UTM

UNIVERSITI TEKNOLOGI MALAYSIA

SECJ3553: Artificial Intelligence

Project Proposal

System Name: Smart City

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1. AI Solution (airil)

This AI-driven Traffic Management and Optimization solution leverages real-time traffic data, predictive models, and Reinforcement Learning (RL) to create an efficient and adaptive traffic control system. It optimises traffic flow by dynamically adjusting traffic signals, offers commuters a mobile app for real-time route suggestions, employs AI-based incident detection to enhance safety, and optimises public transportation services. User feedback and collaboration with stakeholders ensure continuous improvement. The system mitigates traffic congestion, reduces commuting times, and enhances the overall transportation experience, addressing the needs of both commuters and traffic authorities in the smart city..

2. Goal of AI Solution

I. To reduce traffic congestion, by allowing the traffic lights to adapt to situations, such as heavy rains, traffic accidents and rush hours.
II. Improve traffic safety, by identifying potential hazards, traffic accidents, presence of any emergencies such as ambulances and potential crimes.
III. Provide and receive real-time traffic updates from main cameras and especially third party companies such as Maps and Waze.
IV. Provide comprehensive traffic predictions for the future and apply it on a daily basis.
V. Provide data driven suggestions for future developments, such as potential new routes, lanes and building zones.

3. Process of Emphasise in DT

In the realm of AI-driven traffic management, the key stakeholders include daily commuters, emergency responders, city authorities, and business owners/logistics companies. Their primary goals revolve around reaching their destinations safely, on time, and swiftly, all while ensuring road safety, efficiency, and smooth traffic flow. These stakeholders often encounter traffic congestion, road accidents, and road hazards, leading to frustrations about constant traffic congestion, inaccessibility during emergencies, and dissatisfaction with existing traffic systems, which results in unpredictable delays and inefficiencies. In response, they employ various strategies like carpooling, using public transport, altering plans, or taking alternative routes. They're bombarded with constant complaints and concerns and actively engage in discussions about traffic problems and potential solutions. Emotionally, they grapple with fear of accidents and hazards, frustration, stress, and pressure related to work and travel, while also seeking potential solutions and answers to alleviate these challenges

a. Summary

Who are they?	● Daily commuters ● Emergency responders ● City authorities ● Business owners and logistics
What do they do?	● Reaching their destination safely ● Reaching their destination on time ● Reaching their destination swiftly ● Ensure roads to be safe, efficient and flows smoothly
What do they see?	● Traffic congestions ● Road accidents ● Road hazards
What do they say?	● Frustration on the constant traffic congestions ● Inaccessibility during emergencies ● Subpar traffic systems ● Unpredictable delays and inefficiencies
What do they do?	● Carpooling ● Using public transport ● Delay, alter or cancelling of plans ● Using alternative longer routes

What do they hear?	• Constant complaints and concerns • Traffic problems and potential solutions
What do they think and feel?	• Fear of accidents and hazards • Frustration and stress from traffic congestions • Pressure from work and travelling • Potential solutions and answers

4. Process of Defined in DT

Users	Problem	Pains	Goals	What Matters to Them
Commuters	• Deal with traffic congestion • Delays • Accidents • Unpredictable road conditions.	• Being late • Dealing with erratic traffic conditions • Going through stressful delays all happen during the commute.	Travel safely, with as little traffic as possible, and to get to their destinations quickly and on schedule.	Minimal delays, stress-free commute, and reaching destinations faster.
Traffic Authorities	• Control traffic during rush hour • React quickly to collisions • Maintain general road safety.	• Managing traffic congestion • Responding quickly to incidents • Optimising traffic flow.	Maintain efficient traffic flow, react quickly to problems, and successfully operate traffic lights.	Reducing traffic congestion, minimising accidents, and optimising traffic management.