

ELEC 4000 Senior Design Status Report – Page 1 of 3

Project Name:	PICASSAU
Team #, Members:	Team 2: Ben Straub, David Toledo, Drew Kerr, Kayla Frost, Peter Gartland
Report Date:	9/18/2013
Project Description:	A robot that paints a picture.
Cycle (1, or 2):	Cycle 1
Cycle Intent:	Construct a robot that can reliably paint a single color image from a supplied vector graphic file.

TASKS

Task #	Task Description (Add rows as needed)	Cycle planned for completion	Planned Total planned hours	Planned hours this cycle	Status (% complete)	Actual hours this cycle	Actual Total hours
1	Team management	2	55	20	18%	4	4
2	Mechanical hardware - construction	1	43	43	80%	9.5	9.5
3	Stabilize paintbrush carriage	2	31	0	0%	0	0
4	Electrical hardware	1	25	25	40%	2	2
5	Embedded software - plotting	1	25	25	50%	12.5	12.5
6	Embedded software - brush control and stability	2	41	0	0%	0	0
7	Computer software - main Python functionality	1	34	34	75%	3	3
8	Computer software - setting up the Raspberry Pi	2	35	3	0%	0	0
9	Computer software - user interface	2	35	0	0%	0	0
10	Computer software - optimization	2	12	0	0%	0	0
11	Image processing - filtering	1	60	60	60%	18	18
12	Image processing - vectorization	2	49	0	0%	0	0
13	Testing and integration	2	35	10	10%	0	0
14	Meetings	2	30	15	18%	15.5	15.5
15	Administrative documentation	2	30	15	18%	4	4
		Planned Total	550	250	Actual Total	68.5	68.5

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TEAM MEMBER HOURS

Record # of hours each person spent on each task this week, then total by week, cycle, and project.

	task															Total Hours		
Name	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	Week	Cycle	Project
Ben Straub	0.5	0	0	2	3.5	0	0	0	0	0	7	0	0	2.5	0.5	16	25	25
David Toledo	0	1	0	0	0	0	0	0	0	0	4.5	0	0	1	0	6.5	12.5	12.5
Drew Kerr	1	0	0	0	3.5	0	0	0	0	0	0	0	0	2.5	0	7	8.5	8.5
Kayla Frost	1.5	0	0	0	0.5	0	0	0	0	0	4.5	0	0	2	1	9.5	12.5	12.5
Peter Gartland	0	0.5	0	0	2	0	2	0	0	0	1.5	0	0	2.5	0	8.5	10	10
TOTALS	3	1.5	0	2	9.5	0	2	0	0	0	17.5	0	0	10.5	1.5	47.5	68.5	68.5

Accomplishments since last status report:

- Tested existing motors under alternative conditions
- Ordered new stepper motors and mounting hubs
- Wrote and tested calibration routine
- Wrote initial paint brush dipping code
- Determined filter tool- OpenCV in Python
- Created method to simplify images to 3-colors (plus background)

Obstacles encountered since last status report and actions to deal with same:

- Even under alternative conditions, the motors were still deemed unusable
 - New motors had to be ordered
- For certain starting conditions, the x-coordinate cannot be accurately resolved with our sensor during calibration
 - Revisit calibration routine, or potentially add another sensor
- Plotting jitter causes the paint brush dipping to miss sometimes.
 - New motors and spindles will likely help this. Also, some improvements can be made in the software.

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Risks facing the project and actions to deal with same:

- Illness of team members
 - Ensure that there is always someone capable of picking up another member's tasks
- Breaking hardware could put the project behind schedule / overbudget
 - Be careful with the hardware and be ready to order replacements if need be
- Incorrect hardware could put the project behind schedule / overbudget
 - Have multiple members double check the item before it is ordered
- Processor speed on Raspberry Pi may not allow real-time previewing of filtered camera feed

Objectives for the next week:

- Research and, if necessary, order a power supply
- Finalize paint brush dipping motion
- Colorize filter
- Construct new spindles
- Improve plotting software to reduce jitter

Notes:

It has become clear that we significantly underestimated the amount of time we'd spend on meetings (task 14). A more appropriate estimate might have been 60 hours total. This allows for an average of one 1 hour meeting for all team members each week. Fortunately, it seems that we may have overestimated some of the hours that it will take to complete the other tasks, so it should even out.