

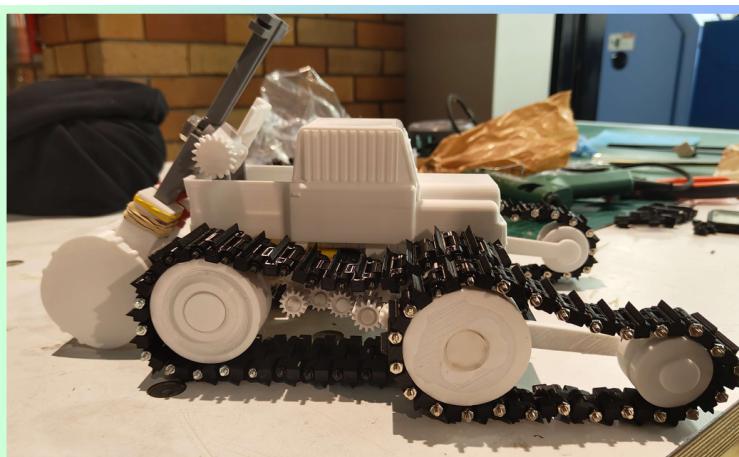
R2R - TEAM 11

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ROBOT DESIGN

Team 11's robot design drew inspiration from the tracks of a war tank and implemented flipper arms to allow movement through rough and inclined terrain. The tracks act like chains and are linked together using wires, then controlled by the main driver gear and tension gear.

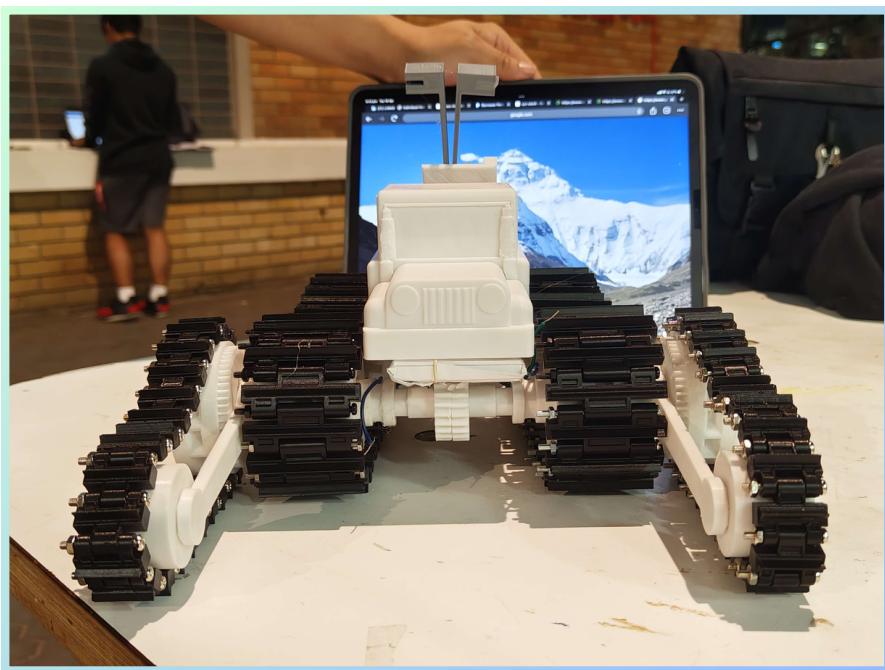


SIDE VIEW OF ROBOT

The two axles are connected to the breadboard, which connects the main electronics inside the 3D printed truck body. There are two ultrasonic sensors to detect the target and navigate through the maze, and a clamp mechanism on the rear is used to scoop the target.

AESTHETICS

The robot features a sleek and simple truck design inspired by war tanks. Its white coloured chassis helps attract the attention of the victim and allows the robot to be visible in most situations.

