

# COLOUR BASED OBJECT SORTING AND COUNTING USING DEEP LEARNING

## **AIM:**

Design and development of Colour based object sorting and counting using Deep Learning.

## **PURPOSE:**

Colour based object sorting and counting using Deep Learning" is an innovative research study that harnesses the power of deep learning algorithms to achieve efficient object sorting and counting based on colour recognition. This cutting-edge approach aims to revolutionize object sorting processes in diverse industries by leveraging the capabilities of artificial intelligence. The proposed system utilizes state-of-the-art deep learning models to accurately identify and categorize objects based on their distinct colours. By employing Convolutional Neural Networks (CNNs) and image processing techniques, the framework can handle a wide range of objects with varying colours.

## **DESCRIPTION:**

ESP32 controller communicates with ESP32 camera by its serial port. Servo motor and DC gear motor connected to ESP32 controller digital pins.

## **WORKING:**

Colour objects moving on conveyor belt and top of this camera attached. Camera will identify the colour and servo motor separates object based on colour. ESP32 camera has CNN machine learning algorithm and it can detect corresponding colour. Simultaneously, controller will calculate objects count and upload colour information to IOT server.

## TECHNICAL SPECIFICATIONS:

### HARDWARE:

Microcontroller	:	ESP32
Crystal	:	16 MHz
LCD	:	16x2 LCD display
Buzzer	:	5V DC
Servo Motor	:	MG996R
DC gear Motor	:	3.5 rpm DC 12V
Camera	:	ESP32 camera
Power Source	:	12v 1 amp DC adaptor

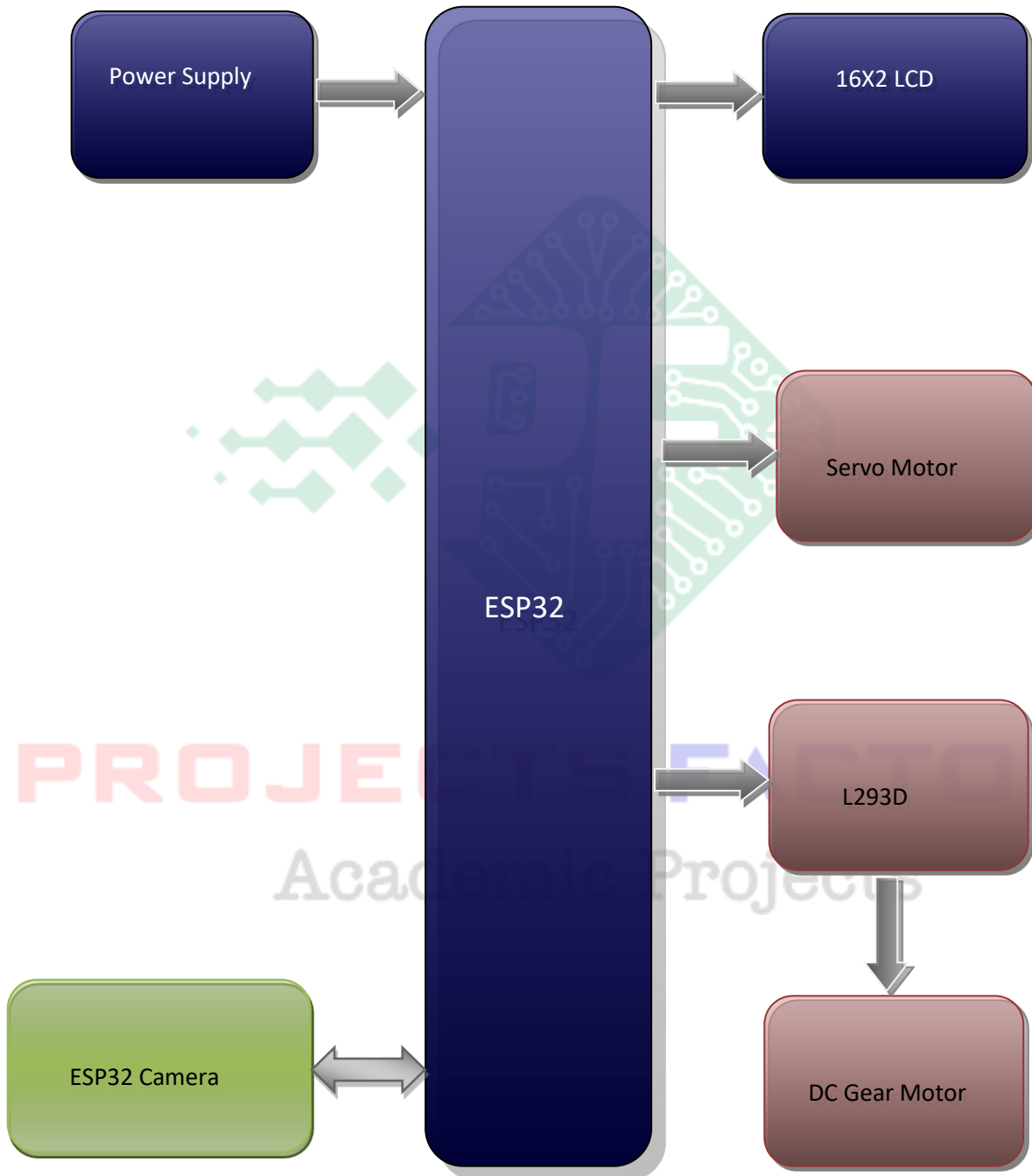
### SOFTWARE:

Arduino IDE  
Proteus based circuit diagram

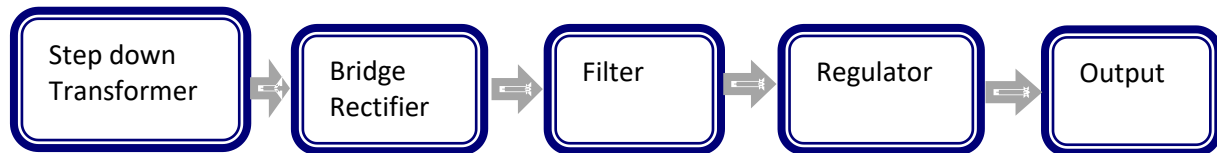
### APPLICATIONS:

- Color based object sorting
- Deep learning algorithms for object sorting
- Inventory management with deep learning
- Artificial intelligence in object sorting
- Convolution neural networks for object sorting

**BLOCK DIAGRAM:**



## POWER SUPPLY BLOCKDIAGRAM:



## INTERFACES COVERED:

- We have covered ESP32 controller programming and interface
- Servo motors and ESP32 camera interfaces
- Conveyor belt mechanism implementation

**PROJECTS FACTORY**  
Academic Projects