

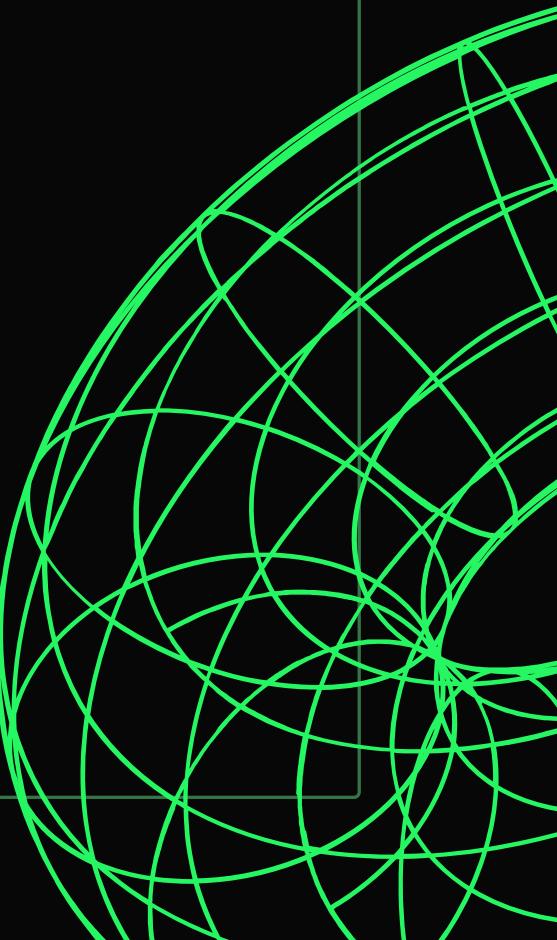
# **NETRA**

# **TRAFFIC MONITORING**

# **SYSTEM**

based on Automatic Number Plate Detection

SDG Goal 11 – Sustainable Cities and Development



# THE PROBLEMS

Manual traffic monitoring becomes highly difficult when there are multitude of vehicles entering and exiting

The data management for such inflow is not only tedious but also not very accurate if done manually

Combating these problems is highly expensive as it requires a large keen manpower

# PROPOSED TECHNOLOGY

An Automatic Number Plate Recognition model technology that uses optical character recognition on images of vehicle registration plates to read the vehicle's registration number and storing it in a database.

The model applies CNN image processing techniques to quickly and automatically identify vehicles in video or photo footage from cameras. Also noting the duration the vehicle was in campus and where exactly it was.

Furthermore, it will link the registered number plate with the database of users possessing monthly/yearly passes to identify the owner.

# FUNCTIONALITIES

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Can be utilized for any building by any organization to aide them in traffic management

The model provides solutions for measuring and analyzing area-related traffic data of a certain area or an entire city. Thus helping in ITS

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Helps in Journey time analysis (JTA) for authorities to identify passing through vehicles and their time from one node to another

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Assist in smart parking management.

