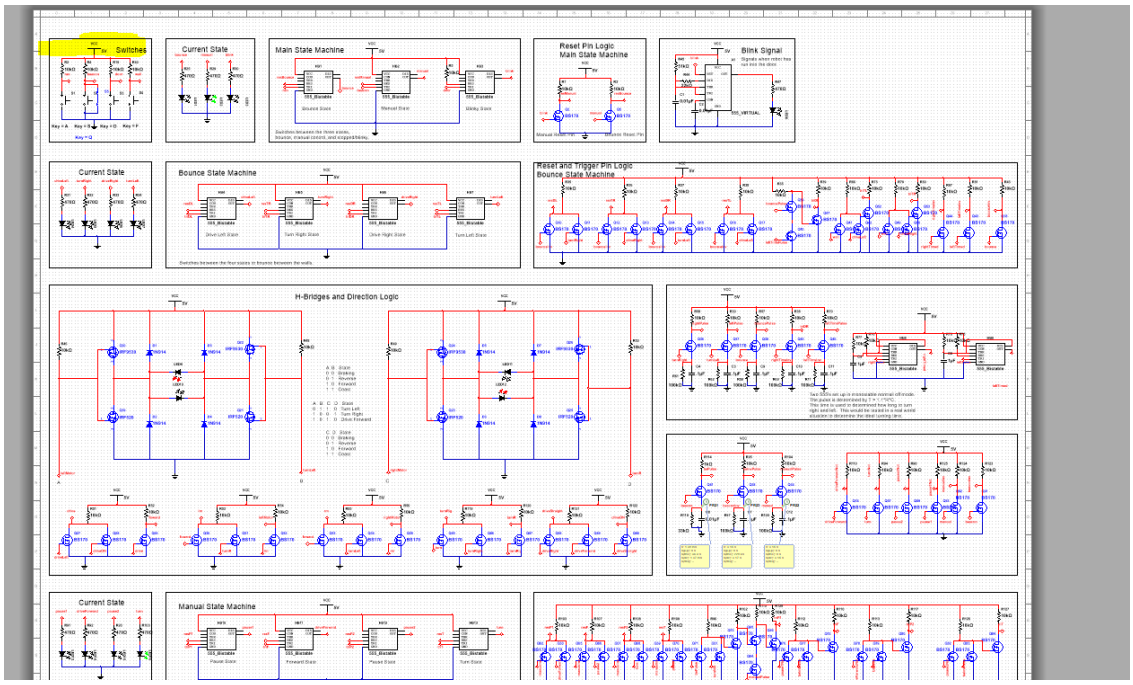
Sarah Brown

ELab Robot Project Simulation Instructions

1. Open the file named BrownSarah_RobotSchematic
2. Start simulation
3. Due to circuit/simulation lag sometimes the correct states as shown by the current state LEDs take a couple of seconds to update. In addition, while changing between states in the manual state, allow a brief pause for the pulse capacitors to recharge. These capacitors take a longer time to recharge than they would in real life due to simulation run speed.
4. The switches in the upper left are used to control the robot
    a. The location is shown below



    b. By pressing A on the keyboard, the switch labeled Run will start the state machine and advance the state to the bounce state.
    c. By pressing F on the keyboard, you can simulate detecting a wall and have the robot change direction. This will change the state to turn right or turn left. The robot will stay in this state and automatically advance to drive left or drive right depending on its current state.
    d. By pressing S on the keyboard, you will simulate pressing and releasing the beacon, this will change the robot to manual mode.
    e. By pressing Q on the keyboard, you will simulate pressing and holding down the beacon (due to Multisim issues this has to be simulated with a toggle switch instead of a push button). This will have the robot drive forward or turn based on the previous manual state.
    f. By pressing Q on the keyboard again, you will leave the state (drive forward or turn) you were last in and proceed to the pause state. Pressing Q again will move you to either

drive forward or turn. Please allow a short pause between changing states in manual mode due to simulation constraints.

g. By pressing D on the keyboard, you will simulate running into the door at the end of the hallway. This will turn off the motors and blink a LED in the upper right portion of the schematic.

Trouble Shooting

1. If there are any simulation errors, double check that the simulation/analysis settings are set to the ones shown below.
2. The robot simulates completely on my machine, but due to Multisim lag please allow time for updates to show on status LEDs or LEDs showing H-bridge motor direction.