Writing Sample C

Abstract

Trinity College holds the international Fire-Fighting Robot Competition every year where it challenges students of all ages to build a fire fighting robot and compete according to their set guidelines. The goal for the competition is to construct an autonomous robot that can navigate a designated course layout and extinguish a fire that is represented as a candle. This senior design project will research, design, and build an autonomous fire fighting robot that competes as well as possible in the competition while also staying applicable to real world situations.

Background

The goal of the competition is to build an autonomous robot capable of navigating a maze and extinguishing a fire. Robots are placed into one of two categories for the competition: Unique and customized. A customized robot utilizes a pre-built or designed system, while a unique robot is constructed of unique parts that are selected by the team. Our project will be competing under the Unique category. The robot itself must fit certain design regulations set by the competition.

The most relevant rules to the design of our project are listed below:

● The robot must be completely autonomous after turned on and must sit on the judge's table turned on for the length of the competition (8 Hours)

● The robot must fit inside of a box with base dimension 31cm x 31cm and 27cm tall

● The robot may not separate into multiple parts, the robot must have a carry handle, and the robot must have an arrow indicating front.

● The robot must also be sound activated; for this, the robot must have a microphone mounted on the top of the unit. A judge will place a sound creating device 25mm from the microphone. When the device sounds a specific tone, the robot must start and complete the course.

● As a safety precaution, the robot must have a kill switch mounted on the top which the judge can pull at anytime to deactivate the robot.

● The fire will be simulated by a candle flame. When the robot recognizes the flame, a LED must turn on signaling that a flame is detected. The robot must then extinguish the flame via water, CO_2, air extinguishing, or a mechanical method.