Vision-Based Close Formation Flight of Unmanned Aerial Vehicles

Joshua Gates, Emmanuel Olojede, Paulina De La Torre, Faustina Adelaine, Christian Mueller, Esteban Sanchez

This research project has been developed in collaboration between the Society of Hispanic Professional Engineers and the Flight Dynamics and Control Research Lab at the Aerospace Engineering Department at Embry-Riddle Aeronautical University.

**RESEARCH OBJECTIVE**

Our research objective is to investigate and implement low-cost vision-based tracking algorithms for close formation missions.

**TECHNICAL OBJECTIVES**

1. Developed an algorithm for vision-based tracking using a Raspberry-Pi camera module hardware.
2. Assembled a Quadcopter to be equipped with a camera module and a calibrated flight control computer.
3. Performed flight testing to obtain video data of a flying marked quadcopter as a reference for developing the tracking algorithm.
4. Test-fly two quadcopters in close formation using vision-based tracking algorithm.

**REFERENCES**
