# Byte Savers

Robust Design

Our robot's robust design seamlessly integrates mechanical, electrical, and computing streams, showcasing a holistic engineering approach. The frame's sturdiness ensures durability and impact resistance, reinforced by strategic vibrant orange and golden spray paint for both aesthetics and protection. This distinctive fluorescent orange hue not only enhances identification but also ensures visibility from a distance, thanks to its longer wavelength. The well-structured and modular code enhances resilience by facilitating reuse and
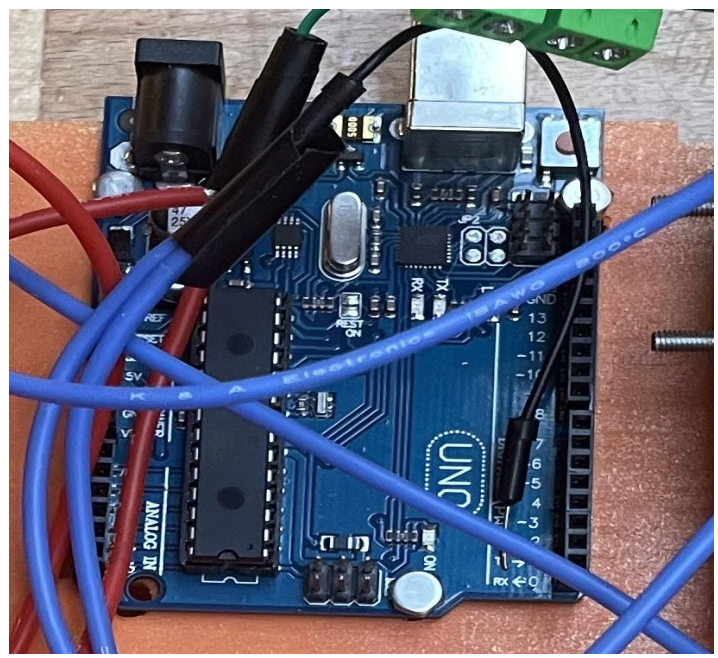
Troubleshooting. The integration of a linear actuator, harmonizing