Aerial Alumni
2015 VWCC AUTONOMOUS ROBOTICS COMPETITION

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Abstract

Abstract goes here.

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1 Technical Report: (Total = 60 pts)

Each team must email ONE pdf document of its Technical Report (with all sections contained again in one document) to George Studtmann (gstudtmann@virginiawestern.edu) by Friday, November 27 th , 2013 by midnight. The Technical Report should include the components listed below. Each of the three topics is worth 20 points.

1.1 Executive Summary:

This summary should be no more than two pages using a 12-point font, single spaced, with 1-inch margins. The summary should succinctly describe the problem that was solved, why the robot is an optimal solution to the problem, and results of pre-competition testing.

1.2 CAD Images, Circuit Schematics, and Programming Flowcharts (or code):

CAD images should adequately describe the form and function of the robot. Circuit schematics should convey how the circuitry was constructed and how it works. A descriptive flowchart of the programming code (or the code itself, if it is properly commented) should be provided.

1.3 Bill of Materials:

The bill of materials should include the following information for each component of the robot: part name, size or part number, vendor name, quantity used, unit price, and total price. You should also sum all the total prices to display the overall cost of the components of your robot. This cost must be less than $150 for components/items used outside of the BOE-bot kit. For components that you did not have to purchase, you must still list a vendor where the item could be purchased along with the unit and total price. These prices must be included in the overall cost of the robot.

2 Introduction

The problem is to develop an autonomous robot to complete a set of trials. The first trial is.... The second .... third .... forth.... an autonomous air vehicle (AAV) was chosen to complete the trials.

The size of the robot can only be 8 in. x 12 in. x 10 in. high so a 250 size quad frame was chosen. 250 represents 250 mm diagonal distance between the center of two propellers. The frame was also chosen because it has a frame built under it, to allow all of the electronics to be mounted.

3 Conclusion

4 Future Work

5 Bill of Materials

Item	**Item Num.**	**Store**	**Qty**	**Unit Price**	**Subtotal**
Frame	366000015-0	Hobby King	1	$19.99	$19.99
Motor CCW	9536000002-0	Hobby King	2	$12.13	$24.26
Motor CW	9536000001-0	Hobby King	2	$12.13	$24.26
Speed Controller	9192000258-0	Hobby King	4	$12.99	$51.96
Power Distribution	9171000530-0	Hobby King	1	$1.89	$1.89
Flight Controller	9171000593-0	Hobby King	1	$24.99	$24.99
Gemfan Multirotor 10 Pair 6x4.5 Black	329000381-0	Hobby King	1	$10.20	$10.20
Parallax Propeller Hat	32230	Parallax.com	1	$24.95	$24.95
Electronic Mounting Plate	Custom Part	VWCC	1	TBD	TBD
Standoffs			8		
Wire					
Connectors					
Black Zip Ties	0076328	Lowes	8	X	X
Thread Locker	24200	Lowes	N/A	N/A	N/A
					$172.30

Spare parts

Item	**Item Num.**	**Store**	**Qty**	**Price**	**Subtotal**
Speed Controller	9192000258-0	Hobby King	2	$12.99	$25.98
Electronic Mounting Plate	Custom Part	VWCC	1	TBD	TBD
					$25.98

Shipping Costs

Shipper	**From**	**Cost**
EMS Express	Hobby King Int.	$38.47
Swiss Post Direct	Hobby King Int.	$2.46
USPS Priority Mail	Parallax Inc.	$7.15
		$48.08
	Grand Total:	**$246.36**

6 Weight Budget

Item	**Qty.**	**Unit Lift (g)**	**Unit Weight (g)**	**Total Lift (g)**	**Total Weight (g)**

