

# Object tracking from drone using ArUco marker

## **Abstract:**

With the increasing use of unmanned aerial vehicles (UAVs) in various applications, there is a need for reliable and accurate marker tracking systems. Thus, with this project, we aim to develop and test ArUco-marker-tracking algorithms for the UAV in both simulated and real-time.

This project uses a PID controller to control the drone in the simulated environment. A camera is attached to the drone, which processes the image to provide information concerning the ArUco marker's location, and its pose is estimated with respect to the drone. The ArUco marker is a square binary pattern allowing for reliable identification and localization. Multiple simulations are run that test the accuracy of the detection. These include landing the drone at the marker's location and tracking another drone with the marker attached.

The real-life system consists of a Tello drone equipped with a camera and an onboard computer for image processing and control. The Tello drone employs a Vision-Positioning system to maintain stability. Extensive testing and validation will be conducted in different scenarios and environments to evaluate the system's effectiveness.