MONASH
ENGINEERING

MONASH University

Faculty of Engineering
Summer Research Program 2023-2024

Project Title: UAV recoil force control

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Objective

This project seeks to study and develop strategies to minimize the effect of recoil forces on unmanned aerial vehicles (UAVs).

Project Details

UAVs are finding increasing uses in many novel and important areas. The ability of quadcopters, a popular rotor class of UAVs, to hover stably during flight make them ideal for many applications. Nevertheless, the presence of recoil forces, arising from specific functionalities that are incorporated into the quadcopter, can result in flight instabilities. This project will study the effect of a specific type of recoil forces. From this, some practicable strategies will be developed to minimize the effect that these recoil forces will have on the ability of the quadcopter to maintain a specified level of hover stability during flight. It is envisaged that some designs will be developed, fabricated and proxy tested in the laboratory. Due to complexities and the limited time allocated for the project, verifications using actual UAV flight tests will very likely not be carried out. This project has direct relevance to industry.

Prerequisites

Candidates must be residing in Melbourne and enrolled at Monash University, pursuing degrees in either Aerospace, Mechanical or Mechatronics Engineering. Interest to conduct analysis, experimentation, and fabrication of designs using 3D printing is required. Familiarity with Matlab, Solidworks or any computational fluid dynamics (CFD) software will be advantageous. Intention to pursue a future final year project in the same area should be indicated.