CALIFORNIA STATE UNIVERSITY BAKERSFIELD

The RC Scouter: Hand Gestured Remote-Controlled Car
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What is the RC Scouter?

The RC Scouter is a remote-controlled car that allows its user to operate it from a distance with simple hand gestures. Using a 6-axis accelerometer and a micro-controller, it can convert the motions of the user's hand into commands for the car.

Goals/Objectives

- To reduce or eliminate "Stuck-By" incidents on construction sites where heavy machinery is present.
- To create a safer work environment by eliminating the need of having someone close to heavy machinery to operate it.
- To reduce company cost of workplace accidents caused stuck-by incidents.
- To operate heavy machinery as efficiently as having someone in the machine.

Benefits/Application

- In 2020, there were 150 deaths and 14,000 nonfatal construction sector injuries.
- Totaling in $1.4 billion in workers compensation.
- Many companies have used automated heavy machinery in the mining and excavation industries. Many companies in these industries have been able to control operating machines from a singular location, often in positions that gives the operator optimal vantage points for improved safety.
- Implementations of radio controls or remote-controlled machinery not only help work towards minimizing stuck-by incidences and injuries for workers but also company workers compensation costs.

RC Car Structure
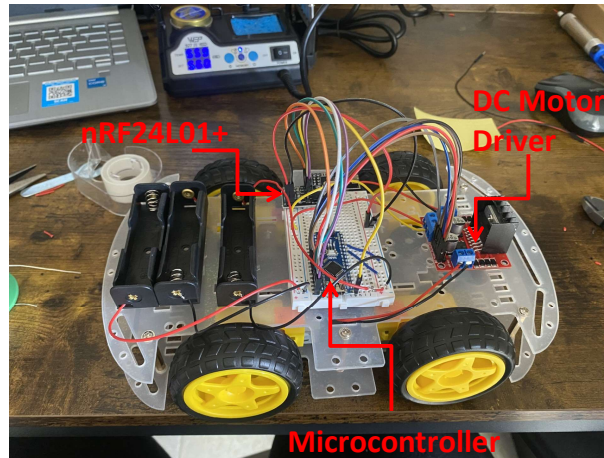
The remote-controlled car is created using a DC Motor Driver, an Arduino Nano Microcontroller, and a Transceiver.
- The transceiver receives signals from the glove and sends them to the Arduino.
- The Arduino will convert the signals received from the glove into commands for the car. The Arduino sends digital signals to the DC Motor Driver.
- The Driver controls the inputs of the wheels, controlling whether they turn left or right.

RC Hand Gesture Glove
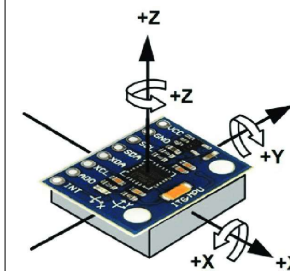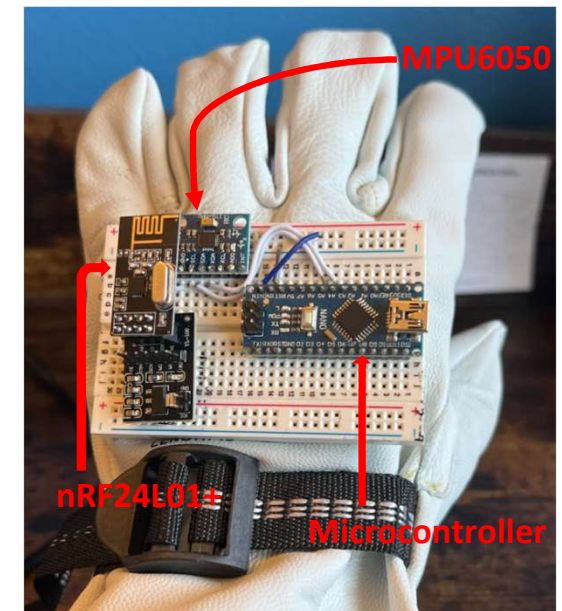
The RC hand gesture glove is made by using a transceiver (nRF24L01+) an Arduino Nano, and an Accelerometer (MPU6050 Sensor). The MPU6050 is the main component of the glove.

- It can register and calculate the displacement of your hand from the origin.
- It can measure linear and angular acceleration by using fundamental principles of a "Proof of Mass" on a spring and "Coriolis Effect".