



Cover page

Project title: **Fire-Fighter Car Robot**

Academic Year: 2025

Group Members:

Department Name: Computer Engineering

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Project Type Software or **Hardware** (Choose one)

Supervisor Name: Dr. Hikmat Darawsheh

Format:

- Single space, Times New Roman.
- 12 pt,
- Maximum 1 page.

Abstract Body:

Items must be provided in the Abstract:

- Why do you think this project is important? Please explain the significance of this Project in brief.
- In your point of view what are the important aspects that should be covered in the project?
- Objective(s): In your view, please explain the main objectives of the project.
- Methodology: Give a brief outline of the application development process.
- Had this project been done before? Are there any similar applications available today?
- **Note:** Please deliver this abstract early to ensure that your Project has been approved by the department's projects committee. **Registration will not be done without this approval.**



Project's Abstract:

Fire accidents pose serious risks to lives and property. Traditional firefighting methods endanger firefighters, highlighting the need for autonomous solutions. This project develops a fire-fighter car robot equipped with sensors and a camera to detect fires, classify burned materials using AI, and navigate safely while ensuring water reachability and obstacle avoidance.

→Key Aspects

AI-Based Fire & Material Detection: Identifies fire sources and classifies burned materials.

Smart Navigation: Avoids obstacles and determines the safest path.

Safety & Efficiency: Maintains a safe distance and verifies water reachability.

→Objectives

Develop an autonomous fire-fighter robot for fire detection and response.

Use AI to analyze burned materials for optimized firefighting.

Ensure safe and efficient navigation with real-time obstacle avoidance.

→Methodology

Hardware: Sensors, a camera, motors, and a water-spraying system.

AI Processing: Analyzes fire and material data for decision-making.

Navigation System: Uses ultrasonic sensors and real-time pathfinding.

Testing: Simulations refine accuracy and safety measures.

→Existing Solutions

Current firefighting robots lack AI-driven material classification and real-time navigation. This project enhances fire response through intelligent detection, optimized movement, and autonomous decision-making.

