

GELS (GSM Electronic Lock System)

Team Funktionneers:

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Design Requirements

- Battery Life
 - Power(24 hours)
- GSM Module
 - Low Power Consumption
 - Compatibility with Raspberry Pi
- Motor
 - Power(Draw 5V)
 - Speed(5 second reaction)

Design Requirements

-Battery Life

Battery Type: Lithium Ion

Battery Rating: 2800mAh, 3.85V, and 10.78Wh

10 days on standby

i) 3V to 5V DC-DC Converter Step Up Boost Module

Converts Inputs of 3.7V to 5V (Need Voltage for

Microcontroller)

-GSM Module

Materials: PCB + Aluminum Alloy

Specifications:

- Quad-Band 850/900/1800/1900 MHz
- Low Power Consumption 1.5mA (Sleep Mode)
- Operation Temperature : -40 C to 85 C

Design Requirements

Motor

Power: 4.8V - 6V DC max (5V works well)

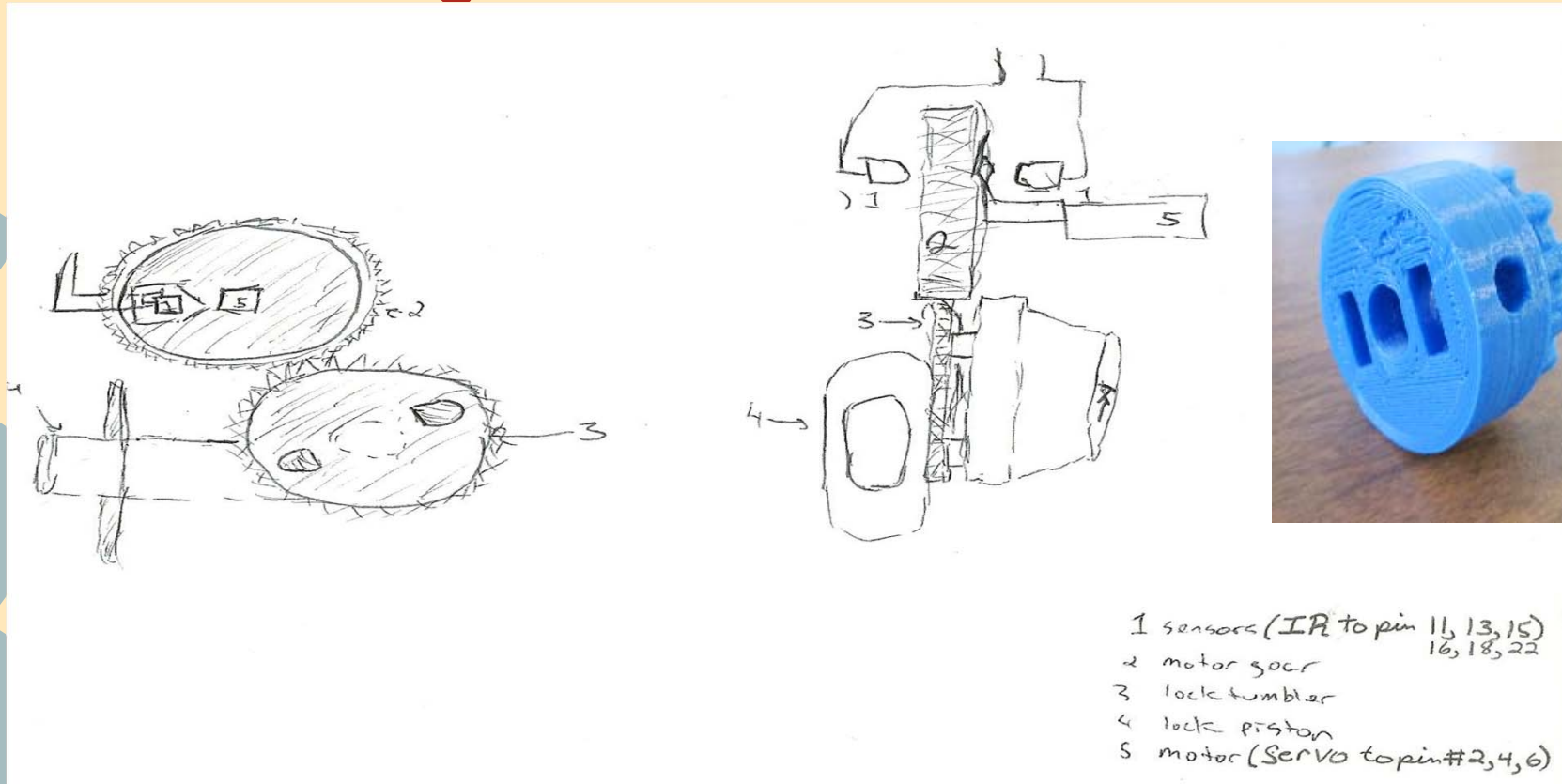
Average Speed: 60 degrees in 0.20 sec (@ 4.8V), 60 degrees in 0.16 sec (@ 6.0V)

Weight: 62.41g

Torque: At 4.8V: 8.5 kg-cm / 120 oz-in, and at 6V: 10 kg-cm / 140 oz-in.

Size mm: (L x W x H) 40.7 x 19.7 x 42.9

Final Design Solution Schematics



Milestone Summary

Feb 1-7	finish ordering all pieces/ start building	Darrell/Corbin	Finish Coding
Feb 8-14	Programing Raspberry Pi	Michael/Eden	Start building and
Feb 15-21	build components that can't be bought	Michael/Darrell	Testing System
Feb 22-28	App Finished (encryption implemented)	Eden/Michael	

MAR 15	1-7	build casing	Team	System Evaluation and field tests
	8-14	encryption test	Eden	

Highlights of the Period

- We have been able to implement AES text encryption
- We received some of the correct parts
- Major steps made in the App

Lowlights of the Period

- Have not been able to boot up Raspberry Pi to a screen
- Not all pieces have gotten here (long shipping time)
- Snow preventing team meeting.

Risk Mitigation Explanation

5	L	M	H	H	H
4	L	M	M	H	H
3	L	M	M	M	H
2	L	L	L	M	M
1	L	L	L	L	M
	1	2	3	4	5

Impact

Risk Mitigation Measures

Risk	Probability	Impact	Risk Control and Management
Raspberry Pi Fails to turn on	2	5	extensive product testing before customer implementation
IR Sensors fail	2	3	have a watchdog timer on the sensor to alert problems
Data loss during transmission	4	5	possibly reduce # of changes the original signal goes through
Motor failure	2	5	Securely install motor out of reach of user

Focus of Next Period Activities

- System construction
- Working voice encryption app on the phone
- Casing Design(tentative)