

Project Proposal: Robot Hand

Website: <https://sites.google.com/view/ece153b-robothand/home>

Overview

The goal of this project is to create a robot hand using the STM32 board. We will be using 5 servo motors, representing the fingers of the hand. The robot hand will be controlled by sending commands through Termite or an Android app via Bluetooth. We will have a manual mode and software presets for commonly used hand gestures. In addition, we will be using the LCD display to display the current mode.

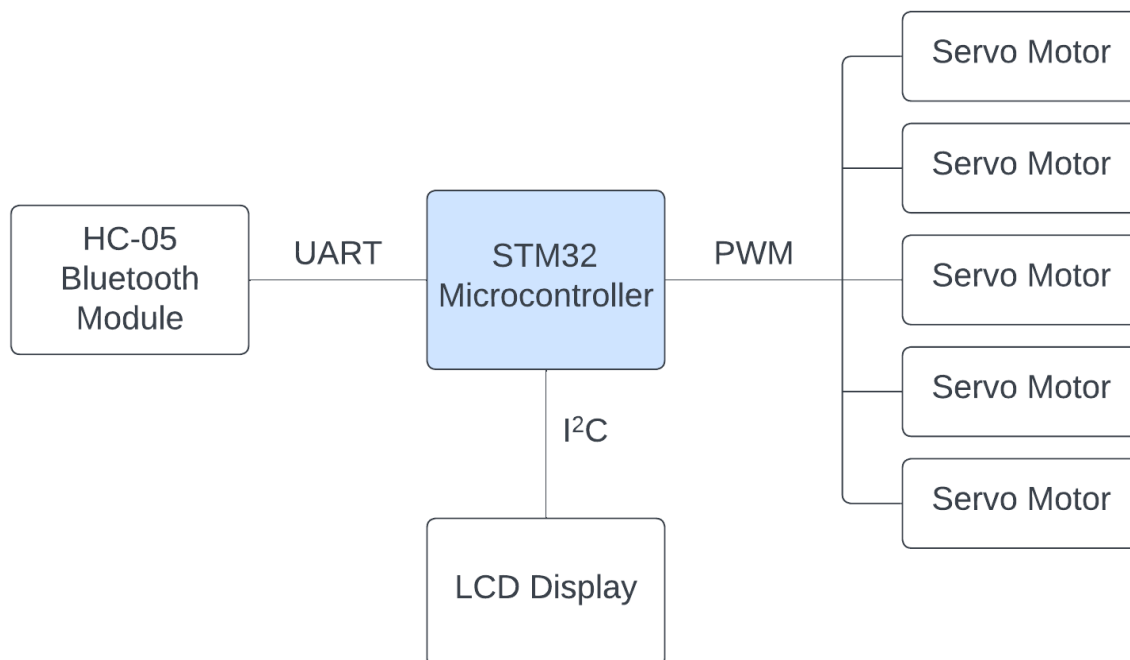
Peripherals

- 5x servo motors
- LCD Display
- HC-05 Bluetooth Module

Serial Interface Protocols

- UART: Bluetooth module
- I²C: LCD display

Block Diagram



Responsibility List

- Minh: 50% coding, build hand with parts, create Android app
- Yuki: 50% coding, figure out how LCD display works and configure it

Software Structure

- UART for communicating with HC-05 Bluetooth Module
- I2C for communicating with LCD display
- PWM signals to control the rotation of servo motors
- Set up an interrupt when a valid input from the HC-05 Bluetooth Module is received. The interrupt will tell the STM board to generate the appropriate PWM signal to rotate the servo motors
- Design an Android app using Bluetooth to control the motors
- Add software presets for commonly used hand gestures.
- Use LCD to show the current gesture preset, or certain modes such as manual control.