# TECH STATS (HARDWARE & SOFTWARE)

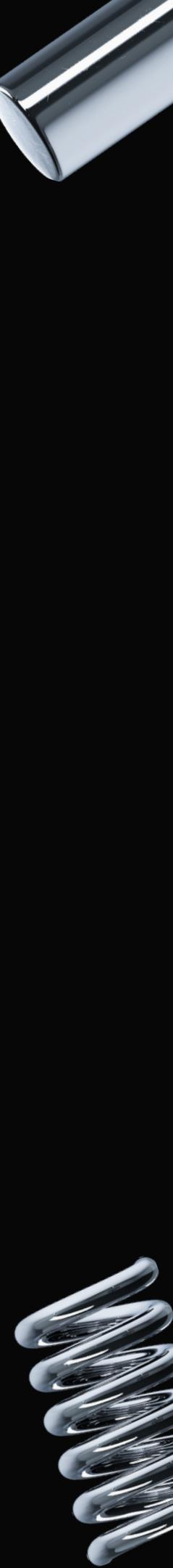
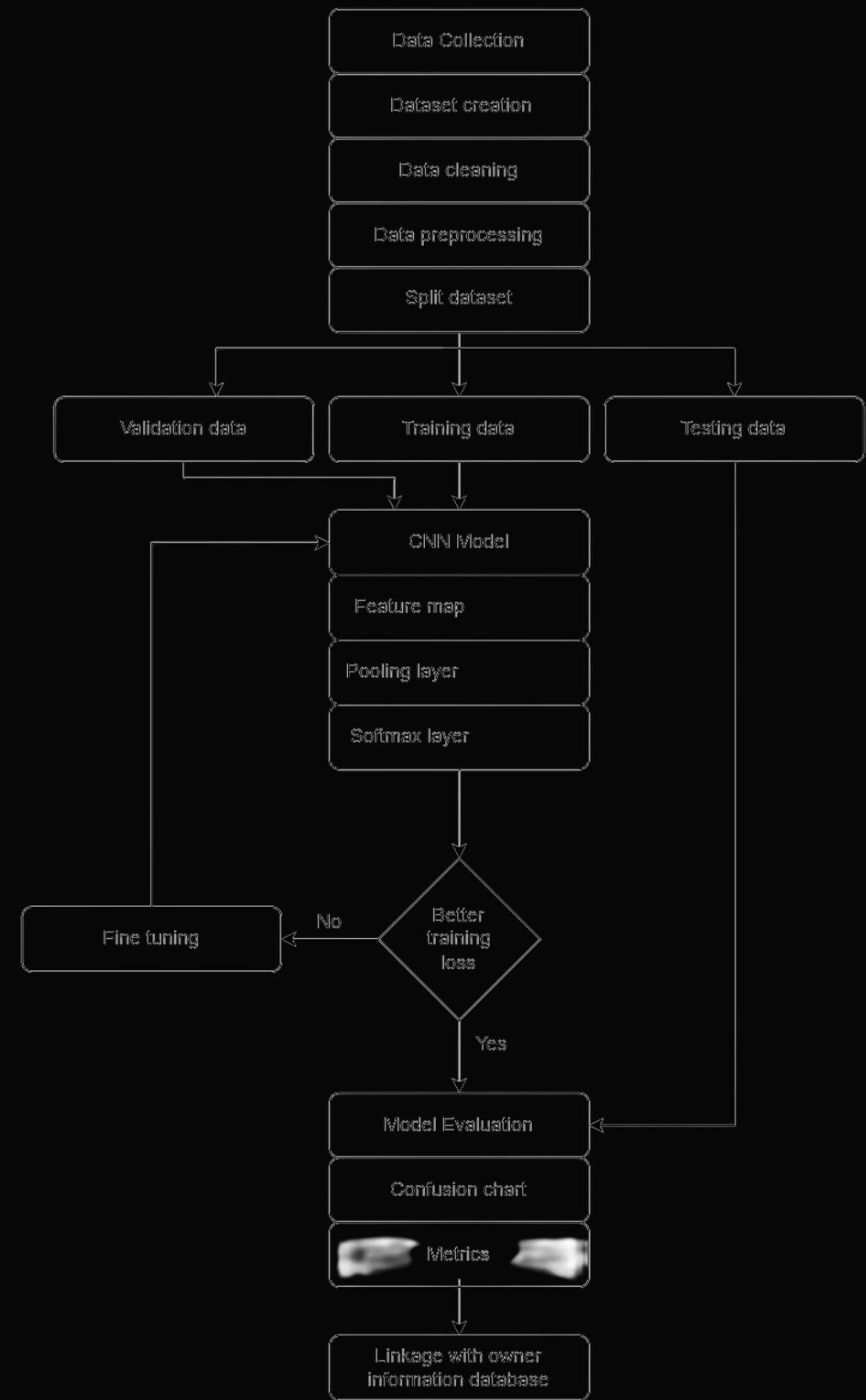
## HARDWARE

- OV7670 Camera Module

## SOFTWARE

- Darknet YOLOv4 - Neural Networks for Object Detection (Windows and Linux version of Darknet )
- pytorch-YOLOv4 PyTorch ,ONNX and TensorRT implementation of YOLOv4
- Pytorch Tensors and Dynamic neural networks in Python with strong GPU acceleration
- OpenCV Open Source Computer Vision Library
- Openalpr Automatic License Plate Recognition library

# ARCHITECTURE DIAGRAM



# BUSINESS MODEL

Cost Efficient

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Boasts of 95% accuracy

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Data recorded can be further used for operating Intelligent Transportation Systems (ITS)

