# MOTIVATION

This project is inspired by the research paper titled "*Face Recognition-Based Door Lock Security System Using TensorFlow Lite*" published in the *Journal of Electrical Engineering and Computer (JEECOM)*. The paper presents a secure access control system that employs face recognition technology using TensorFlow Lite to authenticate individuals.

The motivation lies in developing a cost-effective, and efficient face recognition-based door lock mechanism suitable for deployment in environments such as hostels, libraries, and departmental buildings.
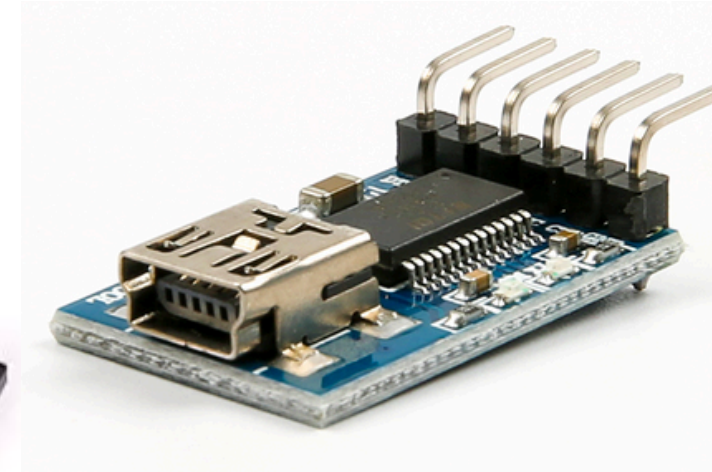
COMPONENTS REQUIRED

1. ESP32-CAM (ESP32-CAM)
2. RHYXM21-45 Camera module
3. FTDI board
4. Relay module
5. Solenoid lock
6. Mini B type cable
7. Jumper wires
8. Battery
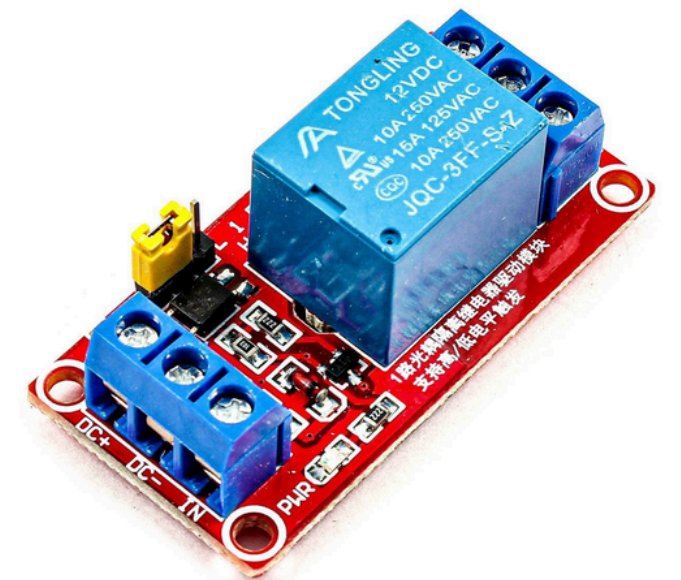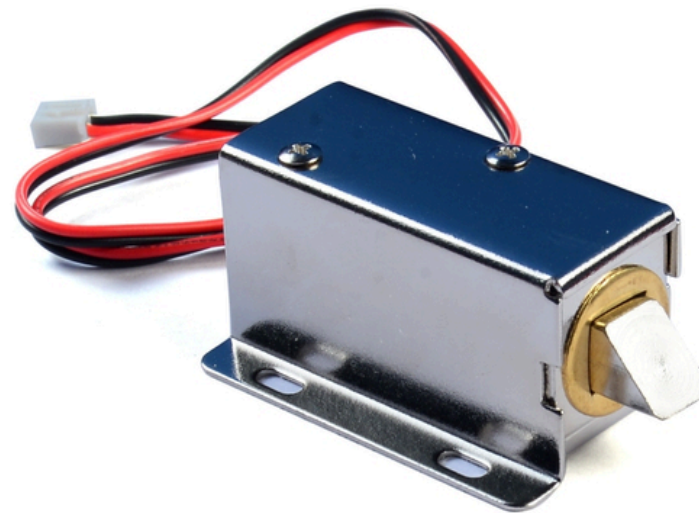9. Resistors
10. Breadboard
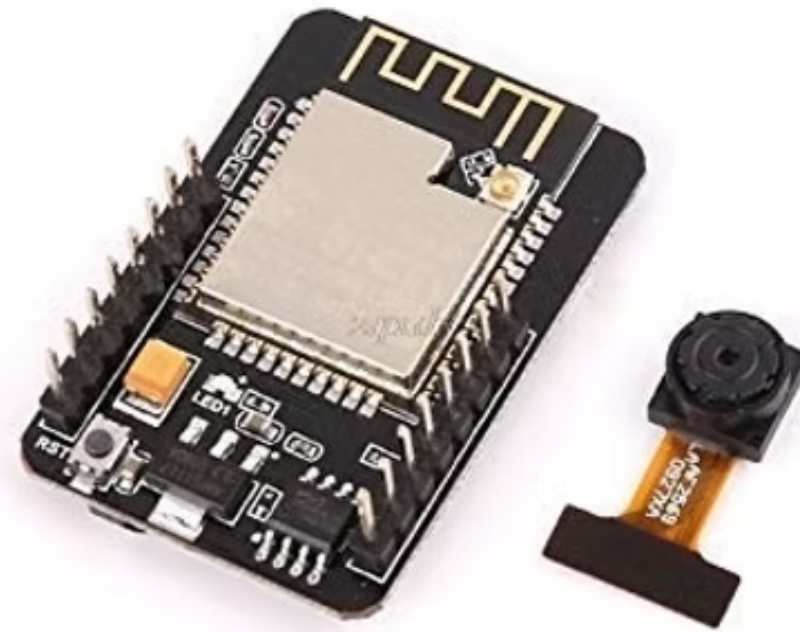
ESP32-Cam

