

Current Research Focus



■ UAV-based Device-free Wireless Sensing

We design efficient and reliable flying robots with wireless sensing techniques for mission-critical applications.

- Through-Wall Wi-Fi Sensing
- Human Detection
- Localization and Tracking



■ UAV in Mobile Wireless Network

Our research focuses on designing UAV trajectory considering an underlying cellular network and its impact on communication performances.

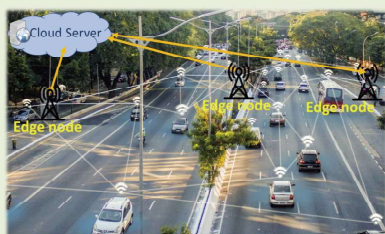
- UAV Trajectory Design
- UAV Base Stations
- Wireless Resource Allocation



■ Machine Learning and Network Security

We investigate the AI-based attack in UAV networks to prevent private information from being eavesdropped. Also, we develop security technology which can detect abnormal UAV behaviors such as unauthorized flight and message replay.

- Privacy Protection
- Lightweight Security Algorithms and Protocols



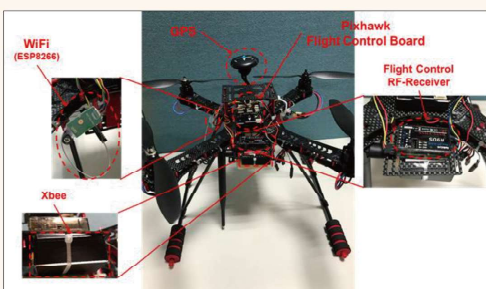
■ Ultra-Low Latency and AI-driven Wireless Network

We exploit network optimization and learning theory to obtain comprehensive design principles for intelligent edge assisted low-latency networks.

- Edge Machine Learning
- Worst-case Delay Analysis

Research Results

- X.C. Chen, Y. J. Chen, "A Machine Learning Based Attack in UAV Communication Networks," IEEE Vehicular Technology Conference (VTC Fall), 2019.
- Y. J. Chen, K. M. Liao, M. L. Ku, F. P. Tso, "Mobility-aware Probabilistic Caching in UAV-assisted Wireless D2D Networks," IEEE Global Communication Conference (GLOBECOM), 2019.
- G. J. Nunns, Y. J. Chen, D. K. Chang, K. M. Liao, F. P. Tso and L. Cui, "Autonomous flying Wi-Fi access point," IEEE Symposium on Computers and Communications (ISCC), 2019.



OpenNCU:

An **Open-source** Testbed for Research in Networking and Communications of Autonomous UAVs.

Collaborators or Sponsors

