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C951 Task 2
Submission 1

In a disaster time is of the essence, but most importantly is safety. When firefighters enter a burning building they will never know what they will find. Which is why bubble rob was made. The scene you see is Bill is trapped with a lot of different fires. Bubble Rob has to navigate around the fire and steer clear of the cliffs while searching for Bill.

With this autonomous vehicle no emergency personnel has to enter the building blind and unknowing if there is a person inside or not. Relieving the first responders from entering the building blind.

Bubble Rob now has proximity sensors for all wheels, 2 in front and 1 in back, so the bot will know if it is about to roll off a cliff. I have also added a vision sensor to detect fire so the bot will know not to run over the fire and try to preserve itself.

Bubble Rob moves throughout the environment based on the sensors on board. Each one of the sensors has a purpose to make sure the robot can avoid obstacles and to find Bill.

Bubble Robs code has a state machine with 7 states: Stop, Running, No Floor Left, No Floor Right, No Floor back, Fire, and Person Detect. The Sensors are able to switch the state of the bot if needed. If any of the floor sensors detect a cliff the state will change to the correct state to move away from the edge. If the Vision Sensor detects a fire the state will change to Fire to move the bot out of the way. And if all of the sensors are good the bot is in a running state trying to find Bill. Running state runs in a somewhat random path to make sure the entire area is clear.

Bubble Rob is nowhere near perfect. He will need a lot of work. Right now Bubble Rob needs a vision sensor to accurately detect people. Currently it is using a proximity sensor which cannot distinguish between people and inanimate objects. Bubble Rob could also use some work on his autonomous path. A more efficient path is needed to help in larger environments.