Autonomous Rescue Trail (ART) Rover

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Overview

- An autonomous rover to provide emergency assistance
- Device will patrol hiking trails and will stop to assist hikers
- Rover will also communicate with a base station to send data back to base
- Hikers can interact with rover via answering questions on display screen

Fall Quarter Work

- Implemented obstacle detection with ultrasonic sensors
- Implemented human detection and object recognition with a camera and infrared sensor
- Assistance prompted LCD Interface and button response once person detected
- Built proof of concept with RC car chassis and motors

Design

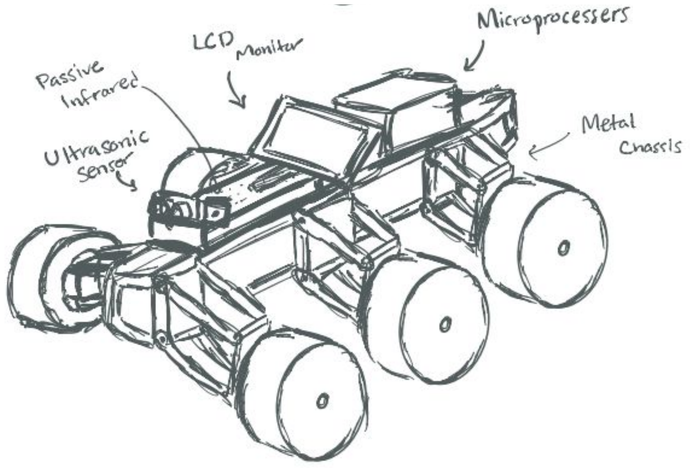

Fig 1: INSERT PHOTO HERE

Materials

- Raspberry Pi(s)
- DC Motors
- Power source
- Rover Chassis
- HC-SR04 Ultrasonic Sensors
- Passive Infrared Sensors
- 16x2 I2C LCD

Background

- Hikers have a chance of getting injured and immobilized on trail (0.56 injuries/1000 hours)
- In the case of injury, the time to get paramedic help or park ranger's attention is too long (7.2 hours)

Next Steps

- Build final chassis
- Obstacle avoidance/autonomous navigation
- Communication with base station

References

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