Multi-Terrain Robot

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When it comes to small, versatile, capable, and durable robots that can be used for search and rescue or exploration, there are few, if any, available. The goal of this project is to design a small robot that could be used to search for earthquake victims, inspect equipment in tight spaces, and explore unknown or dangerous environments. The robot is based off of a centipede, meaning that it has pairs of legs connected to discrete, articulated body segments. The robot's legs are driven by a motor connected to a central driveshaft. At each junction between body segments, the driveshaft is made flexible using a universal joint. A worm gear lies on the driveshaft inside each body segment. These worm gears drive worm wheels, which turn shafts perpendicular to the driveshaft. These shafts drive the legs. The early prototype's body segments were designed in SolidWorks and 3D printed, while the driving mechanism and legs were constructed from LEGO pieces. The current iteration is more durable, larger, has a metal drivetrain, and a steering system. The robot is capable of walking over uneven terrain and streaming video feedback to the operator.

Awards Won: