SCALING OF THE U13A REMOTE CONTROLLED HELICOPTER

Midpoint Presentation

Abdul Aldulaimi, Travis Cole, David Cosio, Matt Finch, Jacob Ruechel, Randy Van Dusen 03/04/14





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- Need and Goal
- Objectives
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PROJECT DESCRIPTION

- Client is Dr. Kosaraju
- Task of scaling U13A remote controlled helicopter by 1.5
- Capability to have mission specific attachments



NEED AND GOAL

Need:

The U13A is to provide early warning and mobile vantage point for forest fires.

Goal:

Successfully upscale a remote controlled helicopter with the ability to add mission specific accessories.

OBJECTIVES

Objectives	Measurement Basis	Units
Designing and building a RC helicopter	Amount of materials	Dollars
Attachments	Camera Parts	Dollars
Batteries	Two sets of batteries	Dollars
Carrying capabilities	Weight	lbs
Lift capabilities	Height range	Meters

3D PRINTING

- •Ultem rapid prototype machine still out of order
- •ABS polymer prototype has been printed to allow testing of powertrain.
- Updated CAD for main core and blades



3D PRINTING – MAIN CORE

CAD Design

3D Printed using ABS



Red circle shows piece that was incorrectly printed separatelyBlue circles shows material that was removed to fit motors.

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3D PRINTING - BLADES

- •ABS blades not as stiff as desired
- Bearing stress resulting from rotation may prove too great for ABS
 Potential modifications include: lengthening, thickening, and adding a taper



3D PRINTING

•ABS made prototypes do not fit together perfectly:

e.g. base of blades do not fit into clamp



- •ABS rapid prototype machines have much less resolution than ultem machines
- •Expect ultem made prototypes to fit together much more precisely
- •The parts printed thus far have allowed us to assemble the powertrain

- Two 5000 KV brushless outboard motors.
- One 1000 KV brushless outboard motor.
- Three Electronic Speed Controllers (ESCs).
- Three 2S, 7.4 V, 1600 mAh LiPo batteries.
- One 6 channel 2.4 GHz transmitter and receiver.











GANTT CHART



SUMMARY

- Our task is to upscale a U13A helicopter by 1.5.
- Our need is for the U13A is to provide early warning and mobile vantage point for forest fires.
- Our goal is to successfully upscale a remote controlled helicopter with the ability to add mission specific accessories.
- Went over our current objectives.
- Showed updated 3D printing model and ABS prototype.
- Went over all part of the powertrain and transmitter.
- Showed video of prototype with motor being controlled by the transmitter.
- Went over schedule for the rest of the semester.

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