

Graduation Project Registration Form

Project #	
Project Title	Optimizing Emergency Response
Proposed by (name and email)	Abdulrhman Mohammed Alshehri – 2220006250@iau.edu.sa
Department / Program	AI
Supervisor (name and email)	Dr. Mohammad Aftab Alam Khan mkhan@iau.edu.sa
Expected Outcomes	<ol style="list-style-type: none">Faster Accident Detection – The system will automatically detect car accidents in real-time using AI-powered computer vision, reducing reliance on manual reporting.Reduced Emergency Response Time – By instantly alerting emergency services (police, ambulance, etc.), the system will minimize delays in rescue operations.Improved Accuracy in Accident Reporting – Computer vision will provide precise location, severity, and contextual data (e.g., number of vehicles involved) to responders.Traffic Management Integration – The system could help nearby traffic signals or navigation apps reroute vehicles to avoid congestion caused by accidents.Proof of Concept for Future AI in Public Safety – Successful implementation may encourage adoption in smart cities or highway monitoring systems.
Brief Description	This project aims to optimize emergency response for car accidents by leveraging computer vision and surveillance cameras . The system will automatically detect accidents in real-time, analyze severity, and alert authorities with critical details (location, vehicle count, etc.), reducing response delays. Using deep learning models (e.g., YOLO, CNN), it processes live footage to identify collision patterns, debris, or stopped vehicles. If successful, this approach could enhance road safety, minimize human error in reporting, and integrate with smart city traffic systems for faster rescue operations.
Skills Required	<ul style="list-style-type: none">Programming – Python (essential for AI/Computer Vision).Machine Learning & Deep Learning – Familiarity with CNNs, YOLO, or similar object detection models.Computer Vision Libraries – OpenCV, TensorFlow, PyTorch.Video Processing – Handling real-time camera feeds (RTSP, IP cameras).Data Annotation & Training – Labeling accident datasets (using tools like LabelImg, CVAT).Model Optimization – Techniques like quantization, pruning for faster inference.Backend Development (Optional) – Flask/Django for alert systems, APIs.Geospatial Tools (Optional) – GPS integration for location mapping.
Specialized Tutoring	<ul style="list-style-type: none">Computer Vision – Optimizing YOLO/CNN models for accident detection.AI Training – Handling imbalanced datasets and edge deployment.System Integration – APIs for emergency alerts (SMS, dashboards).Privacy & Hardware – GDPR compliance, camera selection.
Associate supervisor (name and email)	Dr. Atta-Ur-Rahman aaurrahman@iau.edu.sa

College of Computer Science and Information Technology
Vice Deanship for Academic Affairs
Graduation Projects Unit

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Students (first name is the group leader)

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To be filled by GPU

Class number