TRAFFIC VIOLATION DETECTION APPLICATION USING VIDEO FOOTAGE

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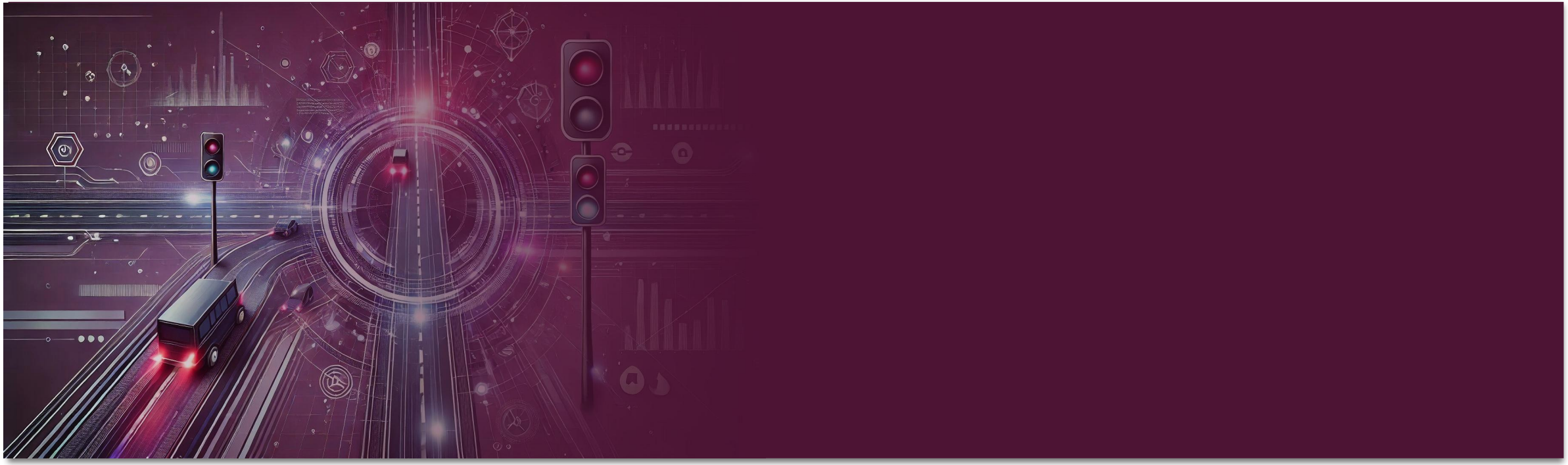

INTRODUCTION

- Traffic rules are set by government regulatory entities to ensure the safety of road users, drivers, public property.
- Traffic rules are established by government regulatory entities to ensure road safety for all users. However, frequent violations result in significant harm to individuals and public property
- Due to various factors, such as driving behaviors and poor road conditi increasing rapidly, making it challenging for the police department to e

PROBLEM STATEMENT

- Recently, the police department implemented software to involve public support in addressing traffic violations.
  - Citizens can upload footage of violations directly to the police department.

- However, processing large volumes of traffic violation video footage manually is challenging.
- Our plan is to extract actionable information from video footage via deep learning technologies.

POTENTIAL SOLUTION

- We aim to address this issue by accurately detecting traffic violations using video footage.
- These results will support downstream analysis and enforcement
- However, due to time and data collection constraints, we aim to address the solution to some extent in this research

CHALLENGES

- The primary challenge is the lack of sufficient training data. We plan to address this using the following prioritized strategies
  - Strategy 01: Collation of data by collaborating with the police department.
  - Strategy 02: Collecting data from our own footage with the necessary approval from the t
  - Strategy 03: Simulating and collecting data in a controlled environment.
  - Strategy 04: Using benchmark datasets.

- Another challenge is the time constraint:
  - Focusing on a selected set of violations to address

SCOPE OF THE WORK (TENTATIVE)

- We initially planned to detect the following violations:
  - Detecting violations of illegal lane crossing of vehicle.
  - Detecting riders not wearing helmets.
  - Detecting illegal parking.
  - Detecting vehicles turning at junctions without using signal lights.

- However, this is not finalized list and will depend on the timeline and data collecti

HIGH-LEVEL EXECUTION PLAN

- Conduct a literature review
- Collect data based on the discussed strategy.
- Adjust the scope based on data collection and timeline.
- Convention ML model building (Preprocessing, Model selection, Training and Evaluation…).
- Future development.

FUTURE DEVELOPMENTS

- This project has ample room for future development. If time permits and other factors align, we plan to add more features to the application.
  - Widen the violation detection rules.
  - Enhance detection accuracy.
  - Explore additional integration options.
    - Implement batch processing through cloud deployment
    - Mobile deployment(have some dependency ML model capable of deploy on mobile)

THANK YOU.

- Questions and Discussions