Engineering 090 Topic Selection Memo

Paul Agyiri
Tristan Lawson

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Topic: Unmanned Aerial Vehicle

We propose to purchase and modify a scaled model Unmanned Aerial Vehicle (UAV).

Since it is understood that designing and developing any aircraft in its entirety requires a solid knowledge of Aeronautics, we will place emphasis on modifying or creating new components for the vehicle such as a simple navigational system/autopilot or implementing a visual control/piloting system (See Ref.).

Some modifications to the radio communications system may also have to be done in this project.

Model aircraft hobby kits on average cost $100 - $200 all inclusive. Microcontrollers and servos can be sourced from the labs in the Engineering building, making this project relatively inexpensive.

A key consideration is aircraft destruction due to a crash. However, the vehicle weight and fuselage material (e.g. EPS foam) [1] may prevent major fuselage/avionics damage in the event of an accident.

With extra time, consideration may be given to the upgrade/modification of other components of the aircraft such as the propulsion system or additional imaging systems for autonomous search capability.

We plan to work with Professors Carr Everbach and Erik Cheever.

References:

UAV Flight Test Programs at Georgia Tech
http://www.ae.gatech.edu/people/ejohnson/uav2004_ftest.pdf

UVS CANADA – UAV COMPETITION
http://pages.cpsc.ucalgary.ca/~hanlen/uav/UAVcompetition_phaseI.pdf

Definitions:
[1] EPS - Expanded Polystyrene