a DC motor and a servo motor, reflects a sophisticated engineering strategy, endowing the robot with precise and adaptable functionality. This comprehensive fusion of elements underscores the excellence in our robot's design.
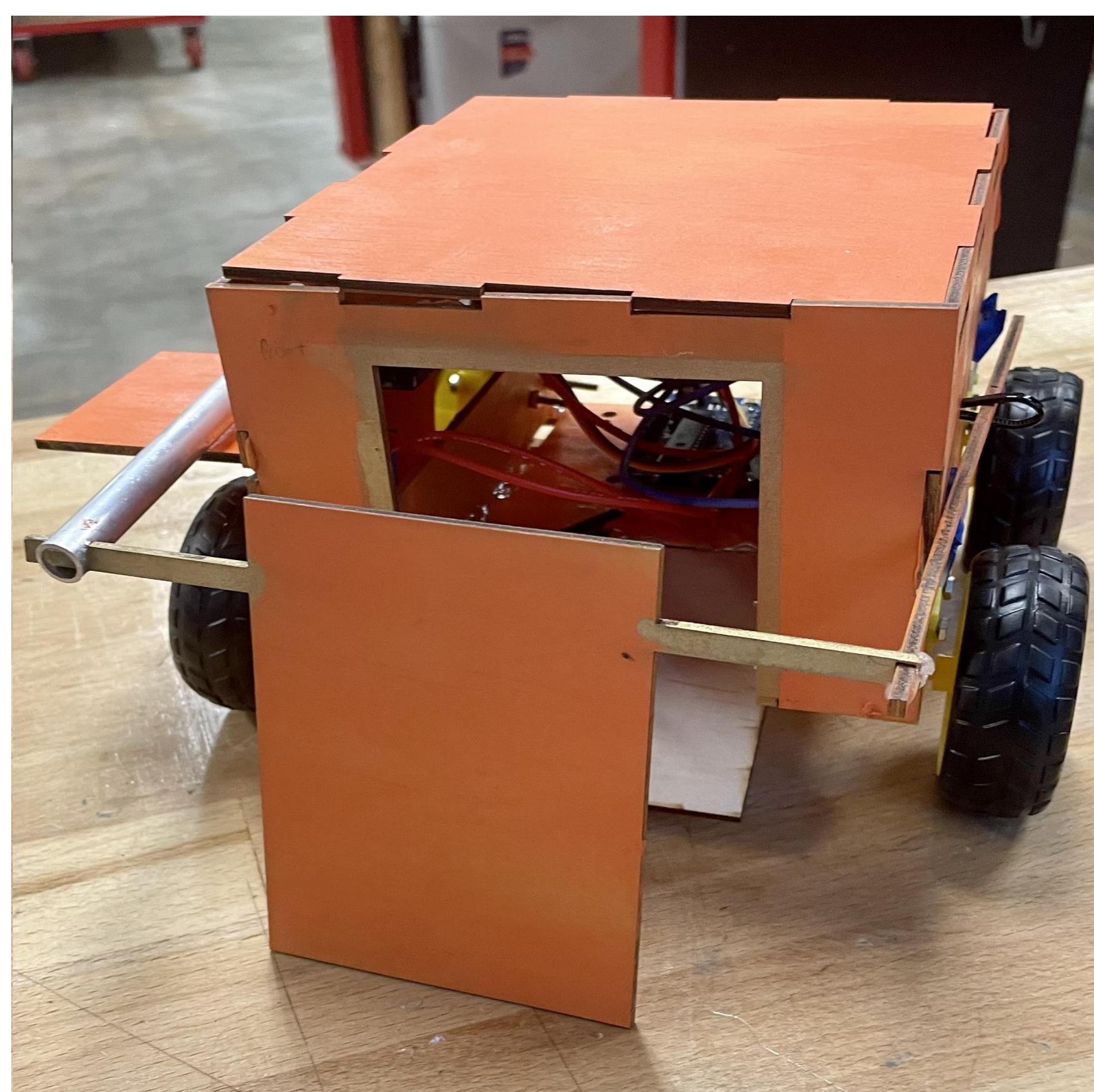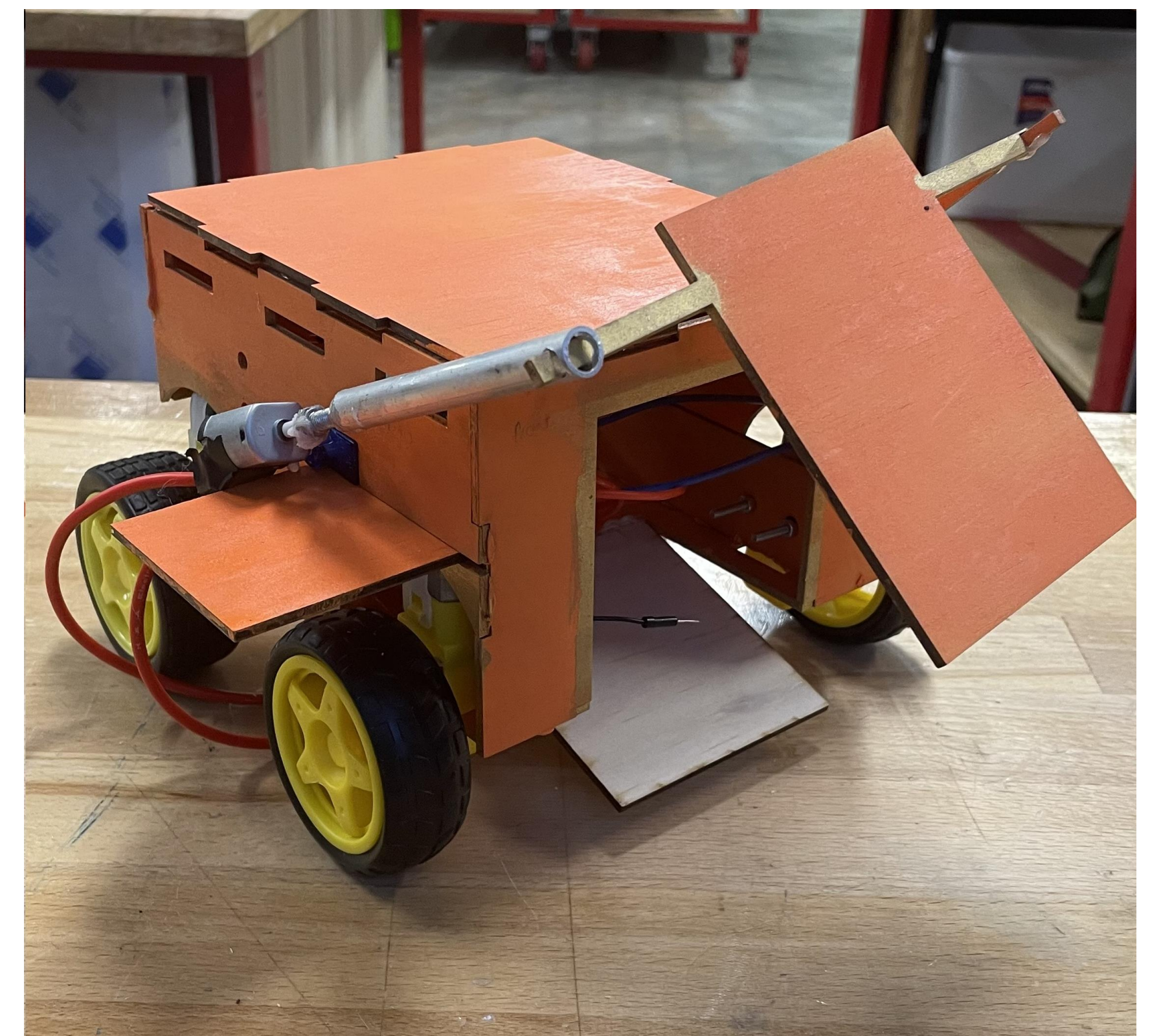
Aesthetic Appeal

