AUTOMATIC DETECTOR FOR BIKERS WITH NO HELMET USING DEEP LEARNING

AIM:

Design development of Automatic Detector for Bikers with no Helmet using Deep Learning.

PURPOSE:

Road safety remains a critical concern, with motorcycle riders being particularly vulnerable to severe head injuries in the absence of proper protective gear. This paper introduces an innovative solution to address this issue through an Automatic Detector for Bikers with no Helmet using deep learning techniques. The proposed system leverages the power of deep learning models, such as Convolutional Neural Networks (CNNs), to automatically detect motorcyclists without helmets in real-time. By processing input images or video streams from surveillance cameras, it identifies helmet wearing. This system involved two main phases: data collection and deep learning model training. Large-scale datasets comprising images and videos of motorcyclists both with and without helmets were gathered from various sources, ensuring diversity in environmental conditions and rider demographics. The collected data was then used to train the deep learning model, enabling it to learn distinguishing features that differentiate helmeted from non-helmeted riders.

DESCRIPTION:

ESP32 camera interfaced with Arduino through UART port. Buzzer and 16x2 LCD connected to Arduino digital pin.

WORKING:

ESP32 camera detects helmet wearing and not wearing. If it detects helmet not wearing then it sends image to Gmail and Arduino enables buzzer. This system helps to traffic department to generate fines.

TECHNICAL SPECIFICATIONS:

HARDWARE:

Microcontroller	:	Arduino uno controller
Crystal	:	16 MHz
LCD	:	16x4 LCD display
Camera	:	ESP32 camera
Buzzer	:	5V DC
Power Source	:	12v 1 amp DC adaptor

SOFTWARE:

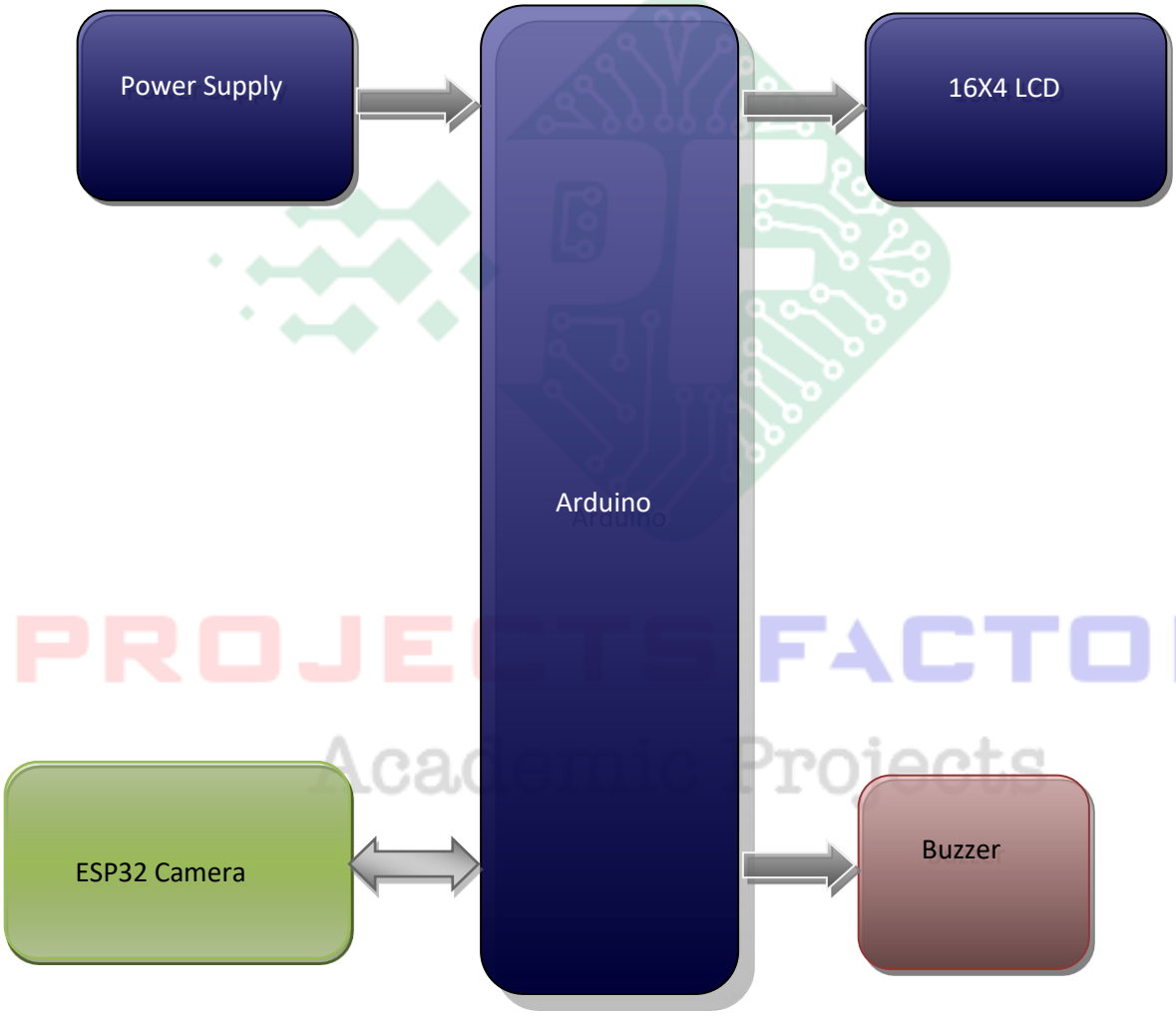
Arduino IDE

Proteus based circuit diagram

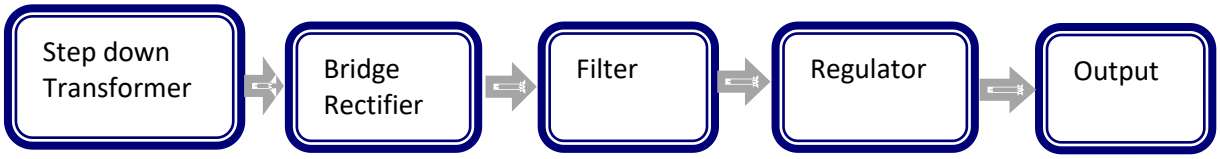
APPLICATIONS:

- Helmet Detection project
- AI and ML projects
- Bikers safety system using visual inspection
- Deep learning projects
- CNN projects
- RNN projects

BLOCK DIAGRAM:



POWER SUPPLY BLOCKDIAGRAM:



INTERFACES COVERD:

- We have covered Arduino Uno programming and interface
- ESP32 cam interface