

Senior Design I

EEL4914

Group E

Steve Monroy

Daniel Franco

Anna Baranova

Andre Barrett



1. Title:

Heart Racer Go-Kart

Members:

Steve Monroy
Daniel Franco
Anna Baranova
Andre Barrett

Sponsors/Contributors:

Possible sponsors: Orlando Grand Prix
Fun Spot
Bobcat for Hire
Funding request from Boot Camp
University of Central Florida Electric Vehicle Program

2. Statement of Motivation

After deciding what our project will consist of and sharing our motives we have come to the conclusion that the following is why we are willing to take on this challenge:

- Learn how to design a complex circuit and program an FPGA board
- Implement and design circuit schematics
- Create some sort of sustainable power generation
- Implement programming into a practical design
- Learn the mechanical side of engineering
- Learn different ways to power electronics

Goals and Objectives

- Build a Go-Kart
- Implement music and lighting environment into a Go-Kart
- Implement a heart rate monitor
- Gain real life experience
- Implementation of new design into an existing model

Function of the Project

The main function of the project is to play a certain genre of music and display lighting, depending on the heart rate of the driver
Heads up display showing heart rate, speed, music selection, place in race and a rear view camera visible to the driver to see who is behind him/her

3. Specifications/Requirements

- One Go-Kart
- Get to a speed of at least 40 mph
- Four strips of 7-color LED lights
- One LED display
- Two speakers
- Steel Framing
- Embedded Board
- Two sensors for heart rate monitor
- Electric/Gasoline Motor

Four 12V batteries (Electric Motor)
 One 12V battery (Gasoline Motor)
 One battery to power on-board electronics
 5 meters in wires for electronics
 Over 20 supercapacitors
 Four transformers
 Four relays
 One fuse box and fuses
 Gears for the axle
 One rear facing camera
 Alternator

4. Project Block Diagram (*Refer to last page for block diagrams)

5. Project Budget and financing

If we don't receive funding from a sponsor each team member is willing to put \$250 into the project. Totaling to \$1,000 for the entire project.

| | |
|--------------------------|----------------------|
| \$400 Go-Kart | \$400 Go-Kart |
| \$170 Motor | \$170 Motor |
| \$20 LED strips | \$30 LED strips |
| \$70 LED Display | \$70 Display |
| \$60 Embedded Boards | \$60 Microcontroller |
| \$10 Camera | \$50 Pulse Sensor |
| \$50 Heart Rate Monitor | \$50 Speakers |
| \$150 DC to AC converter | \$60 Speedometer |
| \$50 Wires | \$60 Roll Cage |
| \$20 Other | \$10 12V Battery |
| | \$40 Wiring |

If we receive funding from a sponsor we hope that they would be willing to fund the entire project. If not, at least for the Go-Kart and we are willing to purchase the rest of the equipment.

