

Project 5: Halloween Robot

EN1-06 Fall 2016

In-class Haunted House (at Tufts CEEEO) due on Monday, October 31st, 2016

Documentation (description, images, videos, code, etc) due to website by Mon (10/31) by 9pm

Project Description: For Halloween (Oct 31st), you are going to create interactive robotic Halloween exhibits that will be part of a Haunted House hosted by the Tufts University Center for Engineering Education and Outreach (CEEEO), located at 200 Boston Ave, Suite G810.

Details (Hardware/Software): You will use your LEGO MINDSTORMS EV3 Kit for doing the sensing, thinking, and actuating (perhaps with assistance from your computer, e.g. sounds). Some Halloween themed supplies will be provided by the instructor. Beyond that, you can use any additional materials (you find or create) for implementing your Halloween robot. You will be programming your robot in LabVIEW. You can run your code in **Main Application Instance** (via the computer) or deployed **Remotely**, whichever makes more sense for your individual project.

You will be combining pairs into small groups of four to work on this project; this means your group will now have access to two MINDSTORMS kits (and thus, two EV3s and twice the motors/sensors/parts as an individual kit). Also, with twice as many participants in your group, it is expected that the complexity of the robot/project should reflect the size of your group, in physical construction and programming. Your Halloween robot should react to user input (e.g. detect when someone is near? have a pushbutton input?) and perform some appropriate reaction/response. Your code should be more complex than just “wait for sensor, initiate motors, loop”; there are multiple ways to achieve this (brick-to-brick communication, interacting with front panel controls, etc). The emphasis for this project should also be reliability, repeatability (robot needs to function for 45-minutes as multiple people interact with it), and stability.

Note: the Tufts Center for Engineering Education and Outreach (CEEEO) is located at 200 Boston Ave, Suite G810, Medford MA 02155. Make sure you know where this is and how to get there. Setup will be from 2:30pm to 3:30pm, Haunted House from 3:30pm to 4:15pm, and cleanup from 4:15pm to 4:30pm (make sure a member of your group can stay after class to clean up). Make sure to take pic/video of your robot in action during the Haunted House!

Total: 10 points

General Robot Design (2 points): Robot construction, stability, etc.

Use of Halloween Materials (1 point): Does the robot address theme of the assignment?

Submitted Code (2 points): Is code submitted, correct, readable? And appropriately complex?

Repeatability (3 points): Does the robot “reset” itself and perform the same over and over?

Documentation (2 points): Does the uploaded documentation accurately reflect the robot?

- Description of mechanisms, etc.
- Video of it in action?