The S-90 Go Kart

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Introduction: Background

- Client: Sean Stenglein
- Disability: Cerebral Palsy
- Interests: Cars and the great outdoors
Introduction: The Project

- Goal: Design and build a go-kart that Sean is capable of operating.

- Constraints:
  - Sean has limited motor skills.
  - Vehicle must be able to be operated remotely.
Division of Labor

- James:
  - Mechanical Design
  - Welding

- Eric:
  - Programming
  - Circuit Design

- Alex:
  - PCB design, wiring, soldering
  - Metal preparation

- Tarek:
  - Metal preparation
  - Inventory management
Specifications

- The go-kart will have:
  - Power steering
  - Power throttle
  - Power shifting
  - Power braking
  - Lights
  - An emergency kill-switch
  - A roll cage and other safety equipment
  - Automatic transmission

- Three methods of control
- Fully adjustable steering column and seat
- Solid rear axle for off-roading
- Multiple fail-safes
Suspension

- Independent front suspension
- Semi-independent rear suspension
Designing the S-90

- SolidWorks 2007 was used to:
  - design and simulate stress on the vehicle.
  - check for clearance issues and collisions for each individual part.
  - do mass and center of gravity calculations.
Fabrication

- The chassis was constructed from A36 mild steel.
- Components were cut to size in the machine shop.
- Welding was done in Andover, MA using a Millermatic 212 MIG welder.
Fabrication Cont...

- Currently the chassis of the go-kart is 80% completed.
Control Systems

- Software and hardware interface testing is ongoing
- Steering control with position feedback is ready for mounting
- Throttle control using servo motor ready for mounting
- Braking control with position feedback ready for mounting
- Challenge: calibrating control systems for normal operation
Electronics Still To Be Done...

- Remote control to software interface
- Remote killswitch
- Emergency shutdown routine
- General user interfacing
- Systems testing
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Questions?

- All questions regarding the project will now be answered.