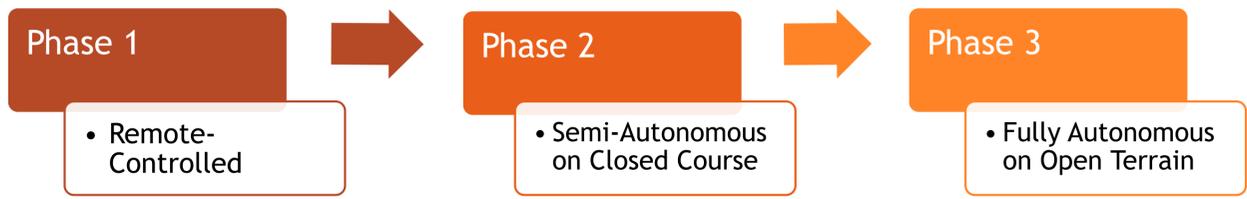




Remote-Controlled Golf Cart P15241

Autonomous People Mover: Phase 1



Background

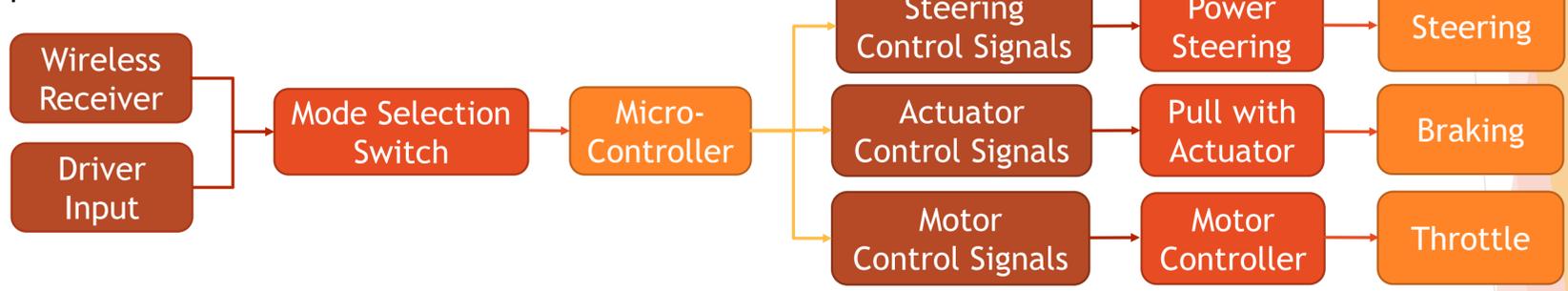
Self-driving vehicles are an upcoming field that will lead to improved roadway safety. Due to a strong RIT interest in this field, an electric golf cart was modified to be remote-controlled as the first of three phases in developing an autonomous golf cart for research in this field.



Customer Needs

- Steering, acceleration, and stopping by remote control
- Emergency stop functions for remote driver and passenger
- Passenger can still drive in "manual" if desired
- Robust & simple design
- Space for future projects & research
- Weatherproof in light rain

Cart Operation



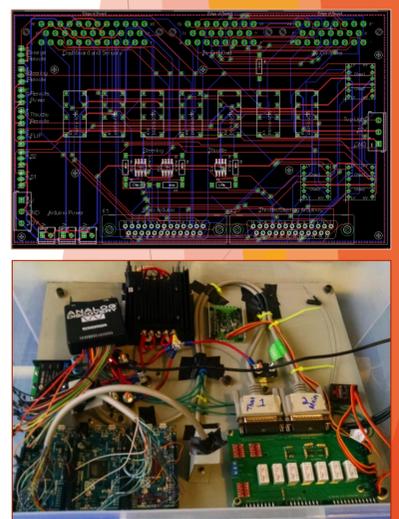
Mechanical



- To stop the cart, a fast-moving actuator pulls the brake pedal from behind.
- Remote steering is performed with a power steering system that the team can splice control signals into.
- System checking LEDs and emergency functions are provided by a redesigned dashboard.

Electrical

- Motion of the cart is specified by a remote controller, which sends Pulse-Width Modulated signals specifying speed and direction to the team-designed control board.
- When signals are received, an Arduino micro-controller interprets speed and direction to control the actuator, steering, and digitally controlled motor.
- DC converters and a 12V battery deliver power to all modified systems and microcontrollers.



Next Steps

The second phase of the Autonomous Golf Cart project began in Spring 2015 with the creation of MSD team P15242 and a CE Senior Design team to implement sensor-based movement on the cart. Moving forward, we hope the golf cart will provide a successful autonomous research and development platform.

Many thanks to our sponsors and supporters:



Team:

Nick Bovee	ME	Steering
Patrick Gelose	EE	Electrical Lead
Katie Knowles	EE	Project Lead
Duc Le	ME	Mechanical Assistance
Keith Martin	ME	Braking
Mollie Pressman	ME	Mechanical Lead
Jonathan Zimmerman	EE	Controls

Dr. Rick Lux, Guide • Dr. Raymond Ptucha, Customer • Nuttal Golf Cars