Overview

In order to enhance theload capacity of helicopter models, a type of helicopter model called quad-copter is built in this project. The quad-copter has four rotors to increase the thrust, because it has a special working principle, the mechanical structure can be simplified and the weight becomes lighter. The quad-copter can move in any direction, hover and has the ability to take-off and land automatically.

Objective

- Enhancing the aerial robustness
- Controlling by sliding the Android device
- Enhancing the connection with Android devices

Methodology

Implementation

Mathematic expression of the DCM in term of Euler angles.

To change the traditional control method, an Android app is developed with either using joystick or pointing the android device to control the quad-copter. To prevent the undesired tilting, the user needs to touch the two joysticks on the screen at the same time and then the tilting becomes valid.

Result

The APP can recover the reaction jet within 0.5s. The controlled performance result, the position recovery to the desired position within about 0.1 second.