OpenCV interfaced gesture controlled robotic arm

INTRODUCTION: -

Many people in this world are familiar with gestures, one of the most effective forms of communication. Remote controllers are used to operate numerous industrial and domestic robots. Our gesture control project uses hand gestures to control a specific robotic arm. Here, motion offers a means of speaking while expressing an idea. Image processing, which is used to process image signals, is one of the most efficient methods for gesture recognition.

This gesture recognition technique aims to record a particular human hand gesture and execute applications based on it. A useful component of gesture recognition research in human-computer interaction is the ability to recognize sign language from hand motion (HCI). The user can control a robot from a great distance using wireless communication. The goal of this project is to use wireless communication and hand gestures to remotely control a robot arm from a greater distance than is currently possible.

DESCRIPTION: -

In this project, an object recognition system is used to control a robotic arm via hand gestures. The webcam used to take the picture of the hand is connected to an Arduino nano. Information obtained from input source is transmitted to processing unit and wirelessly transmits the information to the receiving unit of the device

The information that is processed for operation of servo motor, which is utilised to regulate the processing that is the robotic arm.

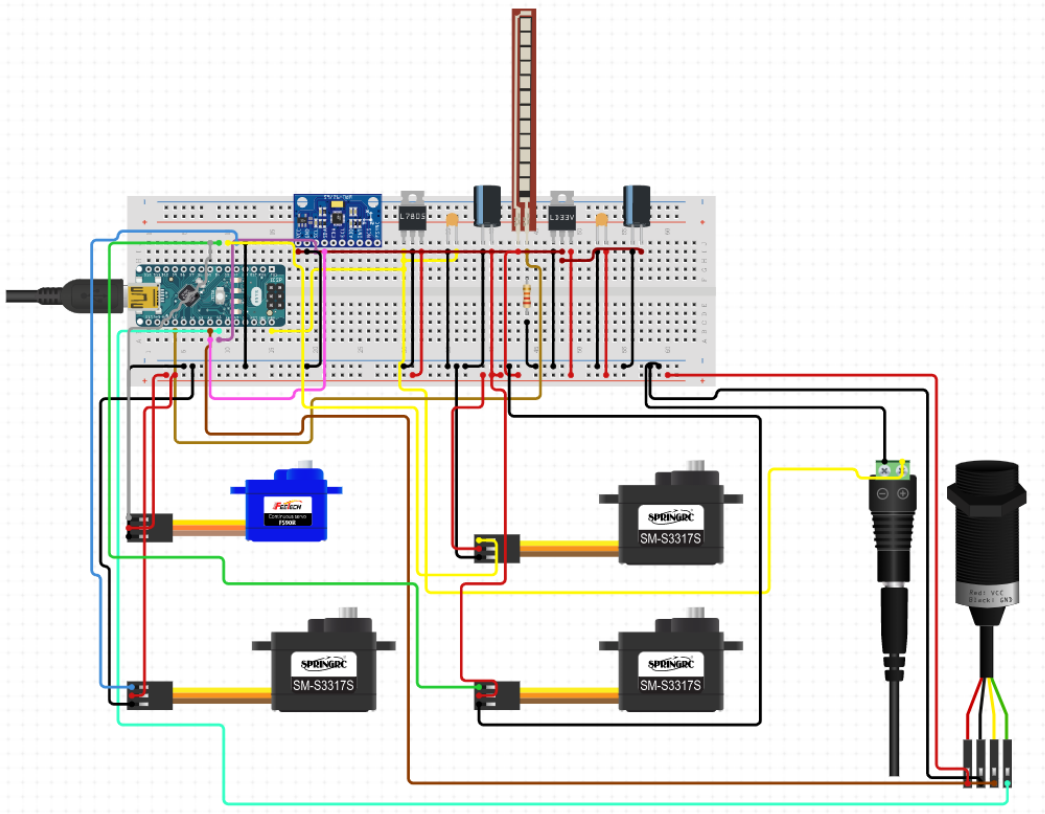
DETAILED EXPLANATION: -

We are using OpenCV for hand gesture recognition - OpenCV (Open-Source Computer Vision Library) is an open-source computer vision and machine learning software library. OpenCV was built to provide a common infrastructure for computer vision applications.

