EF 230: Virtual Robot Project

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Design

Our virtual robot design is based off of the Bomb Defusal VR game. The robot would go through a number of rooms and complete the tasks in the designated room, if the robot completes all the tasks then the "bomb" is defused. We incorporated different functionalities that MATLAB has such as: face recognition, color recognition, symbol recognition, and user interface elements. For some parts of the maze, the robot will have to check it's surrounding and try to find it's way out using its sensors. For example, if it bumps into a wall, the robot would reposition to continue through the maze.

Our map is made of 4 rooms/modules. In module one, the robot will travel through this section with specific order of colors shown to the rover by the user. Module 2 is similar to module 1, but rather than the user showing a color, they'll show a symbol/text. Once completed, robot would move on to module 3. Module 3 is also a maze-like room and imitates a "cutting-the-right-wire" senario. The robot travels through the maze until it approaches various beacons which represent different wires to cut (different pathways to travel) based on the color of the beacon. Once the robot approaches the beacons, the user will be asked to choose a wire to cut. If the right wire is selected, the robot continues to travel through the maze to the next beacon group to choose from. Otherwise, the user has to try again. After cutting all the right wires, the robot moves on to the last module where it will be asked a true/false question. The user has to position their head to the right or left of the screen to answer. If the question is true, their head should be to the right of the screen and vise versa. Once the robot successfully completes all modules, the bomb will be defused.

Best Feature of Project:
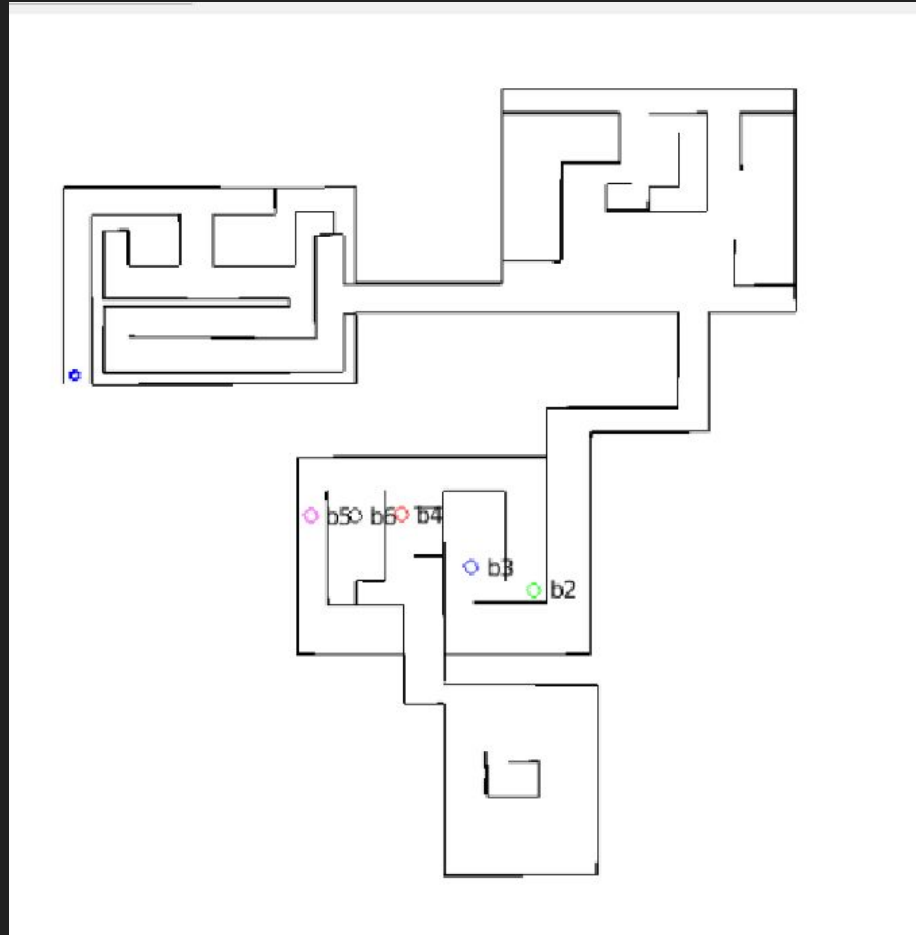
Maze Layout/Design

Logic Flow Chart