TEAM 6 POSTER

ROBOTS TO THE RESCUE

ENGINEERING QUALITY

Our robot ensures high-quality functions in terms of navigation, movement, and control of the claw to carry out its intended task of rescuing a potential victim with precision and efficiency. The robot uses sensors to determine its surroundings, allowing it to accurately navigate through potential obstacles obstructing its path, all while reporting its environment to the user. Furthermore, the wheels provide reliable grip and torque to traverse any terrain within the maze. These factors were heavily considered to ensure the high quality of the robot in achieving its purpose.

ROBUST DESIGN

The integration of repurposed wood as a structural component introduces novel design possibilities because it is lightweight yet durable and offers a unique blend of strength and flexibility, enabling the creation of robots that are not only robust but agile as well. 3D printed material has also been incorporated into the scooper, where, similar to the repurposed wood, is light yet durable, an ideal property for a small rescue robot. It has a high tensile strength and even has thermal and chemical resistance, highly practical in a real life scenario where environmental factors may impact the functionality.

AESTHETICS

The aesthetics of our robot focusses on the simplicity of its shape, this boxed shape helps differentiate itself amongst more complex looking shapes such as debris amongst an earthquake situation. Furthermore, the robots colours of ‘Premium Pearl White’ as seen in the figure 1.

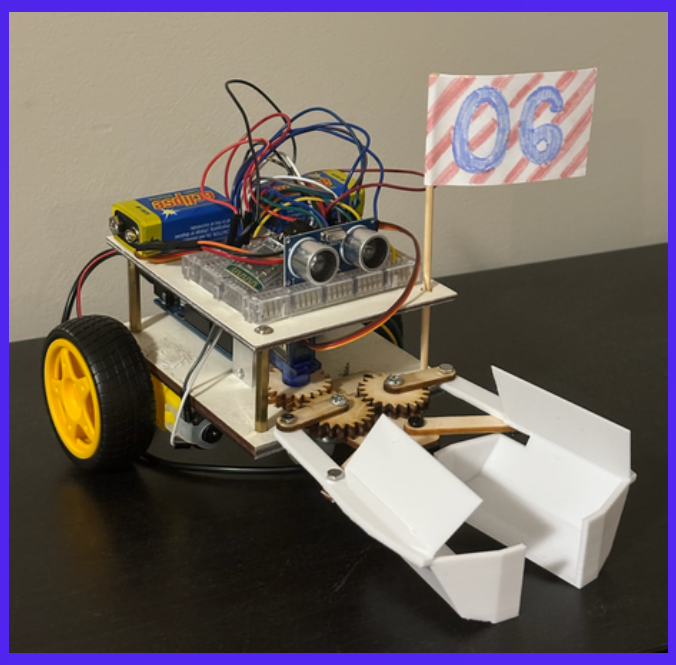

Figure 1: Team 06 Final Prototype

This colour was specifically chosen not only for the sleek look but also acts as a reflective surface from light sources, thus becoming easier to find by victims to notice the robot. The aesthetic structure of the robot is also reflective of a main goal saving people, depicting an approachable shape being compact and ‘cutely’. Our Robot is quite the cutie pie!

INNOVATION

The robot we have designed redefines innovation. The claw has been designed as a claw/scoop hybrid, increasing safety for the victim as it gently scoops the victim and stores them in a secure compartment in a singular motion. The scoopers have barriers on the ground, sides and even partially on the top, acting as a makeshift roof, preventing the victim from falling out of the scoop during the possible rough travel back to safety, as well as providing protection from any possible falling debris.

Furthermore, the robot's design incorporates advanced functionalities with the inclusion of an ultrasonic sensor. The Ultrasonic Sensor utilises sound waves to retrieve distance measurements, meaning regardless of whether the robot is in-view of the operator or not in the maze, it will retrieve information on its local location. Lastly it makes use of a remote bluetooth module which allows for easy control of the robot without having to be connected to the operator. This removes the necessity of a cable connected to the operator, reducing risks of entanglement when returning to safety.