

“Intelligent Traffic Management System Using Advanced AI and Machine Learning”

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PROJECT OBJECTIVES:

1. Address Urban Traffic Congestion
2. Utilize Advanced Technologies
3. Optimize Traffic Flow
4. Enhance Safety
6. Provide User-Friendly Interfaces
7. Optimize Resource Allocation



➤ **FLOW OF WORK:**

1. Initiating Discussions with Your Mentor:

- Discussion with mentor.
- Mentors experience and goal clearance.

2. Organizing a Collaborative Session:

- Comprehensive project plan.
- Timelines, milestones and responsibility planning.

3. Research and Planning:

- **Reading research papers.**
- **Doing extensive research.**

4. Data Collection and Preparation:

- **Gathering Relevant datasets.**
- **Pre-processing of Datasets (Cleaning and Filtering)**

5. Implementation of AI and ML Algorithms:

- Using YOLO v5l model.
- Darknet Framework
- Pandas, Sci-kit learn, Tensor flow and etc.

5.1. What is YOLO ?

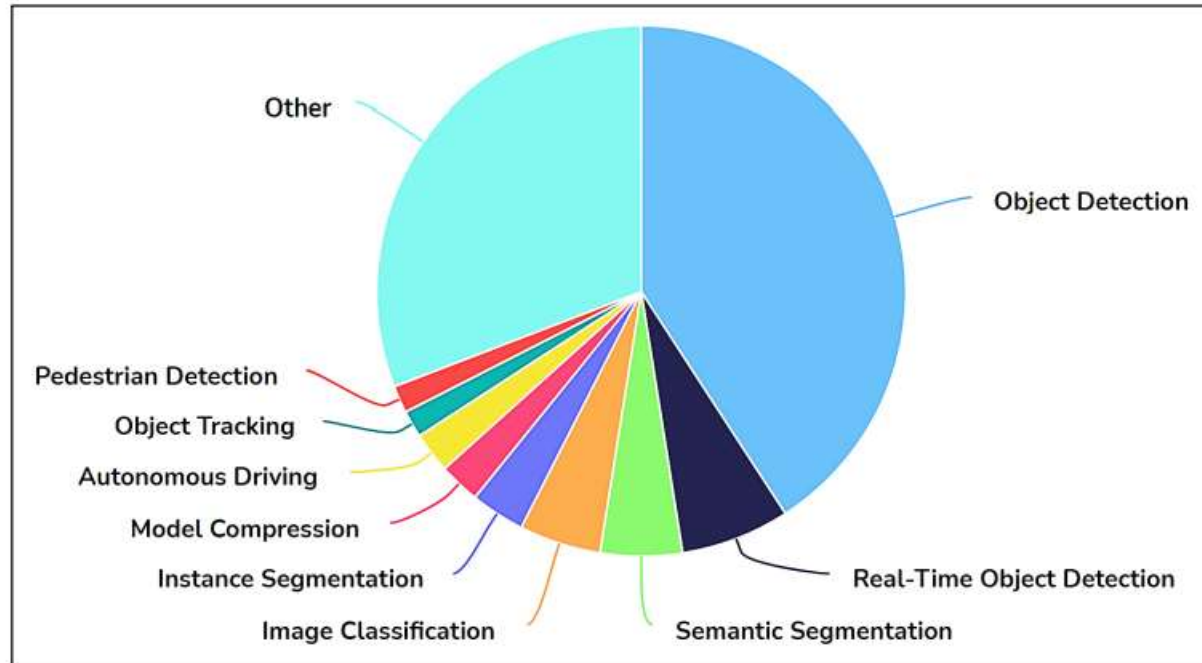
- It mean You Only Look Once.
- Most powerful object detection model with best accuracy.
- Combination of RCNN and SSD.
- Detect image placed in any random manner.
- Detect object even if they are rotated in 360 degree.

5.2. Why YOLO is being used ?

- For vehicle type detection.
- For counting each type of vehicle.

