

EE / SE 491 Week 8 Status Report

Apr. 15, 2019 - Apr. 19, 2019

Group: sddec19-20

Project: Ultra-thin electronic skin for real-time health Monitoring

Advisor/Client: Liang Dong

Team Members:

Sovann Chak: Software Architect, iOS Developer

Omar El-Sherbiny: Circuit design and analysis of Sweat sensor

Justin Gordon: Software Developer, Communication research

Sungmin Kang: Circuit design and analysis of Mobility sensor

Sangwon Lee: Circuit design and analysis of ECG, DMD 3D printer

Passing Week's Accomplishments

Software Engineers

(Sovann)

- Got the parts list approved (after a couple emails between myself and the client)
- Drafted and completed an email to the ETG
- Gained approval and the ETG successfully ordered the parts
 - Retrieved the order from the ETG
 - Retrieved some necessary cables/bread boards from our clients lab
- Began working on the prototype
 - We have an accelerometer which needs to be soldered and pieced to a breadboard
- Met with Justin and further discussed testing with regards to our soon to be finished prototype

(Justin)

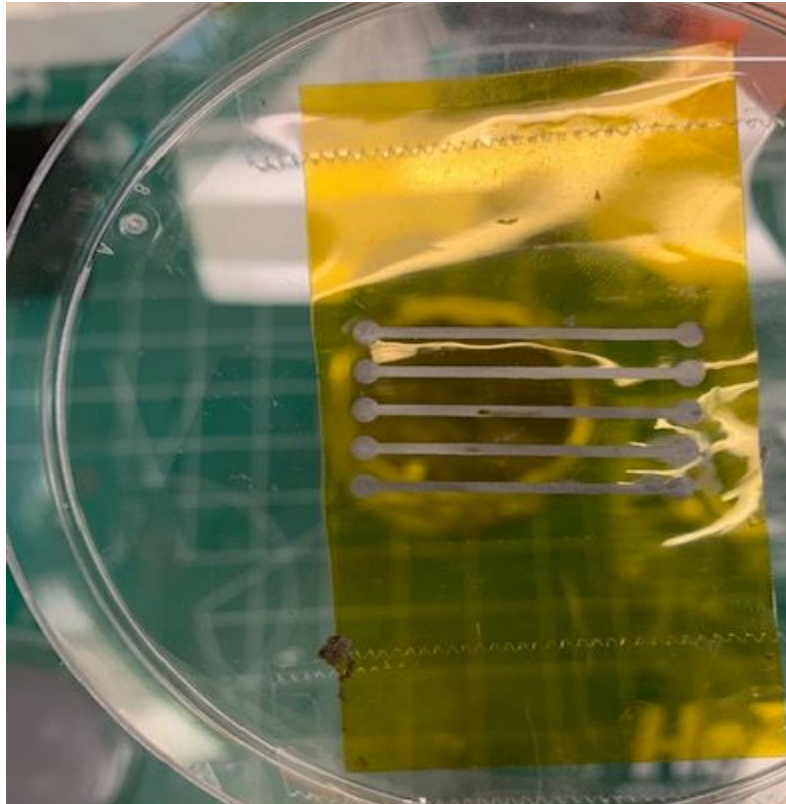
- Met with Sovann and further discussed testing with regards to our soon to be finished prototype
- Continued work on Mobile development

Electrical Engineers

(Omar)

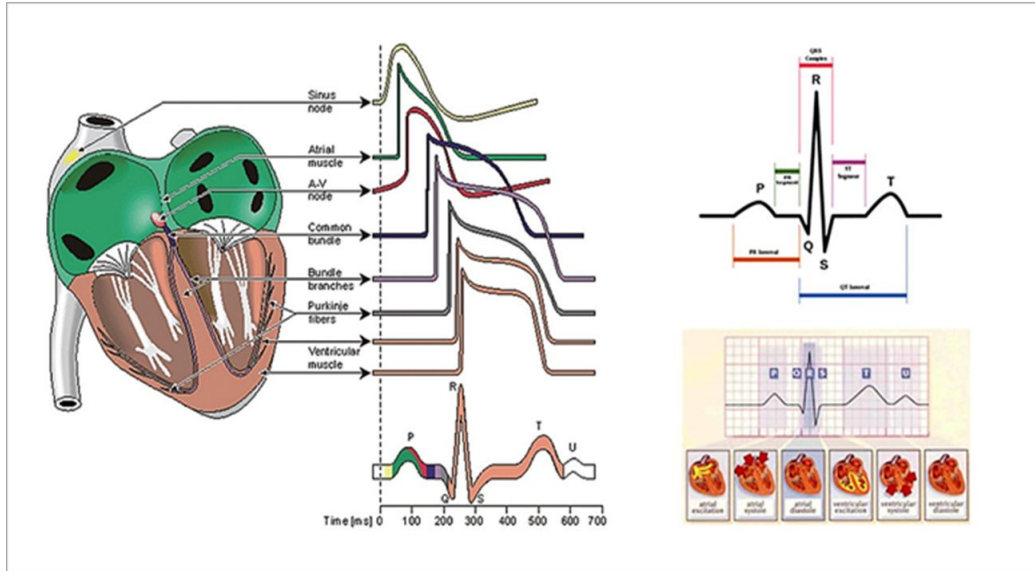
(Sungmin)

- Made graphene (20mg graphene + 700ul DI water + 300ul ethanol)
- Put the graphene on the PDMS mold, and got graphene pattern on the mold
- Using scotch tape, remove some graphene on the mold except for our pattern
- Through Stick-Transfer process, got our pattern on tape.



(Sangwon)

- ECG-Characteristics
- -1mV range
- -1 ~ 200Hz
- -(Sodium)Na / K between Cell membrane -60mV ~ 40mV (100mv Range)
- -Measure Skin Lower than 100mV
- Ground(reference voltage) on Right ankle (Far from Heart)



Individual Contributions

Team Member	Contribution	Weekly Hrs	Total Hrs
Sovann	Finally gathered all of the necessary parts to begin work on our prototype and initial testing. Began working on the prototype (quite the learning curve since I've never worked with hardware before).	6	57
Justin	Gathered remaining components needed for mock testing of bluetooth interfaces. Worked on android development.	6	55
Omar			43
Sungmin	After making graphene liquid by sonication, through stick-transfer process, getting our mobility sensor pattern with graphene on the tape.	7	52

Sangwon	Research on ECG technologies and theory.	6	51
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Plans for Next Week

(Sovann) Finish the prototype

(Sovann) Write some basic test applications to test the bluetooth libraries of iOS

(Sovann) Begin to interface both the prototype and the test applications

(Sovann) Continue iOS development course (<http://CS193p.stanford.edu>)

(Sungmin) Thinking about flexible substrate, not tape

(Sungmin) After getting pattern on flexible substrate, thinking about connection with Ag/AgCl

(Sungmin) Start to measure some resistivity on our mobility sensor using Neulog (<https://neulog.com/>)

(Sangwon) Test with Carbon Tape to measure voltage from body.

(Justin) Create heartbeat sensor for testing

(Justin) Continue work on bluetooth communication

(Justin) Keep studying android mobile development