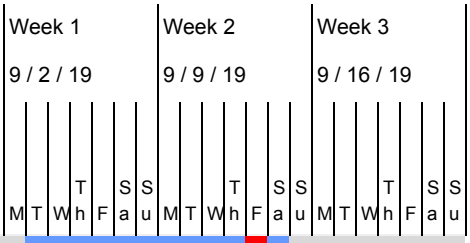
DongWon Park
13 September 2019
CS 503 Embedded Systems
Professor Grupen

1. Gantt chart

Display Week: 1

WBS	Task	Lead	Start	End	Cal Days	% Done	Work Days	Days Done	Days Left
1	**Design**	[Name]	Tue 9/03/19	Sat 9/14/19	12		9		
1.1	CdS/R2/Rmotor Resistances	[Name]	Tue 9/03/19	Thu 9/05/19	3	100 %	3	3	0
1.2	voltage divider, Vout	[Name]	Fri 9/06/19	Sat 9/07/19	2	50%	1	1	1
1.3	switch logic	[Name]	Sun 9/08/19	Mon 9/09/19	2	25%	1	0	2
1.4	circuit layout	[Name]	Tue 9/10/19	Wed 9/11/19	2	0%	2	0	2
1.5	chassis structure, motor mount,	[Name]	Thu 9/12/19	Fri 9/13/19	2	0%	2	0	2
1.6	degisn checkout	[Name]	Sat 9/14/19	Sat 9/14/19	1	0%	0	0	1
2	**Prototype**		Sat 9/14/19	Mon 9/16/19	3		1		
2.1	Circuit Breadboard		Sat 9/14/19	Sun 9/15/19	2	0%	0	0	2
2.2	Logic/Performace checkout		Mon 9/16/19	Mon 9/16/19	1	0%	1	0	1
3	**Implementation**		Mon 9/16/19	Wed 9/18/19	3		3		
3.1	Soldering		Mon 9/16/19	Tue 9/17/19	2	0%	2	0	2
3.2	Tuning		Wed 9/18/19	Wed 9/18/19	1	0%	1	0	1
4	**Demonstration**		Thu 9/19/19	Thu 9/19/19	1		1		
4.1	Demonstrate		Thu 9/19/19	Thu 9/19/19	1	0%	1	0	1
5	**Report**		Fri 9/20/19	Fri 9/20/19	1		1		
5.1	Write the final report		Fri 9/20/19	Fri 9/20/19	1	0%	1	0	1



Measurements

a) **Resistance**
   i) Full light: 2.5kΩ
   ii) ambient light: 12kΩ
   iii) ambient dark: 1MΩ
   iv) total darkness: 2.72MΩ

b) **Rmotor: 6Ω**

R2

R2 = Vout / (Vin - Vout) * R1

a) when Vout is 2v (Dark, motor stopped) : 283kΩ
b) when Vout is 8v (Light, motor working aggressively): 96kΩ

Vout

Vout = R2/(R1+R2) * Vin

a) when Dark (motor stopped): 2.0007v
b) when Light (motor working): 8v

Note:

- I believe this circuit and my prototype is working because it has worked perfectly on my breadboard. I just need to tune more to get it accustomed with the demonstration environment which is with dark light. I also have to measure the resistances again to gain more accurate R2 values.
- Sometimes, debugging was needed on my breadboard so that's why neatly designed circuit is an important thing to consider.
- For excitatory, 10kΩ was enough to operate the motor. But for inhibitory operation, 1MΩ was needed. I have to figure why.