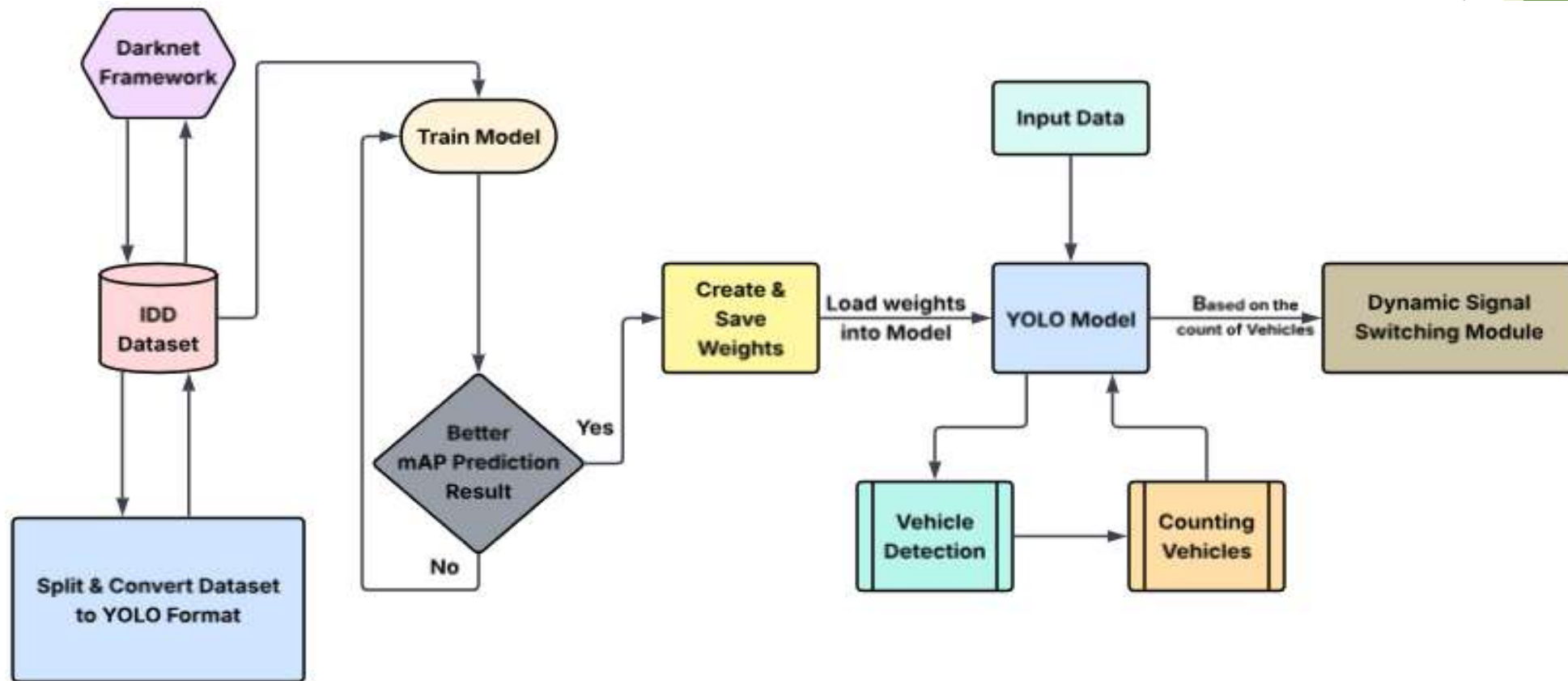
5.3. Why Darknet Framework ?

- Image Processing Power 40-90 FPS.
- Used to implement the YOLO.

