

This project effectively applied engineering and design skills to create a mechanism for picking up and transporting balls.

Key features of the design include:

- Movement in the XY Plane: Achieved through the use of gears.
- Stability: Ensured by the flat base of the mechanism.
- Linkage System: A four-linkage arm with a bottom handle allows movement in the XZ and YZ planes. Applying force to the handle moves the system up or down.
- Ball Handling: The claw's shape is designed to fit the ball, and a rubber band secures the ball within the claw.
- Rotational Joints: Connected with screws, including linkages in the arm and claw.

The system is designed to handle a maximum weight of 23 grams, requiring a force of 0.00303 lbf, and to open the claw with a force of 0.80 lbf. It is expected to operate at 37.5 RPM and deliver 40 lbf of torque. To enhance the design, prototype testing is essential. This phase will reveal potential system failures and verify assumptions, such as friction in the linkages. Testing will also address ergonomics and human factors, potentially refining the handle design and reducing the number of controls from three to fewer, thereby improving usability and efficiency.