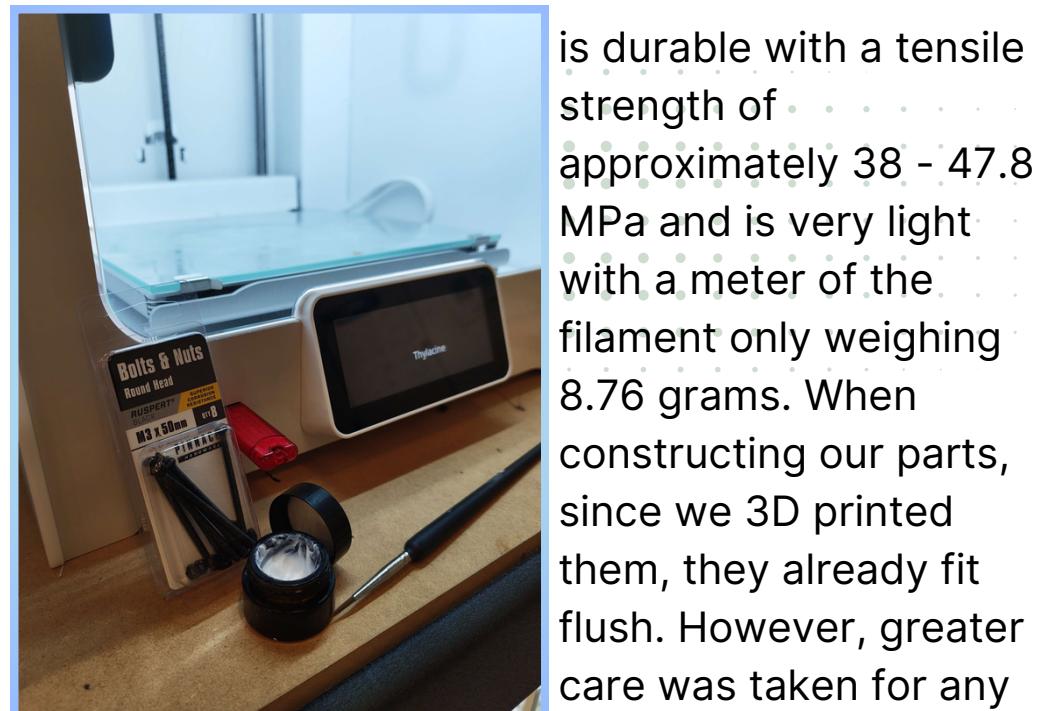


FRONT VIEW OF ROBOT

The truck design allows the victim to easily associate the robot with help. The tank truck's tyres are large and give a sense of robustness and durability, perfect for navigating in rough terrain.

ENGINEERING QUALITY

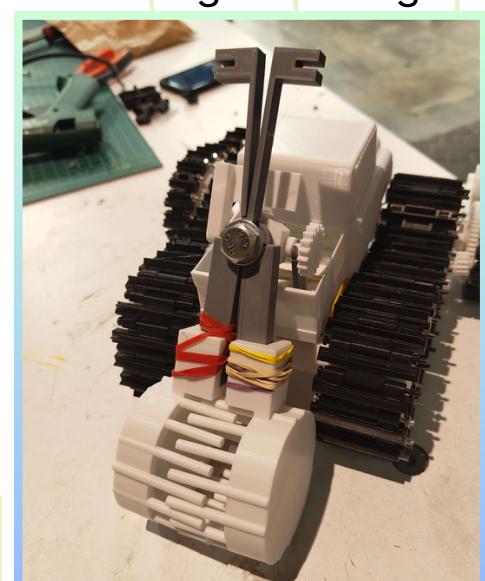
In terms of the quality of engineering, the primary material that is used for the chassis, tracks and wheels is 3mm FDM PLA PLASTIC. This material



is durable with a tensile strength of approximately 38 - 47.8 MPa and is very light with a meter of the filament only weighing 8.76 grams. When constructing our parts, since we 3D printed them, they already fit flush. However, greater care was taken for any spinning components such as the wheels where Krytox 205 lube was used to ensure smoother movement. To connect the tracks m3x50 bolts were used providing strong support and decreasing chances for the tracks to unravel in transport. Electronics are purchased from UNSW and have all passed compliance testing.

INNOVATION

The scoop mechanism is a design innovation that was constantly improved on during the design and build process. The design as seen in (insert photo) takes inspiration from objects such as scissors for the opening and closing mechanism and also tractors for the actual circular shape of the scoop. A practical sense of innovation



ARM MECHANISM

was moving the pivot point of the scooper lower as during the build process, a higher pivot point could not support the total weight of the ball. Also, the idea of using velcro to line the scoop's surface and attach to the ball was a unique idea that helped secure the ball further.