

## *EE/CprE/SE 491 WEEKLY REPORT 1*

*Jan 24, 2023 – Feb 5, 2023*

*Group number: sdddec23-19*

*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 our group met with our advisor for the first time to discuss expectations for the project. While meeting with the advisor we discussed our timeline and planned on working on researching successful implementations for the first few weeks of our project. This includes reading an article about companies that are successful in the field and learning about products similar to ours that have been successfully created.

### ○ Past week accomplishments

- **Chase Thompson:** Learned that a few companies have been able to successfully create an ingestible capsule to monitor gut health though most are not incredibly ambitious in the methods they implement into the capsules in the same way that our outlined expectations are. Also learned that a lot of companies are implementing image processing called Rapid Reading in order to automatically detect when there is a problem discovered by the capsule in order to help cut down on the number of images and length of videos for the doctors to watch. Most of these successful implementations are kept fairly secret and it is somewhat difficult to find information on the specifics of the techniques that they are using. These methods are also quite accurate in their detection, sometimes having a detection rate of 70% or more. While this can sometimes leave many cases to be misread, since these images are then examined by the doctor this does not pose as great of an issue, though it would still be helpful to improve the success rate.
- **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.

○ **Individual contributions**

<b><u>NAME</u></b>	<b><u>Individual Contributions</u></b>	<b><u>Hours this week</u></b>	<b><u>HOURS cumulative</u></b>
Chase Thompson	Began reading the article about companies in the field and researching which companies are successful in implementing Rapid Reading techniques.	5	5
Robert Zukowski	Began reading “Video Capsule Endoscopy and Ingestible Electronics” and “RoboCap” research papers.	3	3
Cutler Thayer	Began reading the research papers, and started looking into companies with similar technology.	4	4
Tucker Thomas	Read “Ingestible capsule can be controlled wirelessly”, the article written by Anne Trafton from MIT news. Began developing a survey to research public opinion regarding the likelihood they would consider using the pill technology.	4	4

○ **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.

○ **Summary of weekly advisor meeting**

Our team met with our advisor on Tuesday, January 31st for the first time to ask beginning questions regarding the project and to get a better understanding of our expectations. We discussed the background of the project and decided that we should start by researching projects that already exist that are similar to ours.