Moving Trap Tank

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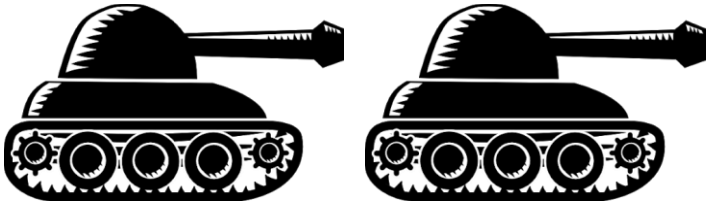
ECE 153B Project Proposal



Overview

We will create a miniature tank that is controllable via Bluetooth commands from our laptop. We will use the HC-06 Bluetooth serial port alongside the STM32L476G microcontroller to control the tank via USART serial interface protocols. To give the tank effect we will use a tank chassis to build on top of. PWM signals will be used to control the speed and turning of the tank. We will the L9958 motor controller coupled with SPI interface protocols to drive the tank.

Peripherals

- HC-06 USART Bluetooth Transceiver
- L9958 H-Bridge Motor Controller
- Wal front 3V-9V DIY Plastic Shock Absorbed Smart Robot Tank Chassis Crawler Car Kit with 260 Motor (Yellow)

Software Design

The user will be able to move the tank using the laptop arrow keys. There will be an application running on their laptop that will send Bluetooth commands encoding the tank's motor direction and turning to the HC-06. The STM32L476G will parse these commands and generate PWM signals for the motor controller to interpret.

Goals

- Having the tank successfully drive and turn according to the laptop's commands
- Incorporate rotating in place for turning
- Incorporate smooth turning (not rotating in place)
- Incorporate joystick to control the tank

Responsibilities

Sairisheek will be responsible for configuring the Bluetooth and USART interface commands coupled with the HC-06 to the STM32L476G, and Erick will be responsible for the STM32L476G's PWM outputs and how the L9958 motor controller uses these to maneuver the tank.