

## Cooperative Multi-agent Jamming of Multiple Rogue Drones using Reinforcement Learning

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**Abstract:** The wide adoption and use of unmanned aerial vehicles (UAVs) has created not only opportunities but also threats to the security of sensitive areas. Thus, effective and efficient counter-drone systems are required to protect these areas. This work tackles this issue by developing cooperative multi-agent jamming techniques using reinforcement learning (RL) to counter the operation of one or multiple rogue drones flying over a sensitive area. The aim of the proposed RL approach is to optimize the joint mobility and power control actions of the pursuer UAVs in order to maximize the received jamming power at the rogue drones aiming at disrupting communication links and sensing circuitry, while at the same time keeping the interference to surrounding pursuer agents below a predefined threshold. The effectiveness of the proposed approach in terms of scalability, learning speed, and agents' final joint performance is demonstrated through extensive simulation experiments for various agent and target configurations.

**Biography:** Panayiota Valianti received a Diploma in Electrical and Computer Engineering from the National Technical University of Athens (NTUA), Greece, in 2018. She is currently working toward the PhD degree at the Department of Electrical and Computer Engineering, University of Cyprus and is also a Researcher at the KIOS Research and Innovation Center of Excellence, University of Cyprus. She has published several papers in international journals and IEEE conferences regarding the design of counter-drone systems. Her PhD thesis work investigates novel decision and control techniques to counteract the operation of rogue drones over sensitive facilities.