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Can be customized for each & every building

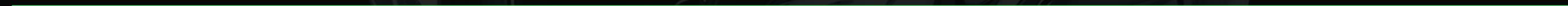
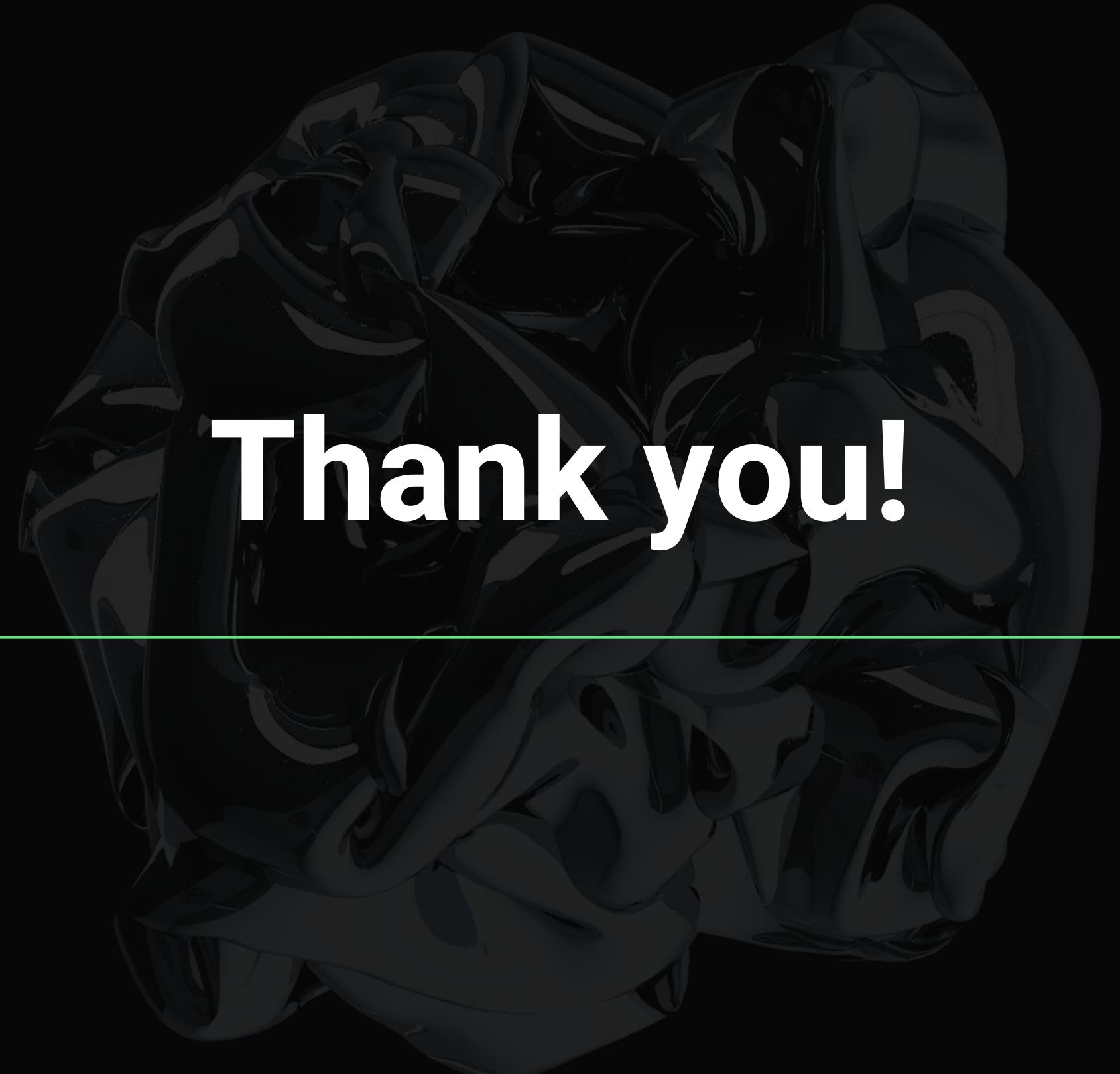
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Versatile software can be applied for a variety of applications, from parking management to security, traffic enforcement

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Automation makes it a key technology for smart cities.

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# Thank you!