**Modelling and Control of a Four Rotor Helicopter**

**Background**

The *Draganflyer X-Pro* is a four rotor electric, radio controlled, electronically stabilized flying platform. This flying machine is built for extreme work. It features near silent operation by using electric motors and belt drive for all four rotors.

The X-Pro is highly manoeuvrable, and has full pitch, roll, yaw, and altitude control using conventional helicopter inputs via a 9-channel radio control transmitter. The X-Pro's four carbon fibre arms can be folded in a matter of minutes for compact storage and transport.

An unmanned aerial vehicle (UAV) of limited size and cost is a very useful and interesting tool. It can be used for a series of different tasks where access from the air is the best solution, or where it is unnecessary or dangerous to use a manned vehicle, or when a high level of accuracy and systematism is called for.

Our goal is to provide the Draganflyer X-Pro with functionalities that makes it possible to fly autonomously. The ultimate goal is to use the enhanced UAV to provide surveillance purposes as well as using it as a supervisor and command centre for a set of cooperative robots (vehicles).

**The project goals**

The purpose is to achieve autonomy. The final goal for this project is to make it following tasks shall be carried out:
1- Develop dynamics model of the vehicle.
2- Test and Verify the model through real measurements
3- Analyse of required wireless communication and Operating system.
4- Find appropriate sensors and data acquisition system (above the existing ones on the platform).
5- Design of a simple controller for a simple manoeuvre.
6- Implementation test and verification of the controller

Due to the level of the system’s complexity and our objectives, the project will be run as long (2-semester) project.

References

Report from a similar project is available.

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