

BB-8

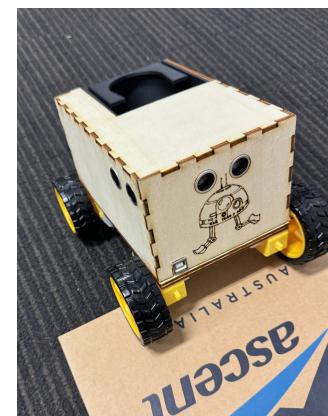
R2R TEAM 8



ROBUST DESIGN

The BB-8 design features a compact yet rigid plywood body that supports the weight of BB-8's components. Through careful weight distribution considerations, including the use of selected components that maximise the robot's overall effectiveness while minimising its weight, the components and dimensions of the board were utilised to manipulate BB-8's centre of mass, therefore increase its off-road stability and capabilities.

The electrics featured in the robot greatly exceed the requirements expected of our tests; the four motor design allows the direction and rpm of each wheel to be precisely controlled, whilst providing sufficient power to transverse over rough terrain. Furthermore, the servo featured on the catchment system is strong enough to lift large loads, including the tennis ball victim due to its output of 13kg of torque. All components are powered by 2x 9V batteries which allows BB-8 to operate at maximum speed for close to an hour. This design means that BB-8 is one of the most reliable, robust prototype rescue robots around!



AESTHETIC APPEAL

As a homage to our team name, the robot is loosely based off the droid-ship design commonly featured in Star Wars, but adapted to suit the needs and requirements of a rescue robot prototype. Securing the victim within the body of the robot, BB-8 not only achieves its required objectives, but also facilitates a safe and secure rescue environment, with aesthetic appeal.



ENGINEERING QUALITY

The robot fits under the size and weight requirements specified by the task, weighing 808 grams within the dimensions of 22.4cm by 13.5cm by 17.3cm.

The design of the robot features a compact body centred on the retrieval and protection of the victim, with the majority of the chassis dedicated to the safety of the victim.

Electrically, the robot is powered by a sole breadboard connected to the Arduino R3 motherboard. This design not only simplifies the construction of the robot, but also allows the components to be troubleshooted and modified for a wide variety of purposes.

