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September 12th, 2017

Capstone Design Project

Dr. Johnson

Problem Statement

Day-to-day operation for nurses and doctors at Children's Healthcare of Atlanta is very important and worrying about the location and state of their equipment should not be high on that list.

Employees of the hospital should be able to see if a ventilator is in use, needs maintenance or repair, and where it is in the hospital all in a way that is easy and efficient, so not to distract them from their more important tasks. The added equipment that gives this functionality should be small, unnoticeable, and removable so that rented ventilators are not permanently modified. It should also be very simple. The point of this modification is to make equipment use more ubiquitous across the hospital and it should not create more issues than it solves.

However, the current equipment management at Children's is inefficient and wastes the hospital's time and resources, not to mention the patients. By not having this information at employee's fingertips we waste their time and efforts searching for equipment like ventilators rather than treating their patients. Because of this, the patients of Children's will have a less than perfect and optimized experience and potentially decrease the company image.

By adding a simple device that can use wireless and Bluetooth signal frequencies generated in the hospital we can triangulate the position of a ventilator to within a room. We can

also state its current maintenance and repair status as well as whether it is in use. This means that in a matter of minute any employee can know where the nearest ventilator is.

For a financial budget, we as a team are still somewhat unsure but we do know we will need a Raspberry pi zero w which includes on board WIFI and Bluetooth and costs roughly twenty-five dollars on Amazon, an enclosure of sort that could possibly be created using a 3D printer or using the one included with the device, and then some RFID tags that will cost around ten dollars for a pack on Amazon as well. So as of right now we are looking at a budget of upwards of \$40.

- We met with our mentor, WenZhan Song in his office on September 1st, 2017
- We held a conference call with Jocelyn Grunwell and Pradip Kamat on September 11th, 2017, but due to the inclement weather Dr. Kamat was not on the call.