Helicopter DBF

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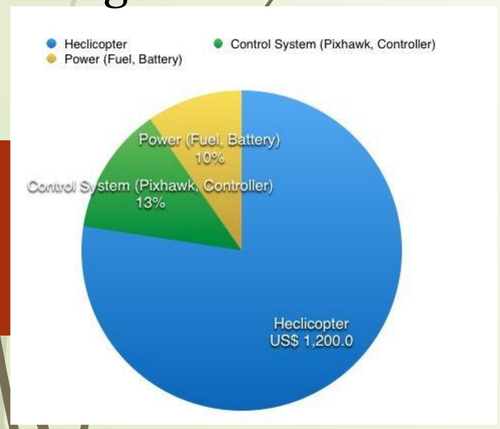
Background

A helicopter is a rotor device, which can take off, land vertically, controlled by four operating controls. The collective pitch controller is to change to angle of attack on both blades for a uniform lift. The cyclic pitch which is responsible for the pitch and roll for the helicopter. The throttle that has a main purpose to control the angular speed of the main rotor Lastly, the anti torque control is used to cancel the main rotor torque and change the yaw angle.

Goal & Objective

Our goal for the project is to engineer a remote controlled helicopter with auto piloting.
Learn and examine the control system of a helicopter, which is different from a normal fixed wing aircraft.
Design and program the helicopter for a self regulating autonomous flight.

Budget



Team Member & Contact Info

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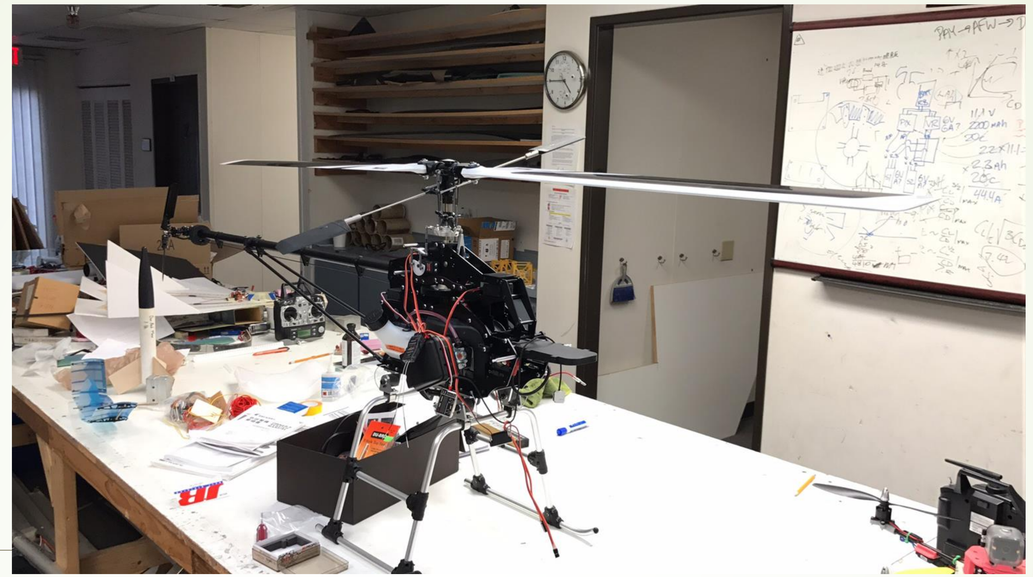
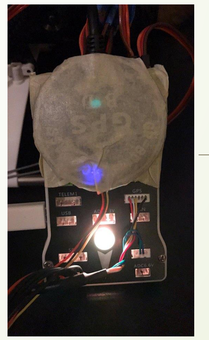


The Pixhawk will send the control input to the swash plate which will execute.



Our team is using Pixhawk to implement the designed control system

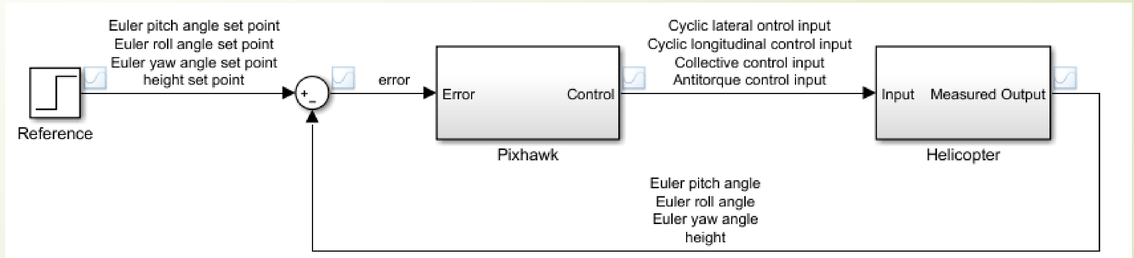
Winter

-Helicopter (prototype and small scale test) assembly
-Circuit design & Remote control flight
-Control system theories

Spring

-Control system programming
-Small scale implementation and data analysis
-Prototype test flight

Simplified Control Loop :



Requirement

- RC aircraft able to carry around 5 kg of motor, servos, and sensors to conduct the flight as planned.
- Aerial computer system with sensors and communication devices to receive command, execute control inputs, and collect data.
- Ground computer system for flight missions and data collection.

Innovation

- Self regulating flight control system with multiple functions.
- Fully automatic data collection and flight mission.