Autonomous Search and Rescue Robot

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Search and rescue missions demand as much manpower as possible in order to locate lost or injured individuals in time to save them. This project aims to reduce this search time by increasing manpower through the creation of an affordable and autonomous robot. This autonomous robot will be capable of distinguishing between civilians, police, firefighters, and soldiers in the event that an individual goes missing or needs help locating first responders during a catastrophic event. The first step of the project was developing the program which included speech recognition for voice commands. Other segments created include a detection segment that identifies what or whom is being searched for, obstacle detection, a geolocator, and robotic movements that are controlled by the detection segment. Next, custom data sets were created to increase the efficiency and reliability of the detection phase. Lastly, a prototype of the robot was created using a raspberry pi, motors, a camera, a speaker, a microphone, a twelve volt battery, a circuit design, and 3D printed parts. After implementing the code, the robot was successfully activated by voice commands and used the data sets to find either police, firefighters, soldiers, or civilians based on the user's commands. The efficiency of the robot has been enhanced with improved versions. The latest model is MK4 at a cost of approximately $200 which is 375 times less expensive than Boston dynamic's $75,000 spot robot; a robot that could be sent in similar search and rescue missions. The success of the prototype proves an inexpensive autonomous robot can be made to improve search and rescue efforts and help civilians locate first responders in the event of an emergency.

Awards Won: