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(57) Abstract :
In recent years, quadcopters have grown because to their tiny size, performance, and simple design. Presently, quadcopters are used for a variety of environmental, military, and medical purposes. In this study, we aim to develop and construct a quadcopter drone utilising affordable commercially available electronics (COTS). The flight of the drone will be controlled using an Arduino kit. Drone flying will be stabilized using an accelerometer and gyroscope. In close range communication, the drone will be controlled using a Bluetooth-enabled smartphone. To control the speed of motors, an Arduino kit will be programmed with a Model Predictive Controller and complementary filter. We also demonstrate how to use and configure MPC and complementing filter using these affordable COTS components. When the drone passes the Bluetooth transmission range of the smartphone controller, a backtracking technique is presented to enable the drone to retrace its course to the launch site without utilizing GPS data.

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