6. Project milestone for both semesters

Spring

Beginning of April- Design specification paper rough draft completed

End of April- Design specification paper final copy completed

May- Have a Go-Kart purchased and functional

Fall

September- Have all of the parts purchased

October- Working prototype

November- Testing

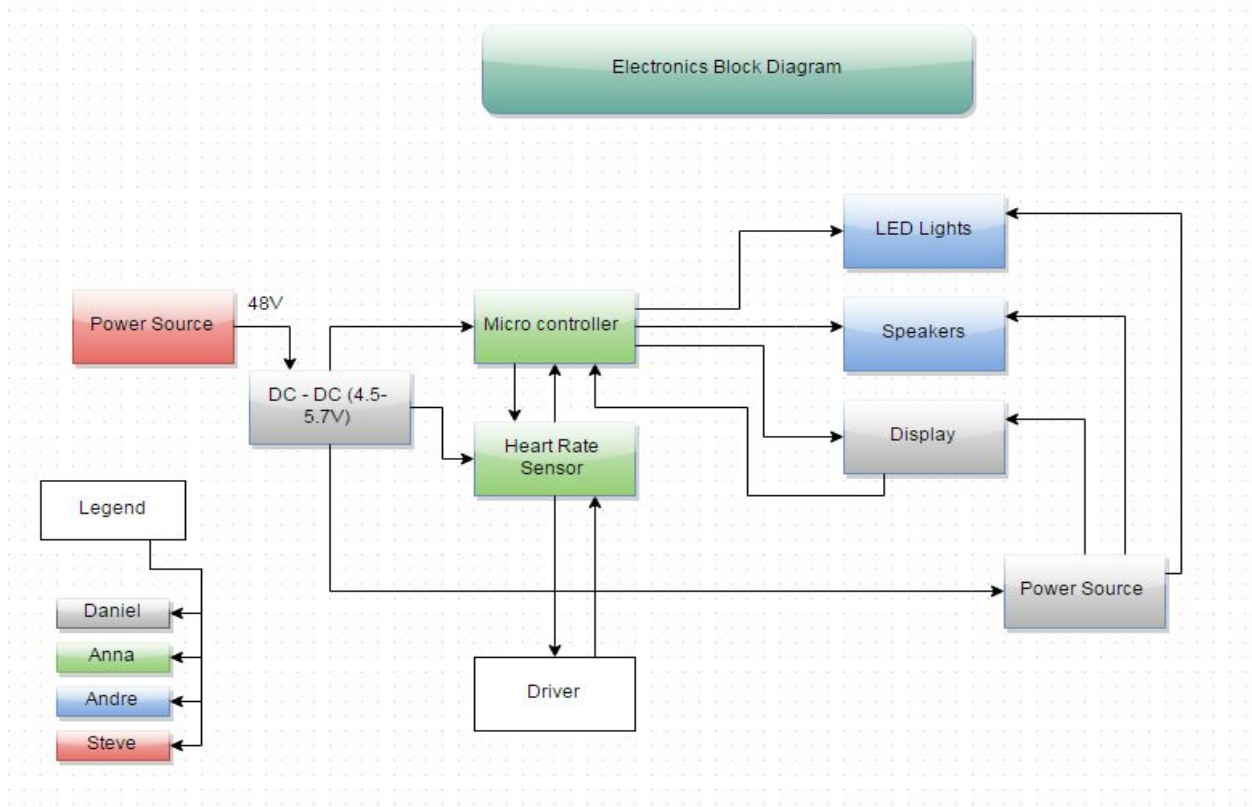
7. Decision Matrix

Features under consideration:

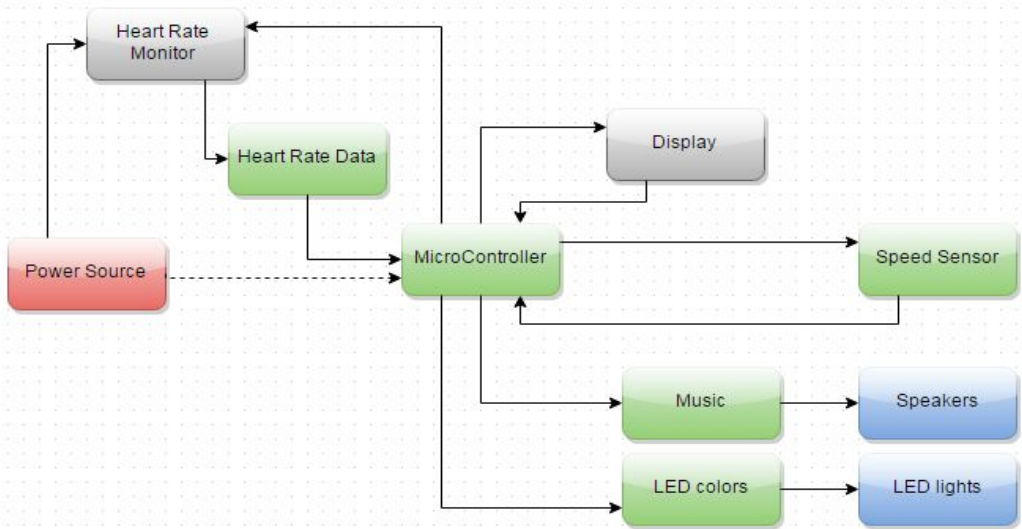
Place in race- May not have enough time

Weight scale- Functionality

Laser tag- May not have enough time



Software Diagram



Power Block Diagram

