas to share their new ideas, latest findings, and state-of-the-art results.

Topics

Topics of interest for this workshop include but are not limited to the following:

- Channel measurement and modeling for UAV-BS/UAV-terminal/UAV-UAV communication links
- Network architectures and communication protocols for UAV communications
- Spectrum management and multiple access schemes for cellular-connected UAVs
- Interference mitigation for cellular-connected UAVs
- Massive MIMO/Millimeter wave communications for cellular-connected UAVs
- Online/offline 3D UAV placement/trajectory design and resource allocation
- Energy model and energy supplying methods of UAVs, energy-efficient UAV communications
- Cyber security and physical-layer security of UAV communications
- Machine learning for UAV communications
- Integrated sensing and communications (ISAC) for UAVs
- Experimental performance demonstrations, prototyping, and field-tests of UAV communications
- Economical frameworks for UAV communications, e.g., cost studies and business models
- Standardization progress and regulatory schemes for UAV communications

Paper Submission

The workshop accepts only novel, previously unpublished papers. The page length limit for all initial submissions for review is SIX (6) printed pages (10-point font) and must be written in English. All final submissions of accepted papers must be written in English with a maximum paper length of six (6) printed pages (10-point font) including figures. No more than one (1) additional printed page (10-point font) may be included in final submissions and the extra page (the 7th page) will incur an over length page charge of USD100. For more information, please see IEEE ICC 2021 official website: <https://icc2021.ieee-icc.org/authors>