Camera module

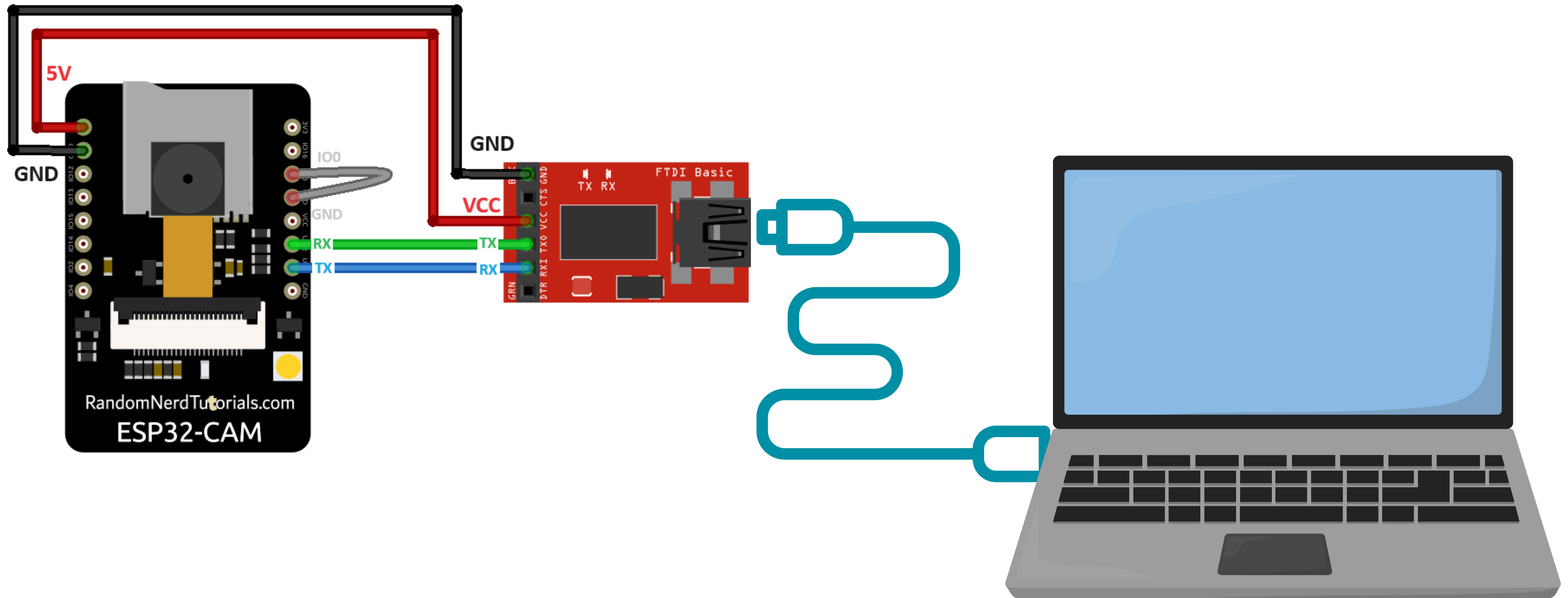FTDI Board

Relay module
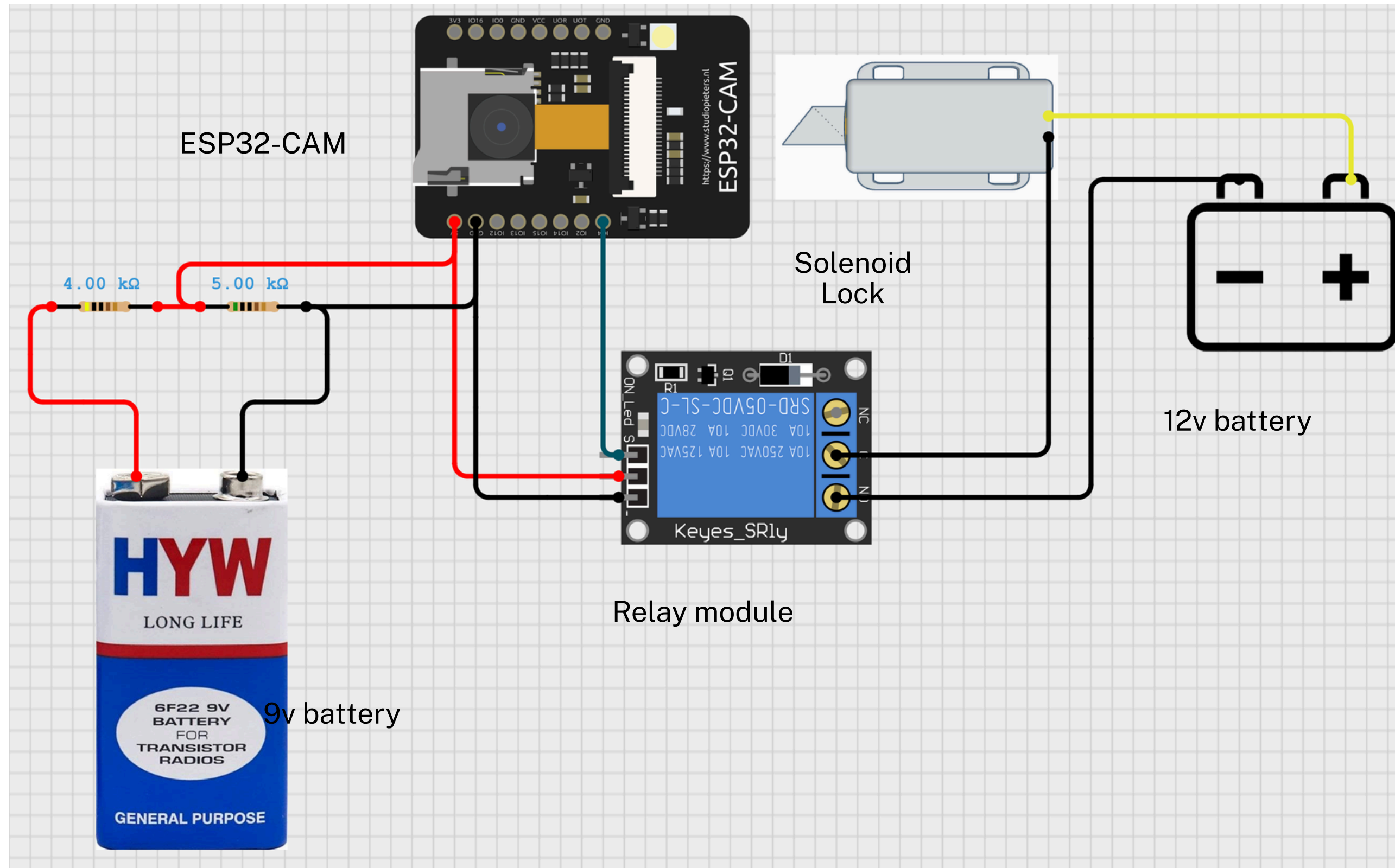
Solenoid lock

Jumper wires

Mini B type cable

CIRCUIT DIAGRAM FOR UPLOADING CODE

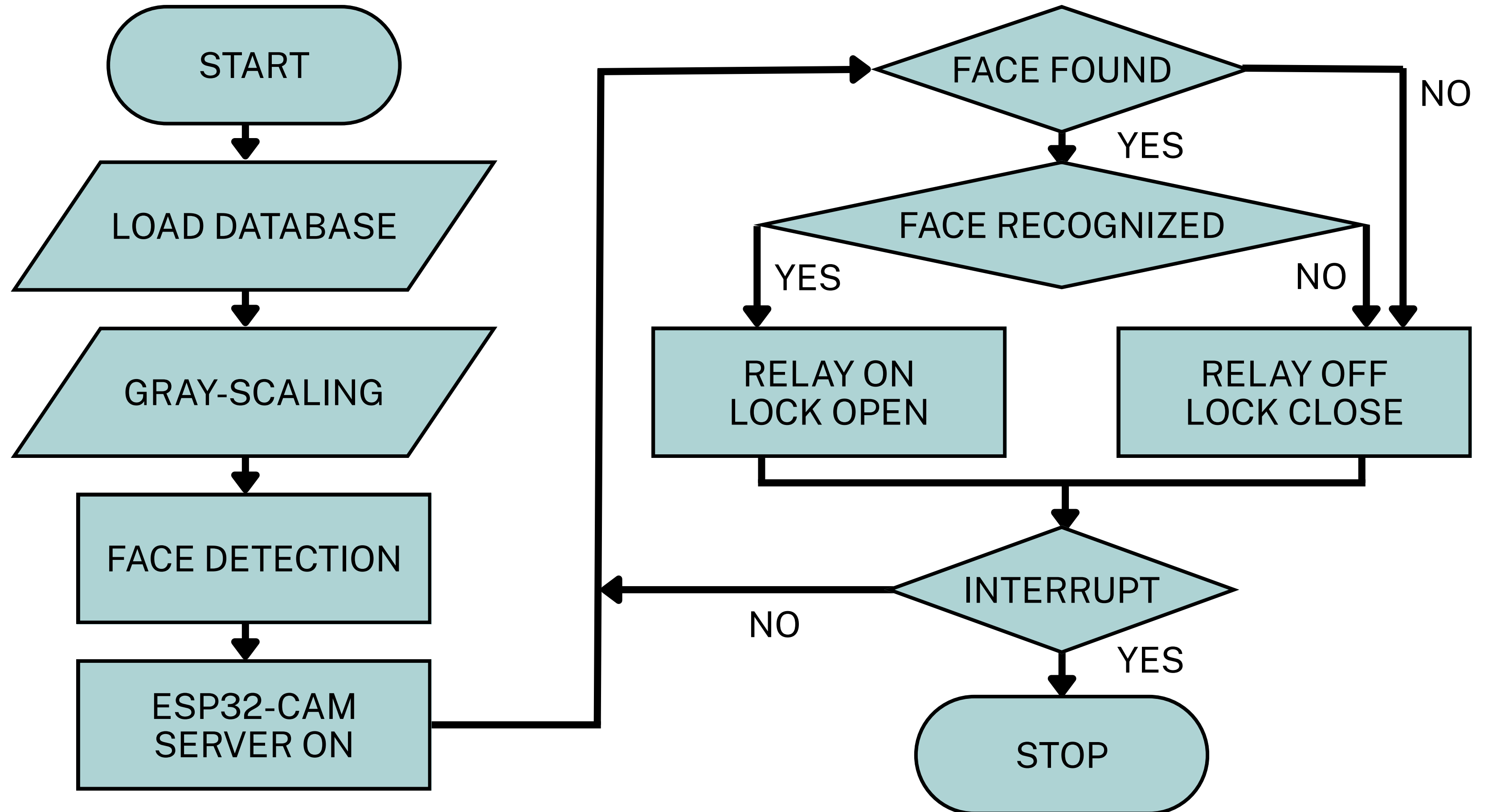Firstly we needed to upload the code to ESP32. For that we will need the following connections

CIRCUIT DIAGRAM FOR EXECUTION

Once the code is uploaded, we disconnect the GPIO0 pin and make the following connections:

FLOWCHART

RESULTS

Model's prediction

To be predicted	Unknown	Amitabh Bachchan	P. V. Sindhu	Sam Altman	Mark Zuckerberg
Unknown	100%	0%	0%	0%	0%
Amitabh Bachchan	10%	90%	0%	0%	0%
P. V. Sindhu	0%	0%	100%	0%	0%
Sam Altman	20%	0%	0%	80%	0%
Mark Zuckerberg	0%	0%	0%	0%	100%

COMPARISION

Parameter	Replication	Research Paper
Tool used	OpenCV	TensorFlow Lite
No. of faces	4	10
Test cases	50	200
Successful detection	47	182
Accuracy	94%	91%

BIBLIOGRAPHY

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