

# Drone-to-Drone Detection using onboard Radar

## Project Summary

The goal of this project is to implement real-time Drone-to-Drone detection using onboard radar. The tasks thereby include the whole development process, from selecting an appropriate radar chip to implementing suitable algorithms and testing them on a physical prototype.

## Project Type

- BA Thesis (3-6 months)
- MA Thesis (6 months)
- Praktikum / Internship (3-6 months)

## Required Qualifications

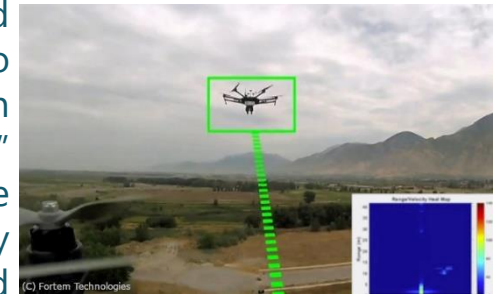
- Prior experience with Radar / Signal Processing
- Basic programming skills (Python, C++, Arduino)

## Contact

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## Detailed Description

Recent technological progress in the field of autonomous driving has made radar sensors both cheaper and lighter. Because of this, they can now also be used onboard of UAVs. We seek to use this technology in our "Hunter Drone" project to enhance the currently purely vision based onboard drone detection. The final system would thereby ideally be able to detect drones and other flying objects up to 150-200 meters away. This could, for example, be done using a 3D mmWave radar.



## References

- S. Dogru and L. Marques, "Pursuing Drones With Drones Using Millimeter Wave Radar," in IEEE Robotics and Automation Letters, vol. 5,, July 2020, doi: 10.1109/LRA.2020.2990605.
- N. H. Malle, F. F. Nyboe and E. S. M. Ebeid, "Onboard Powerline Perception System for UAVs Using mmWave Radar and FPGA-Accelerated Vision," in IEEE Access,, 2022, doi: 10.1109/ACCESS.2022.3217537.
- Başpınar, Ö.O.; Omuz, B.; Öncü, A. Detection of the Altitude and On-the-Ground Objects Using 77-GHz FMCW Radar Onboard Small Drones. Drones 2023, 7, 86. <https://doi.org/10.3390/drones7020086>.