Little Insect Project (Inspired by DARPA LittleDog Project)

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The LittleDog project was part of the DARPA Learning Locomotion program, which involved using a quadruped robot, LittleDog (constructed by Boston Dynamics), to walk through different terrains. The LittleDog is a college level project; the robot is costly, and the algorithm/programming to control the LittleDog is complex. The objective of this engineering project was to find an affordable (less than 100 dollars) and simple way to build a robot that would be able to perform nearly as well as the LittleDog. In this project, a robotic insect was made from off-the-shelf micro-controller and commonly available materials. The robot had to be programmed differently to walk through a gap, several stairs, and a section of rough land. The robot was able to walk through all the terrains without major problems such as tripping and unbalancing. The hardest parts of the project were making the leg sensors (used to detect the ground levels) and programming the robot to walk through the rough terrain. Push-pull switches were originally planned to be used as sensors placed at the bottom of the legs. However, the robot was not heavy enough to push the switches so custom-made switches were made. Because the rough terrain was bumpy, the robot could not balance well at first. Programming to adjust the legs based on angle difference between the legs allowed the robot to be more balanced and stable. From doing this project, students will be able to learn robotics and programming and fully utilize commonly available materials to make simple robots that can perform near professional-grade robot functions.

Awards Won: