

Continuous Monitoring of Asthma Control Progress Report 9

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Date: Friday, March 24th - Thursday, March 30th

Problem Statement

Asthma patients often do not experience the the symptoms of asthma exacerbations, such as coughing, wheezing, and increased respiratory rate, for up to 2 days after it has begun. In severe asthma patients, where the exacerbations are more frequent, prolonged detection can lead to more serious symptoms, longer recovery times, and extended tissues destruction. These severe asthma patients only account for 5-10% of all asthmatics, but they account for a disproportionate amount of health-care costs, hospital admissions, doctor visits, and emergency services. By creating a device that can detect the symptoms of an asthma exacerbation earlier, the patients could be more promptly notified to start their asthma action plan (AAP). This could potentially save significant amounts of time, money and resources while also reducing the effects of the exacerbation.

Restatement of Previous Team Goals

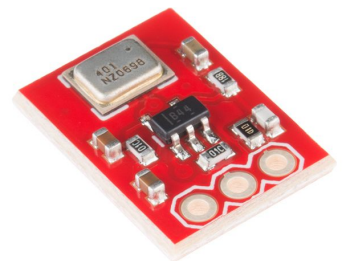
- Work on LabVIEW code to add data storage
- Assemble the prototype and begin testing
- Look more into the requirements for the shirt/ alternatives for holding the microphones

Summary of Team Role Accomplishments

- Luke (BSAC) - There have not been any BSAC meetings for the past two weeks.
- Tim (Leader/ Communicator)- Completed HIPAA training. Worked on/ submitted the progress report.
- Kelsey (BWIG/ BPAG)- Picked up 3D printed piece from the shop. Uploaded progress report to website.

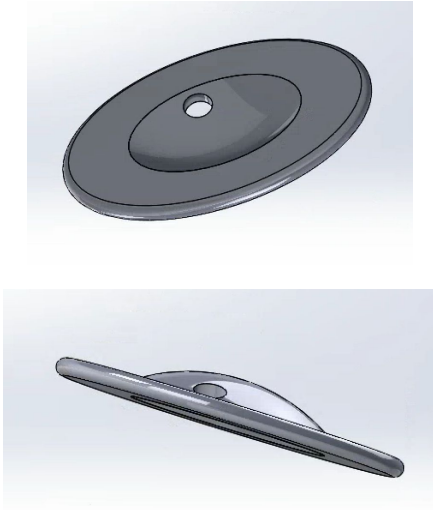
Summary of Design Accomplishments

The team decided on an encased microphone design. First, it will feature a 3D printed casing in order to make the design slimmer/more ergonomic. In addition, the microphone be completely enclose in the new casing. The reduced bulk will increase patient comfort and enable the device to be more easily integrated into a shirt. The team will use the same microphone as last semester: Sparkfun MEMS Microphone Breakout- INMP401 (ADMP401). The idea behind this is that we know that microphone has

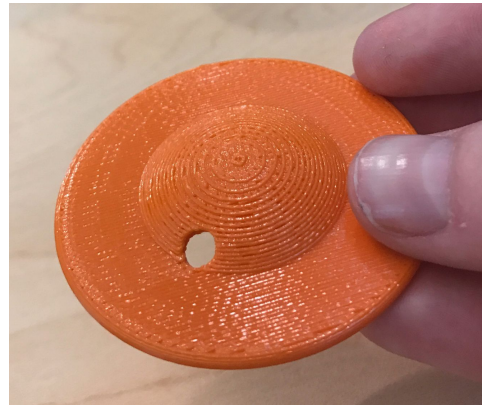


worked well and it should be compatible with our code written last semester.

Casing Solidworks Images



3D Printed Casing



The team decided to use a two conductor shielded cable with drain wire (Digi-Key C2534-50-ND). This will allow one conductor for the audio signal, one conductor for the voltage supply, and the drain wire to be connected to ground. The team began to assemble and test the prototype today and will continue working on it later tonight.



There have not been any actual design changes, but the team is still trying to figure out the best way to implement the device into a shirt. Since many of the patient might wear different sized shirts (and the device needs to be tight against the individual for the best results), the team may need to create multiple shirts of different sizes to accommodate the patients. That way, the microphone system could be transferred from shirt to shirt depending on the patient. This seems to be a lot of extra work, so it has been proposed integrating the device into an adjustable band that could be placed on the patients. We have reached out to our client about this idea, and we intend to meet early next week to discuss this and any of remaining details of the project.

Activities

Date	Member	Task	Time (hrs)	Week Total	Sem Total
3/30	All	Worked on prototype and testing	3		
3/29	Tim	Completed HIPAA training	.5		
3/30	Tim	Worked on/ submitted Progress Report	.5	4	23.5

