



Cover page

Project title: Savior Robot 🤖 Academic Year: 2025-2024

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Department Name: computer engineering

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Project Type Hardware

Supervisor Name: dr. suleiman abu kharma , dr. muhannad al jabi

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:

The project revolves around developing a robot designed to perform various tasks in dangerous environments that are difficult to access, such as high-pressure areas where it is necessary to cut or connect wires. The project is a prototype of a robot capable of assisting in dismantling suspicious objects using digital image processing. By identifying the colors of the wires, the robot identifies the wire that needs to be cut by human control with a remote control. The robot control consists of two parts: the first part is either with the help of image processing to identify the wire by identifying the color as a prototype, then the human controller through the remote control cuts the wire using the arms or the second part is fully controlled by the human controller without the help of the robot through digital image processing. The robot contains a video feed provided by a camera for video and digital image processing. The body of the robot will be made of galvanized steel for its resistance to rust and its ability to bear weights and be used in different conditions. The design of the robot will be inspired by the character Wall-E from the movie with other modifications to suit the requirements of specific tasks. Without consulting any external experts, we will be responsible for designing, cutting, welding and assembling the robot. The robot will be of a suitable and large size, reaching more than a meter in height and width. High-capacity motors with a torque of approximately 20 -30N.m will be used to carry the required parts without any problems. As for the power source, we will design a special rechargeable battery for the robot and it will be designed using lithium batteries as in electric bicycle batteries. We will design it as follows, where the battery consists of several cells arranged in groups or sequences and parallel rows, the sequences will be designed in a way that reaches the required electrical voltage, and the parallel rows will be designed to increase the current or operating capacity for the capacity(Ah). As for the arms, we will use a stepper (NEMA 17, 23) motor to make the movement more precise, and we will use Raspberry Pi in addition to Arduino Mega, where data will be exchanged between them serially, and these two will be in the body of the robot, and ESP 32 will be used to control the robot, and we will also use a large joystick for ease of use.