Autonomous Field Medic for Search and Rescue Recovery of Victims

Introduction

Being a combat medic may seem less risky than actively participating in battle. However, the reality is that combat medics are also exposed to many dangers. The Autonomous Field Medic for Search and Rescue Recovery of Victims was designed to assist combat medics in saving lives. It has a retractable gurney to transport wounded soldiers. It can also transport any supplies that a medic might need. These features allow for combat medics to treat the wounded more efficiently, while reducing the chances that they become wounded themselves.

Materials & Methods

Materials:

- Gears Educational System - Heavy Metal Chassis
- Aluminum plate
- PVC Pipe
- 6 Wheels
- Arduino Uno
- 4 HB 25 h-bridges
- 4 DC motors for drive system
- Camera swivel stand
- Pixy Camera
- Electronics box
- 4 NiMH Batteries
- Screws
- Wires

Process:

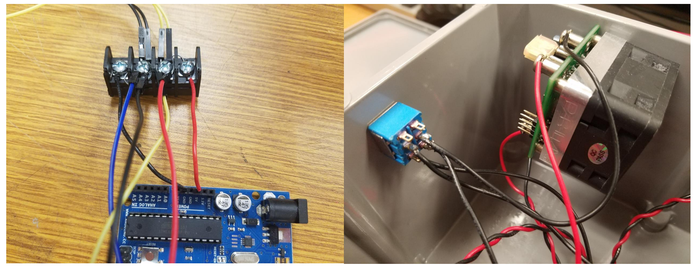
- Assembly of the chassis
- Adding motors
- Adding an aluminum frame
- Attaching the electronics box
- Assembly of electronics
- Programming the robot to follow a color
- Testing
- Development of gurney deployment mechanism

Results

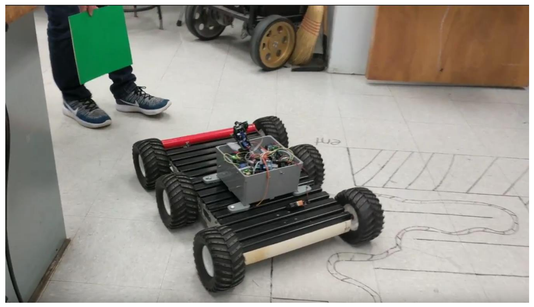
The prototype for the Autonomous Field Medic for Search and Rescue Recovery of Victims was built at approximately 1/2 scale and used relatively inexpensive parts. Many of the electronics, including the h-bridges and Arduino, are common devices that are readily available. The Autonomous Field Medic prototype demonstrates the gurney function and the ability to track and follow objects of a certain color. After thorough testing and revisions to code, it can speed up and slow down depending on the perceived size of the flag and it can turn with ease. The Autonomous Field Medic accomplished its goal in demonstrating functions that would be useful for combat medics in battle.

Design Prototype

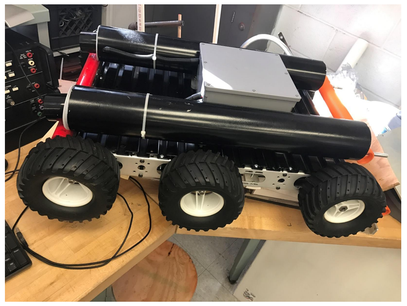
Frame



Electronics



Testing



Early Prototype

Conclusion

The Autonomous Field Medic for Search and Rescue Recovery of Victims demonstrates functionality that would be an immensely useful for combat medics. It can transport supplies and has an retractable gurney. This tool also would not have to be immensely expensive, even at full scale. However, more features should be added to improve autonomous functionality. In addition, further development in conjunction with trained medics could make the Autonomous Field Medic even more useful.

Future Modifications

Firstly, the Autonomous Field Medic would need to be prototyped on a larger scale. This full scale model could have more powerful motors, more sophisticated microcontrollers, and extra functions. In addition, the full scale model would require additional development to ensure the functionality of the gurney.

Features that could be added:

- GPS tracking to find soldiers
- More advanced camera systems to monitor surroundings

With additional resources, the Autonomous Field Medic for Search and Rescue Recovery of Victims would be a useful device in saving lives.

References

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