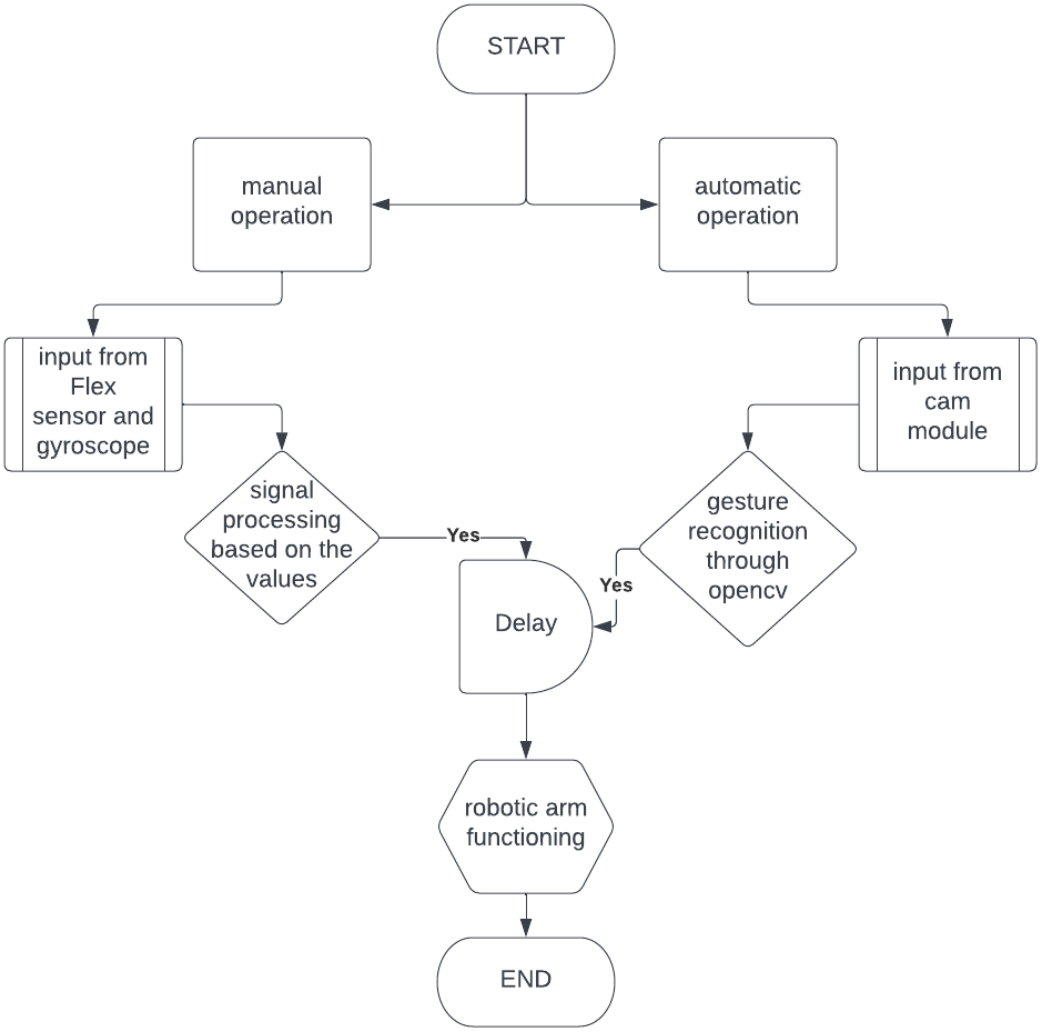
The hardware components we are using are:

1. Arduino Nano
2. Cam module
3. Servo motors
4. Flex sensor
5. Gyroscope
6. Gloves

CIRCUIT:



FLOW CHART:



APPLICATIONS: -

It can be used in sectors of

- Industrial and manufacturing
- Chemical Laboratories
- Security and maintenance
- Domestic uses
- Learning and implementation.

POTENTIAL CLAIMS: -

- Improved safety
- Improved efficiency and productivity
- Enhanced precision
- Greater flexibility and factor of access.

THANK YOU

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