IoT InnovateX

TITLE PAGE

Problem Statement: ***A smart AI based solution for traffic management system.***

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IDEA TITLE

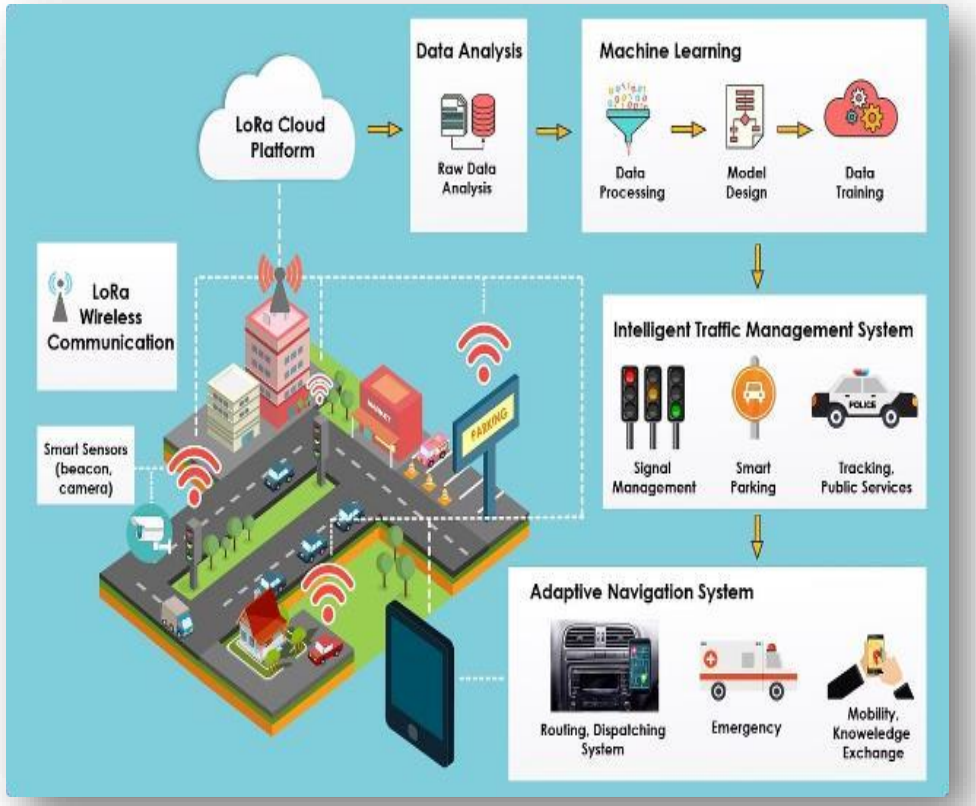
Smart AI-Based Traffic Management System

- ***Dynamically adjusts traffic light timings based on real-time traffic data.***
- ***Integrates camera-based traffic monitoring, carbon emission deductor, thermal imaging, and sensors for comprehensive analysis.***
- ***Sends automatic alerts to nearby authorities in case of detected congestion.***

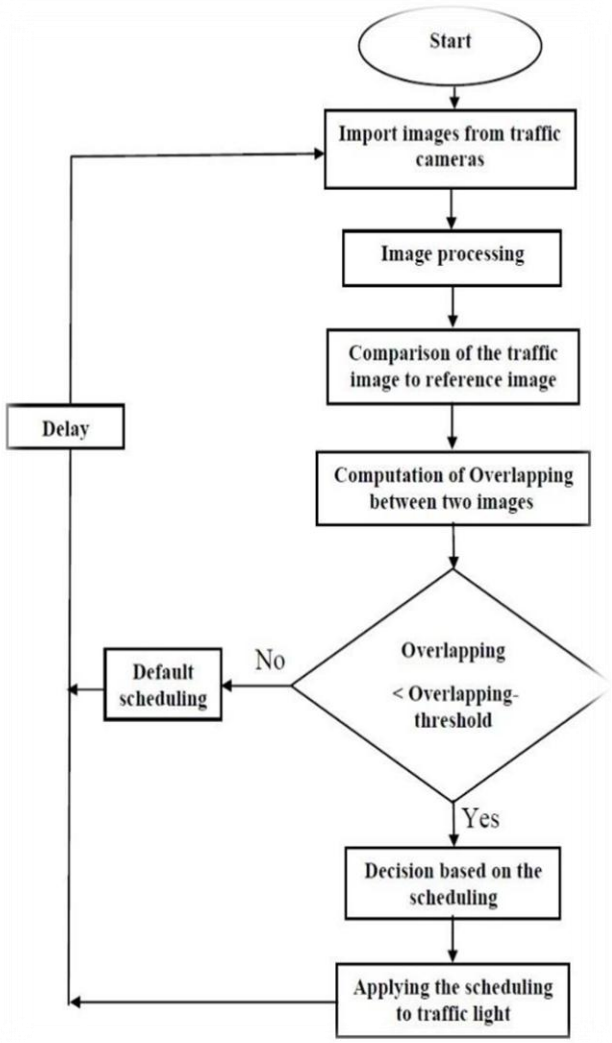
TECHNICAL APPROACH

Technologies Used:

- *Python* ***(for AI model and data processing)***,
- *Data Science* ***(for Analysing the datas)***,
- *Machine Learning* ***(for Train the model)***,
- *OpenCV* ***(for image analysis)***,
- *TensorFlow Lite* ***(for AI inference)***,
- *Raspberry Pi OS Lite*,
- *Tinkercad* ***(for circuit simulation)***.



FEASIBILITY AND VIABILITY



Fesibility:

- *Technical Feasibility*
- *Cost-Effective.*

Potential Challenges and Risks:

- *Environmental Variability*
- *AI Model Accuracy*

Strategies to Overcome Challenges:

- *Redundant Sensors*
- *Model Tuning*

IMPACT AND BENEFITS

Potential Impact:

- **Traffic Efficiency:** *Reduces congestion and improves commute times.*
- **Environmental Benefits:** *Lowers fuel consumption and emissions by minimizing idling times.*
- **Social Impact:** *Enhances road safety by preventing traffic jams in critical areas.*

Benefits:

- **Economic:** *Saves fuel costs and reduces traffic-related delays.*
- **Environmental:** *Reduces carbon emissions and supports sustainable urban development.*
- **Social:** *Improves overall traffic management, making cities safer and more efficient.*

RESEARCH AND REFERENCES

Reference Links:

- *Tinkercad for Circuit Simulation*
- *Python with TensorFlow Lite*

Research Papers:

- *Cite relevant research on AI-based traffic*
- *management and environmental sensing*