No : _____ Date: __/__/____

Research log book

Group ID - R25-062
Student ID - IT21822094
Name - PAS Tharana
Individual component - vision based fire detection and IOT integrated system

24/12/06 - 24/12/12	conducted background study on industry 4.0 and Its importance in modern warehouse safety systems Reviewed existing fire safety practices and the limitation of traditional smoke / heat detectors Discussed Potential use of computer vision for fire prevention with supervisor

No: _____ Date: __/__/____

24/12/13 - 24/12/20	Reviewed early-stage research papers on fire detection using CNN and yolo models identified research gap - lack of camera only real time fire detection for warehouse enviromen
24/12/23 - 24/12/30	Finalized research topic - vision - based fire Detection and prevent. system system for warehouse safety outlined initial objective and funtional goals of the project began drafting project proposal and gathered references

Jan 2025

No : _____ Date: __/__/____

25/01/01 -	Defined main and sub-objectives clearly
25/01/20	Real-time fire detection using camera feed
	shelf proximity estimation for spatial awareness
	fire size classification and spread prediction
	Developed problem statement and scope for proposal document
25/01/21 -	completed proposal presentation slides and finalized the report
25/01/31	presented proposal to evaluation panel and received feedback

No: _____ Feb 2025 Date: __/__/____

25/02/01 -	conducted feasibility study
25/02/10	compared yolov5 vs yolov8 for detection speed and accuracy selected yolov8 for real-time processing due to higher mAP score and lightweight structure
25/02/11 - 25/02/20	Designed detailed architecture for system modules Defined data flow finalized technology stack
25/02/21 - 25/02/29	planned system testing framework and risk mitigation

No: _____ March 2025 Date: __/__/____

25/03/01 -	collected fire ~~and~~ ~~smoke~~ image dataset from roboflow
25/03/10	Annotated data using Roboflow for bounding box training
25/03/11 -	trained yolov8 fire detection model using pytorch backend
25/03/20	evaluated accuracy, precision recall and mAP
25/03/21 -	integrated shelf detection model using a separate yolov8 dataset
25/03/31	created funtion for shelf Detection calculation based on bounding box coordinates
	prepared progress document for PPI submission.

No: _____ April 2025 Date: __/__/____

25/04/01 - 25/04/10	completed and delivered progress Presentation 01 implemented flask endpoints for real-time fire detection inference
25/04/21 - 25/04/30	Designed UI for live camera feed, alert logs and event visualization conducted internal testing pre recorded fire video
	may 2025
25/05/01 - 25/05/10	Designed directional LED Alert module using 8 LEDs (Up, Down, Right indication) Added 4 buzzers for studio feedback created Wiring, built prototype circuit using Arduino board.

No: _____ Date: __/__/____

25/05/11 - 25/05/20	Programmed Arduino to receive serial inputs from flask-based backend
25/05/31	conduct initial LED and buzzer testing with pre-recorded video inputs.
	June 2025
25/06/01 - 25/06/10	Fully synchronized LED and buzzer module with fire detection measured end to end response latency
25/06/11 - 25/06/31	Conducted repeated system tests with various lightning and background conditions improved data communication between flask and arduino Completed testing

No: _____ July 2025 Date: __/__/____

25/07/01	Performed continous testing of integrated system
25/07/10 -	
25/07/31	monitored Arduino temperature alert accuracy, and power consu-
	August 2025
25/08/01	performed final quality assura- testing of the AI/Alert integrati
25/08/10	verified system reliability across multiple warehouse videos
	optimized dashboard
	obtained supervisor and co-supervis feedback
	prepared for upcoming progress presentation

No: _____ Sep 2025 Date: __/__/____

25/09/01	Conducted progress presentation 02.
25/09/14	received recommendation to to extend with iot smoke sensors
25/09/14	began integration of 4 MQ-7
-	smoke sensors into existing
25/09.31	Arduino circuit
	studied sensor calibration process
	Testing both detection individually
	verified correct LED + buzzer response on smoke based Alerts

No: _____ Oct 2025 Date: __/__/____

25/10/01 - 25/10/10	conducted full system validation including camera, smoke, LED and buzzer modules
	evaluated detection, real time response
25/10/11 - 25/10/20	Finalized commercialized part (two posters)
	Practiced viva presentation
25/10/21	presented final viva successfully
25/10/31	submitting project deliverables to cloud

supervisor : [signature]

2025/10/31