

I Overall Project

10/20/16

① Why?

This project implements all requirements for the course including communication and autonomous behavior. This project also simulates a real life military defense/offensive system. If done correctly, this can be expanded and brought to a much larger scale utilized in the security industry.

② What exists: How done?

Many autonomous Robots exist today, however they do not communicate with other identical Robots. What exists is single autonomous vehicles controlled destructively via GPS or random generator. These implement a variety of sensors including but not limited to ultrasonic & IR proximity sensors.

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③ What my project brings.

10/20/16

This project brings a new aspect of a simulated defense/offense system. No other system exists where robots travel autonomously while communicating, simultaneously searching for a desired target. This project utilizes a variety

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of sensors to control autonomous behavior; exposing me to a new area of study. Communication between microcontrollers also offers a new experience to tackle for the class.

Overall my project brings an intuitive and interesting task for myself and fellow classmates to take part in.

II Processor

① Why?

The Dragonboard 410c is a seemingly perfect match for the project idea and for myself. It has builtin WiFi, Bluetooth and GPS capabilities and offers a linux based OS suitable with Python. There also in supply and do not need to be ordered.

② External + Internal Capabilities.

- GPS, WiFi, BT on-board antennas.
- Quad Core Processor 1.2GHz
- USB Ports + HDMI
- Micro SD Port
- 12 GPIO Ports
- DC Power + I2C
- 1GB of RAM
- Qualcomm Q12a + GPS location Technology.

③ Speed cushion / Improvement Possibilities - project lifecycle.

This project has a very good cushion that ranges from basic operation to advanced capabilities. For example, Basic operation would have autonomous tanks that communicate with one another FAIRCHILD while searching for a target.

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③ Continued.

An advanced version of this project would be fully autonomous communicating accurately robots that find a target, and then form a defense position around that target. This will be done using GPS and BT capabilities.

④ Cost Considerations

Cost is very low due to the implementation of an existing project. All hardware is readily available therefore no initial cost to this new project. Any cost will come from hardware ordered for replacement or specific needs.

III HARDWARE CHOICES

① Availability

All hardware is available and in stock.

② Reliability

All hardware is new or barely used. Reliability is based upon proper reconstruction and/or manufacturer's process.