TOPIC PROPOSAL FORM

UTM
UNIVERSITI TEKNOLOGI MALAYSIA

FYP 1-0 (a)

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Supervisor Name: Dr. Nurulaqilla binti Khamis	Field: Mechatronics	Proposed Topic: AI-Driven Detection of Road Potholes for Enhanced Infrastructure Safety	
Goal:	Obtain an AI model capable of detecting road potholes accurately in real-time from images or videos taken by a camera		
Objectives:	1. Collect images or videos showing different types and sizes of potholes 2. Label the collected images or videos to indicate the presence of potholes 3. Train a YOLO model to recognise pothole accurately by using the labelled data 4. Deploy the trained model on both camera and edge device to detect potholes in real-time 5. Monitor the deployed model's performance and make improvements if needed		
Scope:	1. Study on the complete process of object detection, from data collection to labelling, model training, deployment, and performance monitoring 2. Learn about the principles of object detection and explore different architectures, such as R-CNN, Fast R-CNN, and YOLO 3. Test various versions of YOLO to understand their performance and investigate the reasons for the difference 4. Focus on model optimization or compression techniques to reduce model size and improve efficiency for deployment on edge devices 5. Explore the user interface to record the coordinates of road potholes upon detection		