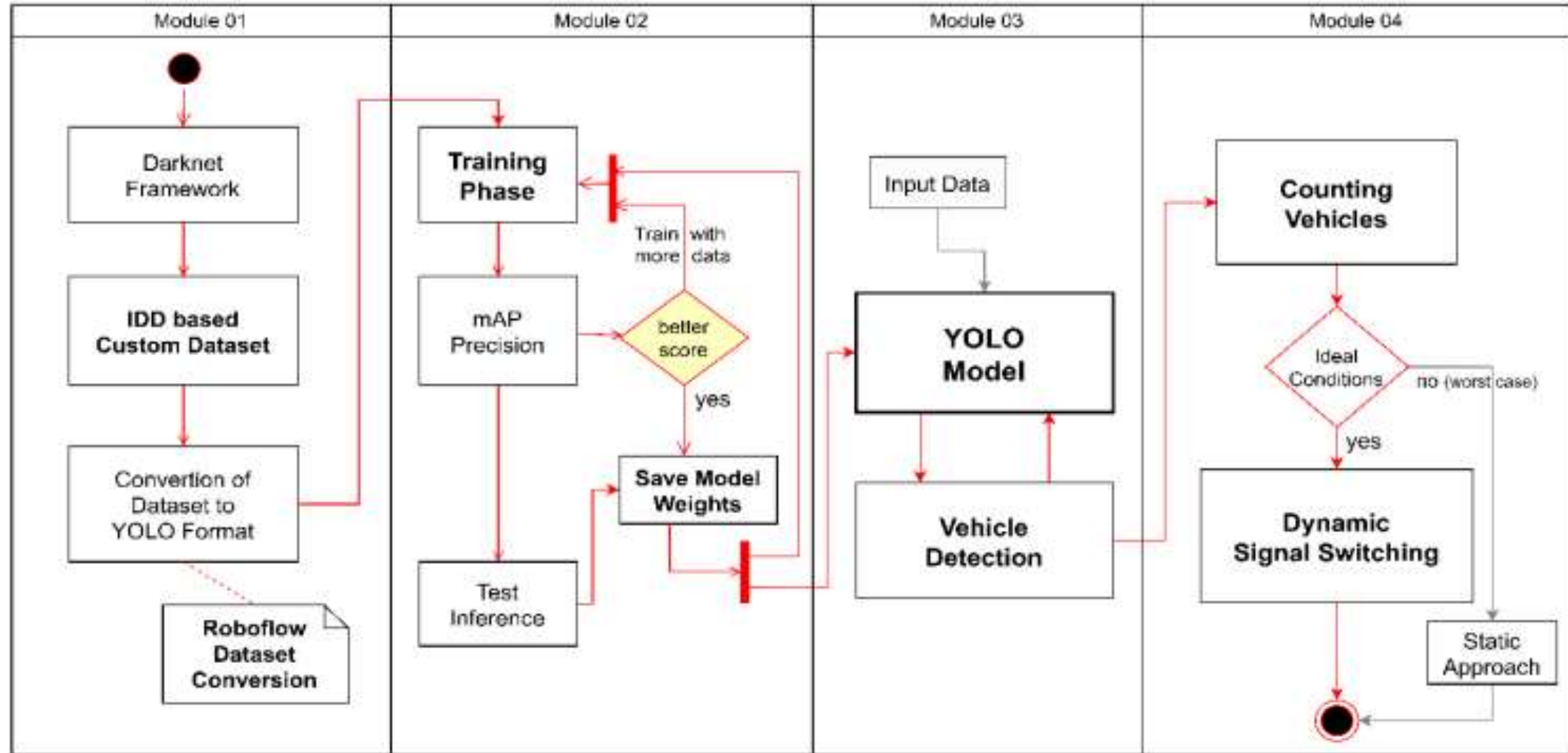


6. System Architecture and Designs:

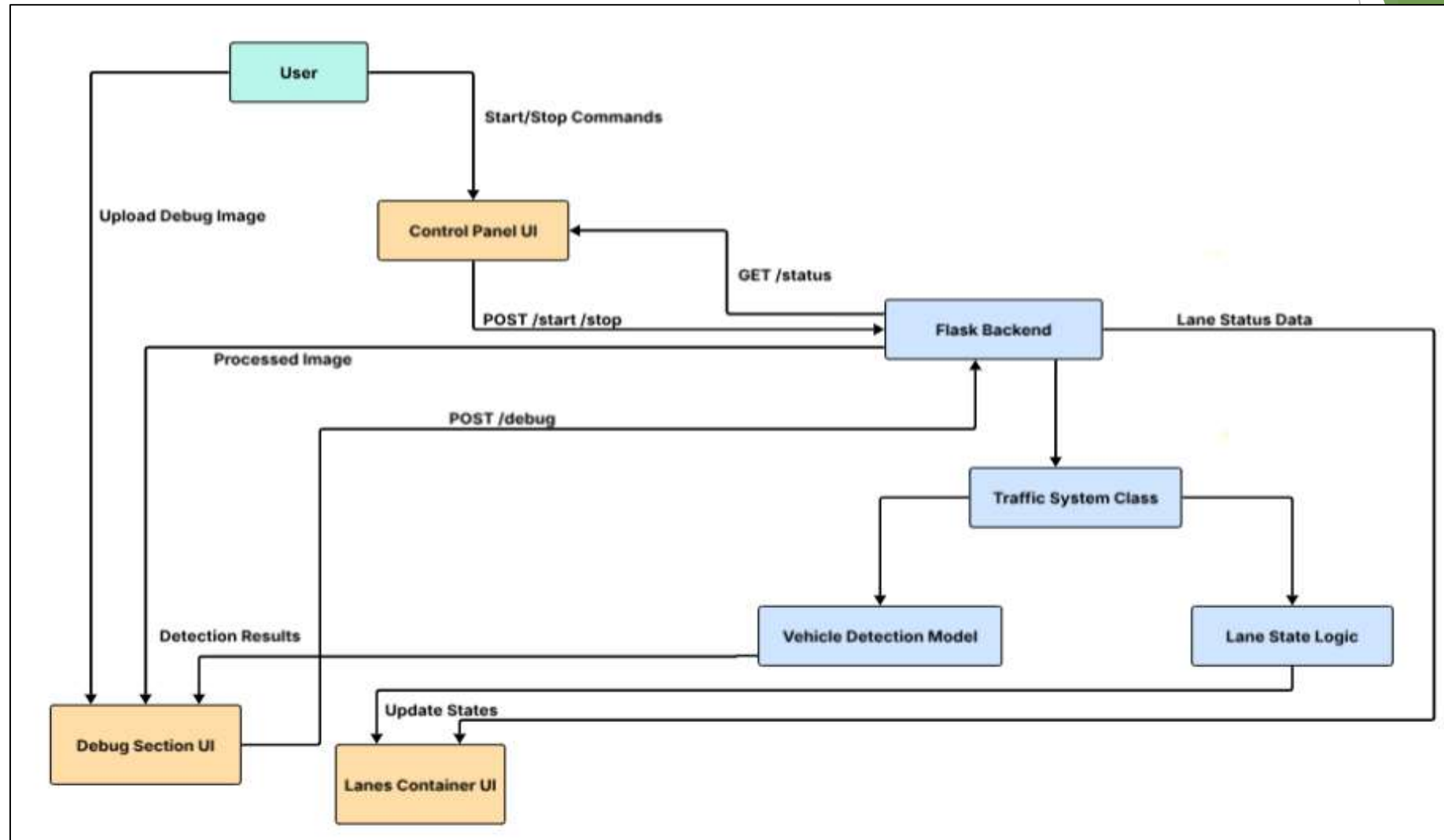
6.1. High Level Architecture Diagram:



6.2. UML Diagram:



6.2. Data Flow Diagram:

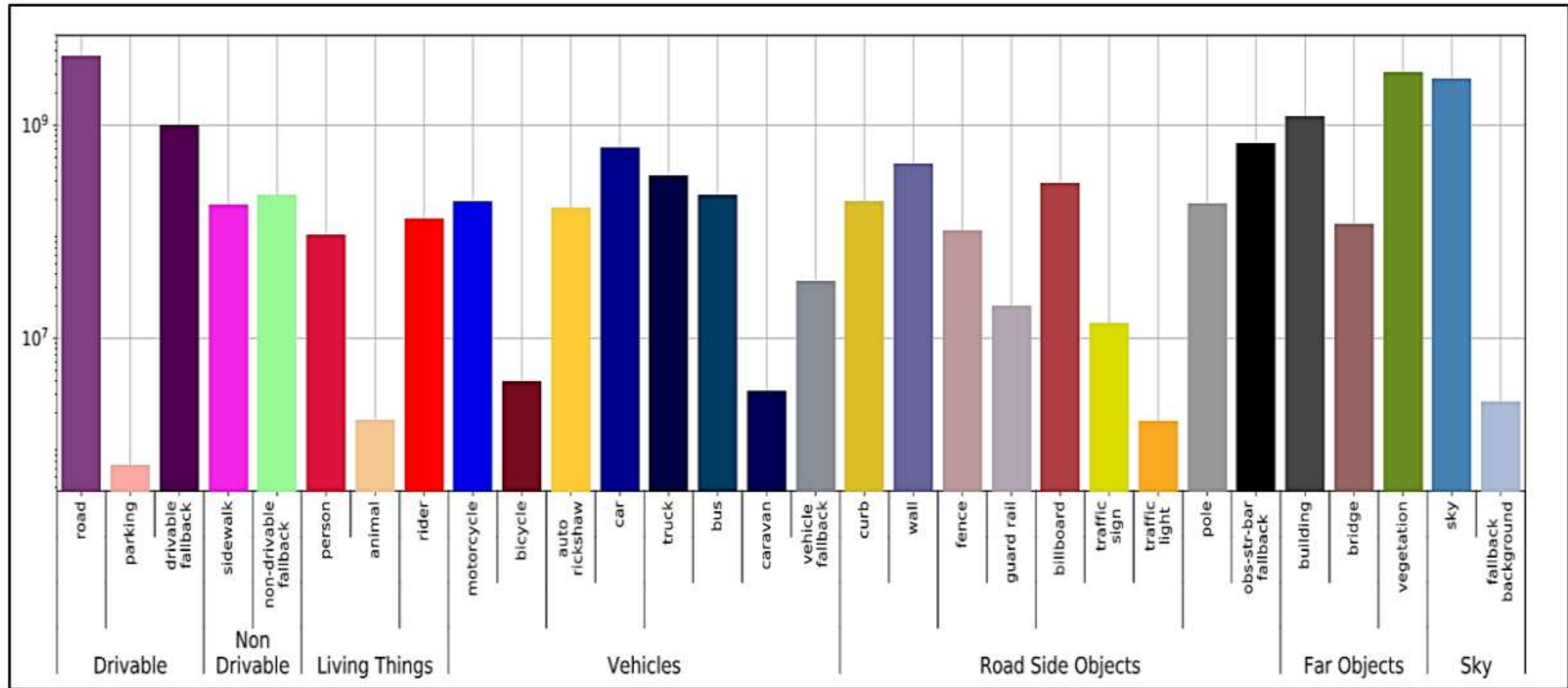


7. Dataset Used and Why?

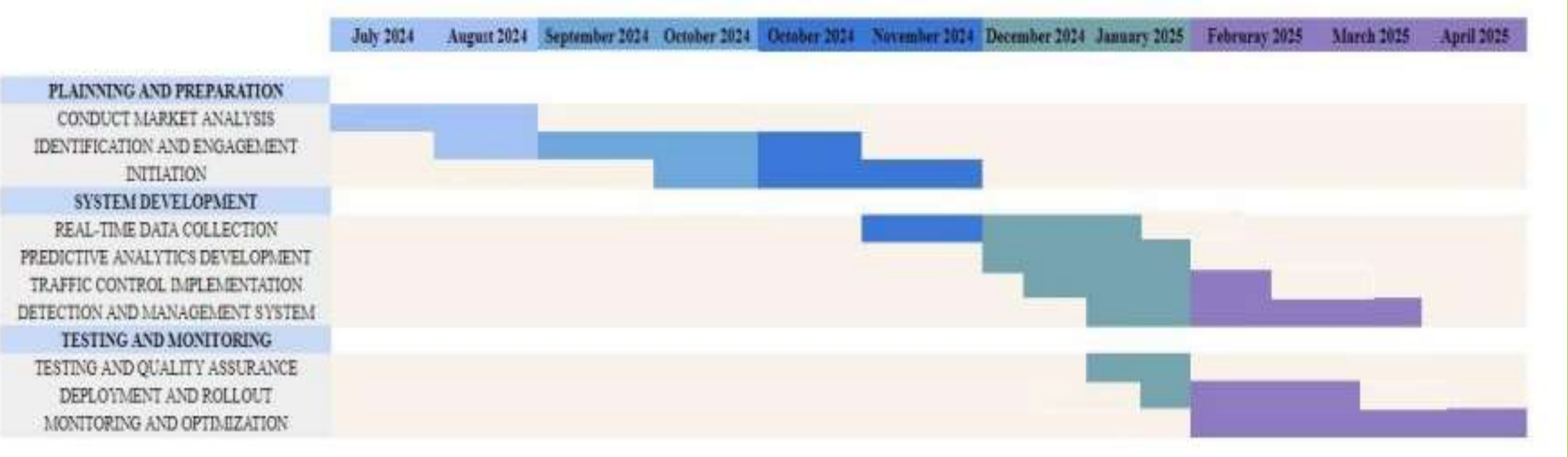
- **IDD – Indian Driving Dataset.**
- **Total classes : 34**
- **Drive Sequences on Indian Roads : 182**
- **Great Class Diversity including buses, bicycles, auto- rickshaws and etc.**