To enhance our robot's visual appeal, we transformed its appearance into a WALL-E-inspired design, employing vibrant orange and golden spray paint. To achieve a polished look, we concealed the DC motors within the robot's body, ensuring a sleek finish. All internal components and circuits were concealed beneath an additional layer of plywood, contributing to a clean and refined aesthetic for our rescue robot.

Utilizing an innovative approach, we've incorporated zip ties on the side of our robot to enhance stability for its L-shaped arm. As the linear actuator extends vertically and horizontally, the strategically placed zip tie dynamically adjusts, moving in tandem with the actuator's motion. This simple yet effective solution bolsters the arm's structural integrity, ensuring optimal support throughout its range of motion for enhanced performance in diverse tasks and scenarios.

Engineering Quality

The robot is well engineered as rigorous attention to detail ensures that every element is securely mounted, eliminating any loose or hanging parts. Our code exhibits high-quality engineering practices, employing a well-structured modular design with distinct functions. This not only enhances readability but promotes code reusability for efficient troubleshooting and future development. Moreover, the implementation of a linear actuator to rescue the victim, incorporates both a DC motor and a servo motor, which showcases a thoughtful fusion of technology for precise and versatile functionality.

Using web server to manoeuvre the robot through rough terrain and rescue the victim through the maze, which seamlessly integrates electrical and computing streams.
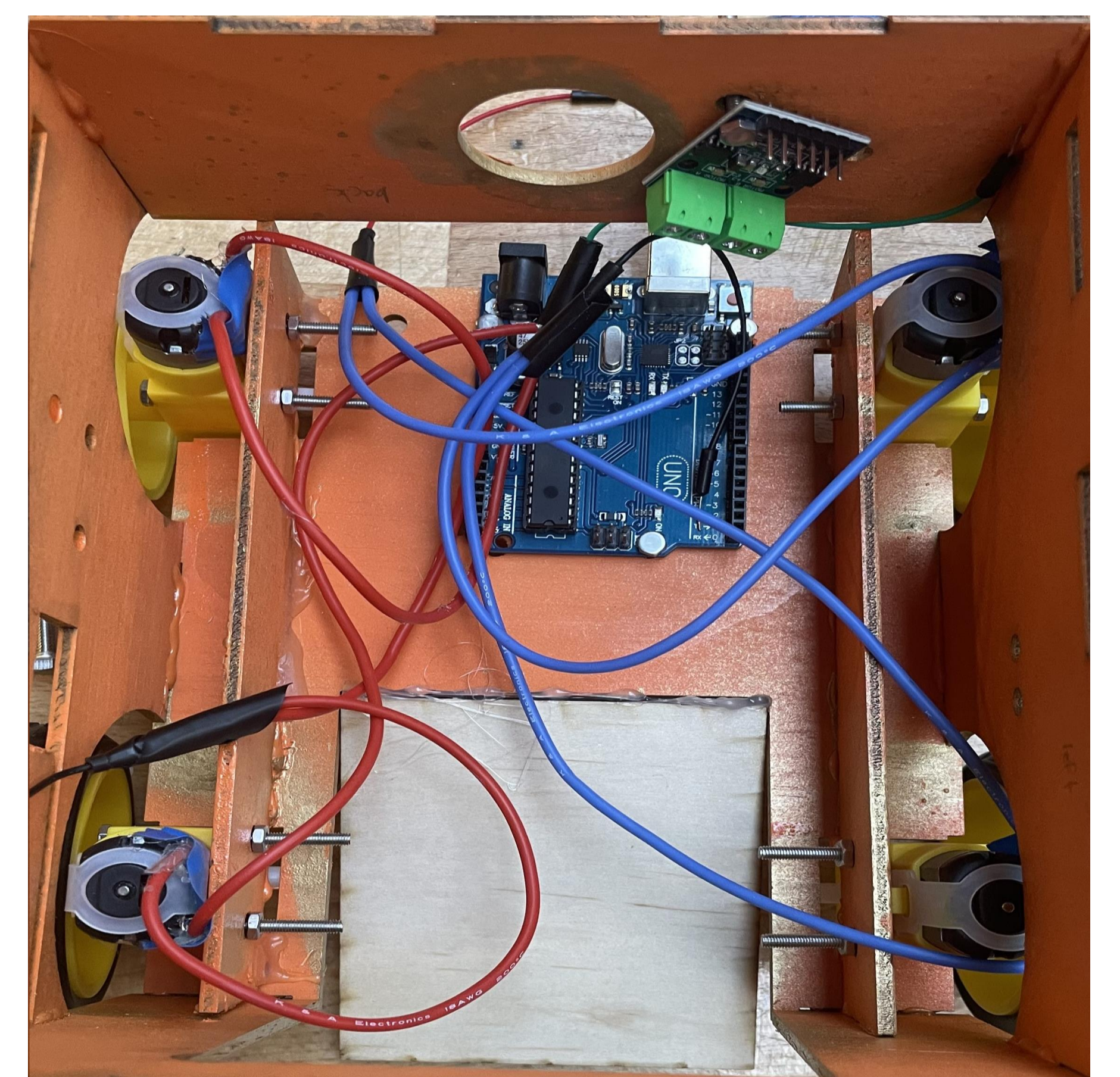
Innovation

The innovation in the Rescue Robot is demonstrated within the designs of its functioning mechanisms and the software that interacts with it. One of the main mechanisms being our linear actuator replacement, engineered using a continuous servo and a DC motor. Purchasing a linear actuator would not conform to the budget constraint, hence resorting to a cheaper alternative. The servo is situated on one side of the body with a DC motor attached. The motor is then attached to a pin with threads. This pin is situated inside of a threaded pipe, driving a forward motion when rotated. Giving a forward motion as an extension for the arm when the printed arm hook is attached. The software aspect allows the motor and servo to be controlled individually, allowing greater precision when picking up a victim. This function demonstrates the extensive engineering quality given while facing the given constraints.