EE/CprE/SE 491 WEEKLY REPORT 2

Feb 6, 2023 – Feb 12, 2023

Group number: sddec23-19

Project title: Bluetooth-Enabled Ingestible Capsule to Monitor Gut Activity

Client &/Advisor: Santosh Pandey

Team Members/Role: Chase Thompson, Cutler Thayer, Jon "Tucker" Thomas, Robert Zukowski

- **Weekly Summary**

  This week we continued our research on capsule endoscopy. This technology could be especially useful for Diabetes and Malaria patients as they sometimes require specific dosages that could change on the fly. Anne Trafton's article for MIT news was useful for obtaining information. The pill they described contains multiple arms that are designed to both hold/release drugs and keep the pill inside the stomach. Also, the bluetooth signal from the pill reaches roughly an arms length away. This is for the safety of the pill's user as to avoid malicious or accidental connections.

- **Past week accomplishments**

  - **Chase Thompson**: Continued researching Rapid Reading technology and trying to find companies that it would be helpful to research to try to get more information. No new information to report but rather gained a better general understanding of the topic. Did brief research into Medtronic to learn more about one of the companies involved in this technology. I was able to find their capsules and software on their website as just a general glimpse of what they produce.
  - **Robert Zukowski**: Most of the information discovered so far has been a reflection of the project proposal. Technology in this field exists, but there are constantly new breakthroughs being made in various aspects from how/what measurements are taken to how they are transmitted, to how the data from the capsule is processed.
  - **Cutler Thayer:** Went through the research paper that we were supposed to read to get a baseline understanding of how this technology works. Started learning about different companies that also develop this kind of technology to see how their technology is implemented as well. While I understand vaguely how everything functions and works I need to look deeper into how this technology works because things do not make full sense to me yet.
  - **Tucker Thomas**: Learned about existing technologies, including how it operates, who it's good for, and why it's being developed. As a group, we are still figuring out schedules and when would be the best time of the week to meet with our advisor. It's my belief that it would be beneficial to meet sometime to better understand each other and "break the ice".

- **Individual contributions**

NAME	Individual Contributions	Hours this week	HOURS cumulative
Chase Thompson	Did further research into Rapid Reading techniques and took a brief look at Medtronic's website and products.	3	8
Robert Zukowski	Began reading "Video Capsule Endoscopy and Ingestible Electronics" and "RoboCap" research papers.	3	3
Cutler Thayer	Finished reading the research paper and started looking into other research that focuses on different pieces of the technology.	3	7
Tucker Thomas	Brainstormed questions for a survey, the purpose of which is to gather data regarding how potential users feel about the technology. Created a OneNote notebook for use among the project group.	3	7

- **Plans for the upcoming week**
  - All Team Members: Read the attached article about already existing companies that are prevalent in this field.
  - Chase Thompson: Do further research into Rapid Reading and learn about what companies are successfully implementing Rapid Reading techniques.
  - Robert Zukowski: Finish reading two mentioned papers. Begin looking into physical size constraints and possibly available sensors to be used.
  - Cutler Thayer: Finish reading the mentioned papers, and look into both rapid reading algorithms and sensors and look into ways to integrate both together.
  - Tucker Thomas: Brainstorm survey questions and get better with using figma.