Cover page

Project title: Automatic Firefighter Car

Academic Year: 2022-2023

Group Members:1- Amr Salman 11941434

Department Name: Computer Engineering

2- Amer Zagha 11923599

Project Type Hardware

Supervisor Name: Dr. Amjad Abu-Hassan

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?
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- **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:

Fires take a heavy toll, and there are often areas that firefighters can't get to quickly because of the flames. Therefore, we decided to implement a project to develop an automatic fire engine.

The Firefighter Car project aims to design and implement an advanced fire detection and suppression system for firefighting vehicles. The system is equipped with a camera, Raspberry Pi and Arduino, enabling the vehicle to quickly identify fires and suppress them effectively.

The technology of the project involves using computer vision to analyze real-time video frames captured by the vehicle's camera. The Raspberry Pi, with its computational power and small size, acts as the primary processing unit, executing fire detection algorithms. This allows for real-time monitoring and analysis of the video feed, enabling the vehicle to detect fire incidents instantly.

- There will be two modes to move the vehicle from the fire station to the destination: automatic and manual modes.
- We will install thermal sensors to confirm fire detection.
- In addition, we will add an ultrasonic sensor to detect any obstacles and avoid them if necessary.
- Stepper motor scanner with the camera He rotates until he finds fire, so we take the angle by a Gyroscope to move the car on it
- The Arduino microcontroller acts as an interface between the Raspberry Pi and various components, such as fire suppression mechanisms and motors. When a fire is detected, the system triggers the appropriate response, activating the mechanisms necessary to extinguish the flames.
- We will also install a water pump sensor to alert when the water is not enough and when it runs out. Moreover, we will develop a software that will provides us with live feed information from the vehicle using a wireless connection. Also, it will enable us to control the car.
- After the vehicle have finished extinguishing the fire, it returns to the fire station autonomously.