EE/CprE/SE 491 WEEKLY REPORT 6

Mar 6, 2023 – Mar 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, Tucker Thomas, Robert Zukowski

- **Weekly Summary**

  This week our team had another meeting with Professor Pandey to discuss our project further. He gave us further guidance on what we should do after our initial research from our initial meeting. Specifically we need to look into how gastrointestinal photos were categorized and then verified by medical professionals. There are data sets available, and we need to see if we can recreate this ourselves. In addition we also got some guidance on what to look for in terms of the hardware. Specifically looking into the microcontrollers from Nordic and trying to get some guidance on how to connect some of the basic functions.

- **Past week accomplishments**

  - **Chase Thompson**: Met with the advisor and discussed where to go next for the project. We discussed finding photo databases in order to have sample images and videos to work with for detecting polyps, cysts, and cancer spots in the colon. Independently from the advisor I looked into some of the data banks that the advisor and I discussed and found a couple open source ones. Also read through some of the papers that cited these data banks and learned a little bit more about how they actually detect these spots.
  - **Robert Zukowski**: We met with the professor to discuss future research areas. We found interesting research papers with good starting points to start the hardware portion of the design. We also discussed different standard capsule sizes and the microcontrollers we would be using.
  - **Cutler Thayer:** Looked into data sets that categorizes gastrointestinal issues from photos. I also looked a little bit into the nordic microcontrollers.
  - **Tucker Thomas**:

- **Individual contributions**

NAME	Individual Contributions	Hours this week	HOURS cumulative
Chase Thompson	Researched data banks for sample images of polyps and cysts in the colon. Looked into the papers that cited these data banks.	4	16
Robert Zukowski	Went to the meeting with our advisor. Began looking into how to program the microcontroller, how to use other devices with it, and how to use the integrated bluetooth capabilities.	3	14
Cutler Thayer	Spent a little bit of time getting a very basic look into the technologies we should base this project off of. Looked into data sets and their categorization and the nordic microcontrollers.	2	14
Tucker Thomas	Brainstormed questions for a survey, the purpose of which is to gather data regarding how potential users feel about the technology. Asked friends and family about their opinions of the project as a whole.	1	12

- **Plans for the upcoming week**
  - All Team Members: Read the attached article about already existing companies that are prevalent in this field.
  - Chase Thompson: Continue looking into the data banks and reading up on AI for image processing to find objects in images.
  - Robert Zukowski: N/A (spring break)
  - Cutler Thayer: Start making simple demos to categorize the photo sets that are available to access.
  - Tucker Thomas: