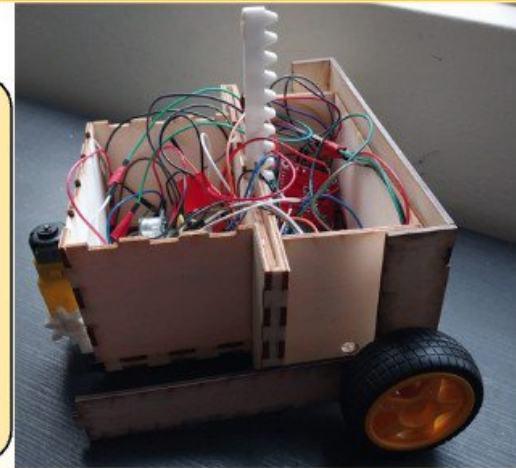


GROUP 5

Robot Design

Our design for the robots to the rescue task consists of 3 main components, which can be seen assembled in the source to the right. One of these components is the main body, which holds the electrical components in a safe and sturdy shell. This is connected to the next component; the object retriever. This component is a box type shape that consists of two moving parts. One that moves it up and down relative to the main body and one that moves a lid in and out of the box.

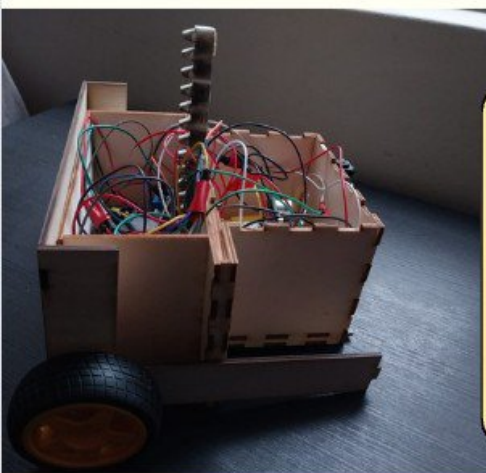
This was designed in a way to easily retrieve the victim; when the robot detects the victim, the object retriever is driven over and then lowered to cover the victim. The lid is then withdrawn to secure the victim within the retrieval box. The final component of our robot is the wheels. The front wheels are connected directly to the motors to give them enough power to drive the whole robot. The back wheels are designed to give the robot support, and hence do not have their own driver.



Aesthetic Appeal

Our robot exemplifies a commitment to sustainability and environmental responsibility through its design aesthetics. Crafted with environmentally friendly materials, such as plywood with an oak color for the body and black acrylic for the sliding doors, it serves as a tangible example of eco-conscious engineering in action. By choosing sustainable materials, we not only reduce our ecological footprint but also provides a valuable lesson in environmentally friendly design practices.

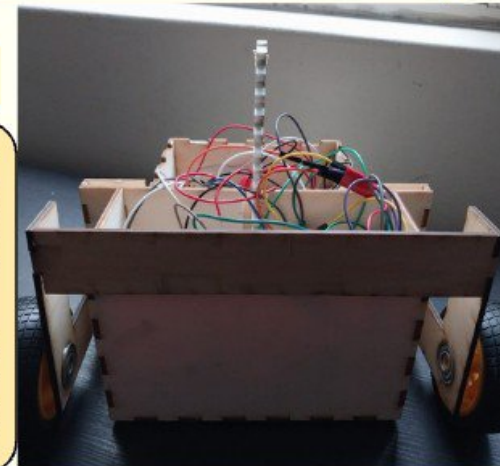
In addition to its environmentally friendly materials, our robot's design incorporates a multitude of cubes and rectangular shapes for its body, adding a dynamic visual dimension to its aesthetic appeal. The use of clean lines and geometric forms creates a modern and cohesive look, engaging students with its sleek and functional design.



Engineering Quality

Our research demonstrates a small robot designed to manoeuvre through tight places and uneven terrain in response to the pressing demand for efficient disaster response in hazardous environments. With dimensions of only 210 x 194 x 100 mm and a weight of less than 1 kg, this tiny marvel combines cutting-edge sensors and clever algorithms to quickly identify and help victims who are trapped. With careful consideration for both affordability and efficiency, the entire job is completed with a budget of \$89.70.

Enhanced versatility and compatibility in catastrophe scenarios are ensured by smooth interaction with current systems through the use of an Arduino interface for external control. Our small robot is the peak of engineering creativity and has the potential to transform rescue operations and save lives in dangerous situations involving human interaction.



Innovation

Our robot introduces an approach to victim retrieval through its unconventional mechanism, featuring a sliding door and a vertically moving box. This innovative design revolutionizes traditional methods by precisely positioning the box directly over the victim, ensuring swift and secure retrieval. Unlike conventional claw or arm-based systems, our streamlined box design minimizes complexity and mechanical failure risks, ensuring reliable performance even in high-stress scenarios.

The sliding door adds another layer of efficiency and safety to the retrieval process. Positioned at the bottom of the box, it securely seals the victim inside once they are lifted to safety. This feature not only enhances the speed of retrieval but also minimizes the risk of the victim slipping or falling during transport. The simplicity of our system facilitates rapid deployment and operation, crucial for time-sensitive search and rescue missions where efficiency is of the essence.

