Autonomous Terminal Luggage Trolley

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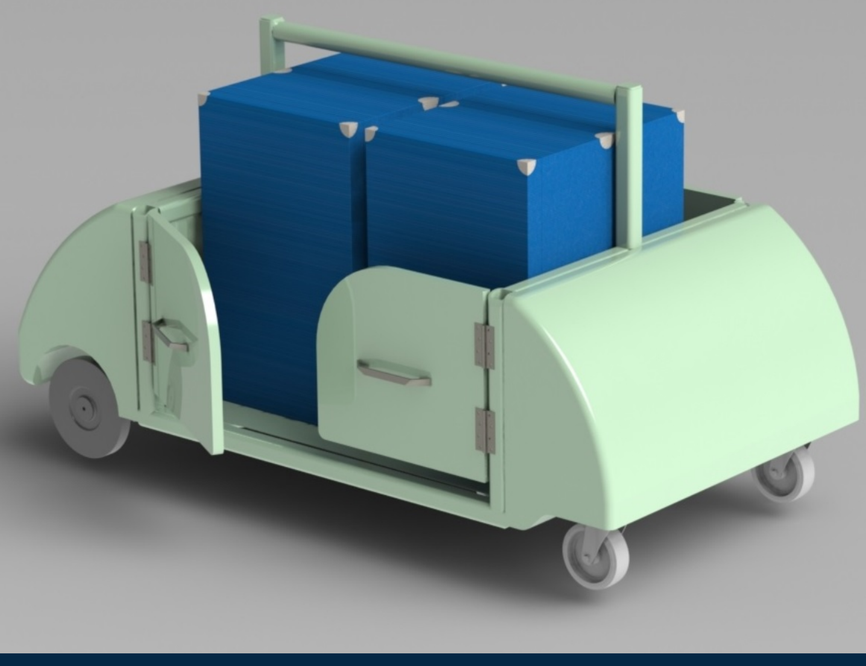
Background

- Currently, people with disablities require further assistance to transport their luggage throughout the airport.
- Existing trolley designs pose risks to nearby users and objects as potential collisions may occur due to luggage being stacked at unsafe heights.



Objective

- Provide better accessibility to people with disabilities, allowing them to act more independently.
- Improve on the ergonomics of current trolley designs by limiting the height luggage needs to be lifted.
- Reduce strain due to pushing heavy-loaded trolleys.
- Limit chances of collision with pedestrians or other objects.

Trolley Specifications

Max Luggage Weight	128 kg
Tracker Range	50-100 m
Proximity Sensor Range	1-5 m
Dimensions	1060 x 970 x 1870 mm

Proposed Solution

- Four-wheeled autonomous cart with smart collision detection and avoidance mechanisms. Open and accessible design for easy loading and unloading of luggage.
- Wireless tracking and homing system to follow the airport patron using Bluetooth Low Energy (BLE) communication.
- Powered by electric motors and a rechargeable battery pack.

Conclusions

- Proof of concept successfully detects obstacles and avoids collisions.
- Cart accurately follows BLE tracker autonomously once activated.

Recommendations

- Different energy source.
- Uniquely encrypted Bluetooth signal to prevent interference with other trolleys. Ability to sense luggage weight.

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Faculty Advisor: Soha Moussa, Ph.D, P.Eng.
Acknowledgements: Evan Fallis

FUNDED BY LAB FUND ENGINEERING STUDENTS

Mechanical Computer