

This project essentially serves as a proof of concept for the implementation of a hand gesture controlled robotic vehicle. Hand gesture recognition is achieved using modern machine learning algorithms and techniques in Python using a CNN classifier. Data transmission from the software application to the vehicle is facilitated via Bluetooth and the vehicle utilizes Arduino and a dual H-bridge motor driver for motion control. Seven gestures translate to seven different directions of motion including moving forward, left, right, backwards, reverse left, reverse right, and stopping. Our main goals as engineers in the context of this project was to explore a modular design based methodology, specifically one involving software-hardware interactions, as well as develop a novel robotics control mechanism such that the field can be more accessible towards older people and people with disabilities.

Finally our project did work in the sense that it met all the High level requirements. The operating speed is satisfactory after modifications on the power supply for L298N and PWM setting in the arduino code. The response of the robot is prompt, in most cases it response to a change in gesture input within a second, transmission range is met as we have tested operating the robot in the 445 lab and have the laptop transmitting signals in another room. We've also cleared ways for running our application on both Mac and Windows with a few lines of code change.