

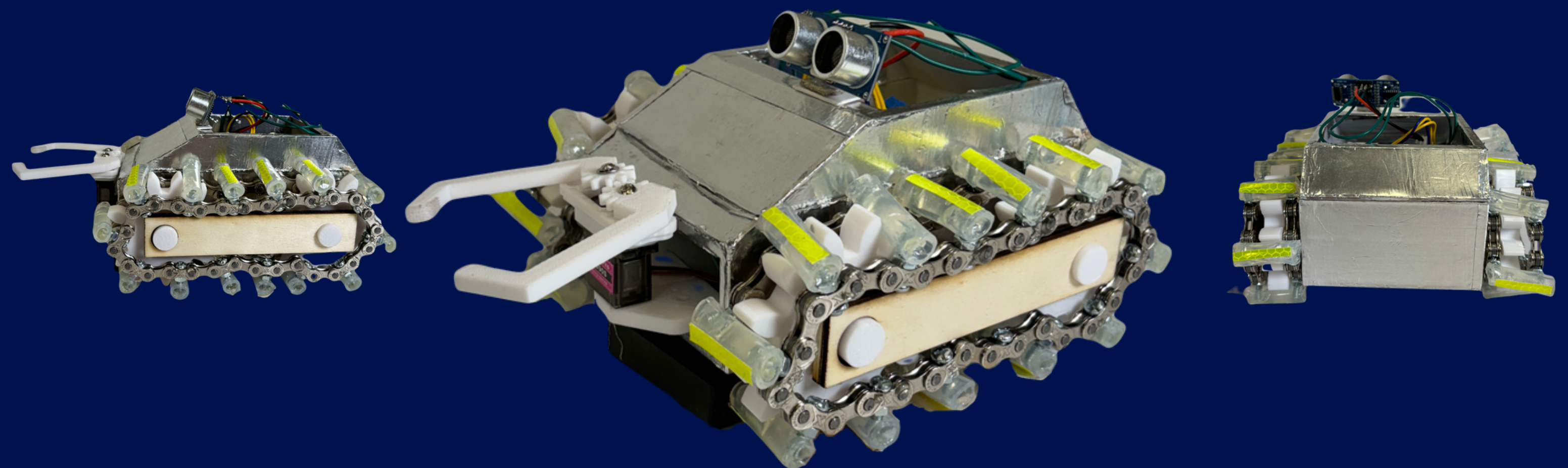
# ROBORANGERS

## AESTHETICS

The design of our robot is inspired by the Tesla Cybertruck, and this makes the design sleek and minimalistic while also effectively utilising aesthetics as a tool for rescuing victims. The shiny silver will allow light to reflect off it and also signify to victims that rescue is there, additionally we have incorporated fluorescent highlights for visibility and recognition. The minimal and compact design also means that there would be less material needed to produce the robot while ensuring an aesthetically pleasing design.

## ENGINEERING QUALITY

The robot adheres to high standards of engineering quality, having a high performance that is accurate, efficient and reliable in doing its tasks. The final costs of the robot were effective, fitting the \$120 given by costing \$111. The claw of the robot has the ability to softly lift up the tennis ball allowing safety for the victim. The robot utilises rechargeable PLA which is biodegradable and rechargeable batteries, ensuring sustainability. The size of the overall robot is 21.8cm (length) by 15cm (width) by 8.6cm (height) and weighs approximately 802.5g. The GUI offers extensive customisability, allowing users to tailor the interface to needs.



## INNOVATION

The robot features a dual sensor system harbouring a colour and ultrasonic sensor allowing for collection of comprehensive situational awareness. The inclusion of tank tracks over wheels also allows for a much more stable robot that is not as prone to tipping over compared to wheels and for great mobility. The chassis being made out of PLA reduces the weight of the build, making it more efficient in rescues. PLA is also a biocompatible material making it safe to interact with bodily tissue and fluids whilst reducing risk of contamination.

The software includes different accessibility features such as a background changer and cursor changer. The cursor changer allows the user to better locate the cursor and helps it stand out from the GUI. The background changer helps accessibility as it allows users with colour blindness to change the interface as needed.

The condensed build of the robot ensures ease of travel through the terrain and has a greater ability to navigate through smaller and more challenging obstacles.

## ROBUST DESIGN

This design is constructed to handle a variety of different conditions as it will be subjected to a variety of different situations. The electrical components will all be covered and contained within the robot to prevent contact with moisture or the surrounding elements. The robot is also built with a low centre of gravity and symmetrically, as this prevents it from being tipped over. The robot is able to overcome the maze and terrain through the track wheels due to the high reliability and durability. Additionally, there are multiple sensors which provide accurate data of its surroundings. We have opted for a mechanical claw design to ensure reliability and ease of construction, this design is present in many other robots of similar calibre, showcasing its durability.