

No-Fly-Zone: Dynamically Enforcing User-Oriented Geospatial Restrictions for Drone Fly-Overs

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Unmanned aircraft systems, a.k.a. *drones*, have recently become quite popular for commercial and recreational purposes. However, no effective solutions exist to restrict drones from flying over sensitive spaces such as homes, schools, hospitals, temporally-restricted areas, etc., either as final destinations or while in-transit. This introduces serious concerns related to: (i) *privacy*, e.g., drones taking pictures and/or record video without explicit consent; (ii) *cyber-security*, e.g., drones used as platforms for launching cyber-attacks; (iii) *safety*, e.g., drone collisions that may result in human affectations and financial costs.

This talk will present *No-Fly-Zone*, an open-source framework that regulates drone fly-overs by providing the means to: (i) identify and delimit *protection zones* over sensitive physical spaces by leveraging geospatial techniques such as Light Detection and Ranging (lidar) and Interferometric Synthetic Aperture Radar (InSAR); (ii) specify and enforce restrictions on drone flights by means of *fly-over policies*, which leverage cyber-security techniques such as Space-Sensitive Access Control (SSAC); (iii) calculate *navigation plans* for drones by leveraging Multi-Criteria Decision Making (MCDM) and Pareto Front (PF) techniques; (iv) orchestrate flight plans to limit airspace drone occupancy by means of *safety bubbles*, which leverage Sense and Avoid (SAA) and Beyond Visual Line-of-Sight (BVLOS) techniques.

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