Type	Images
Full	2,588
Train	1,294
Validation	862
Testing	432

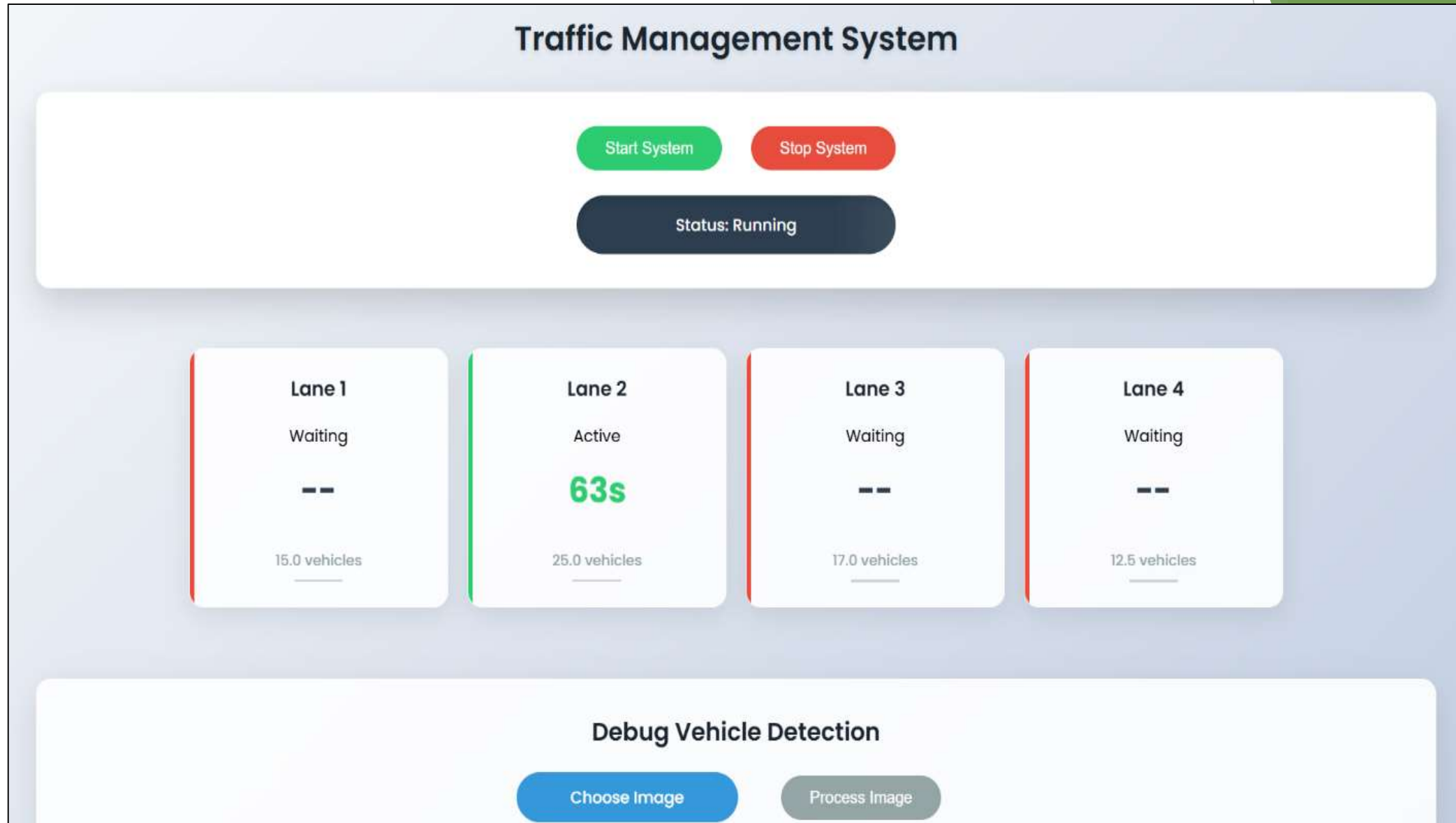
7.1. IDD – Labels Available:



7.2. Gantt Chart:



8. Current Working Status:



8. Testing and Evaluation:

- **Rigorous testing of the prototype.**
- **Functionality and Performance Testing.**
- **Evaluation of accuracy.**
- **Gathering Feedback.**

9. Documentation and Reporting:

- **Documentation of project methodology and detailed report of the project.**
- **Publishing a research paper with reference to the project.**

A nighttime photograph of a city street. In the background, a large, modern building with a glass facade is illuminated. A green double-decker bus is visible on the right side of the road, and several cars are parked or moving. The street is lit by streetlights, and the overall scene is dark with some artificial light sources.

**“Thank You
For Your
Patience Listening.”**

Do You Have Any Queries ?