7 CAD Drawings

Figure 1: Electronics plate

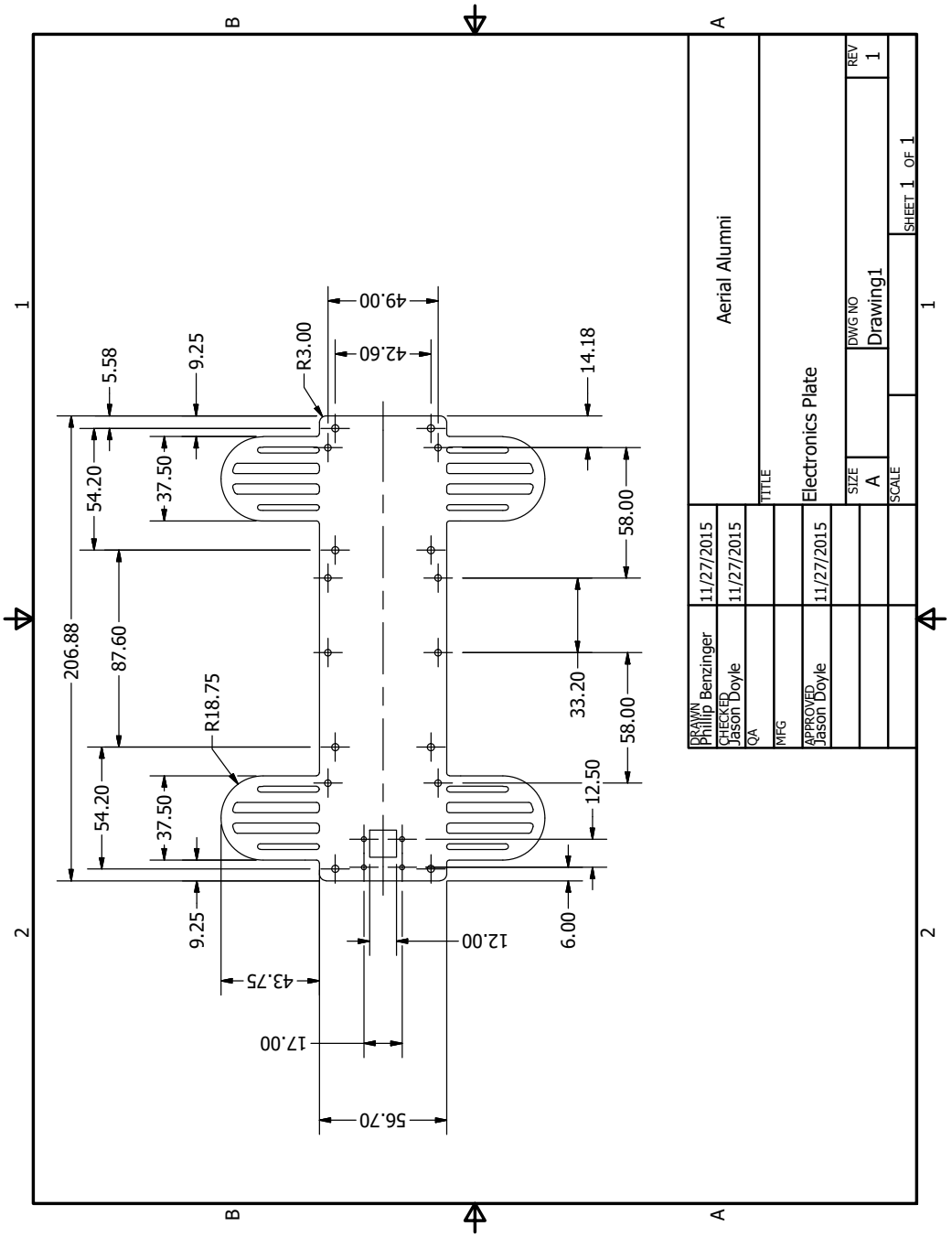

Figure 2: Block Diagram

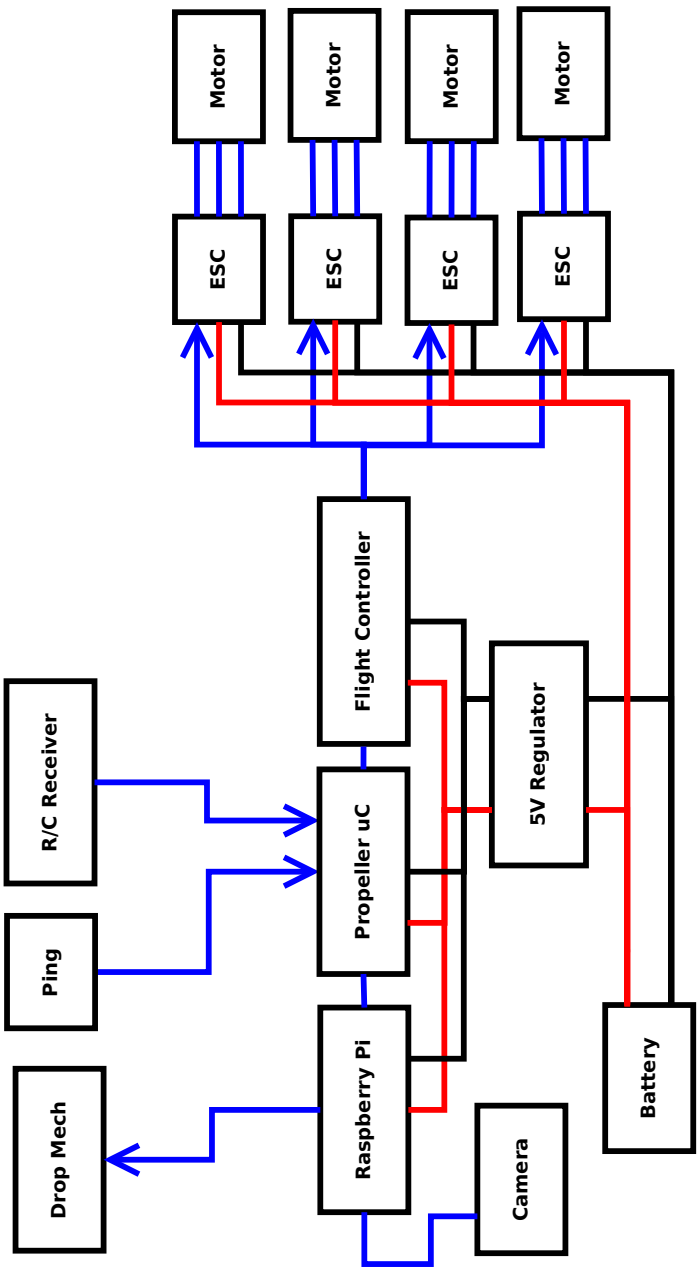

Figure 3: Propeller μC connections