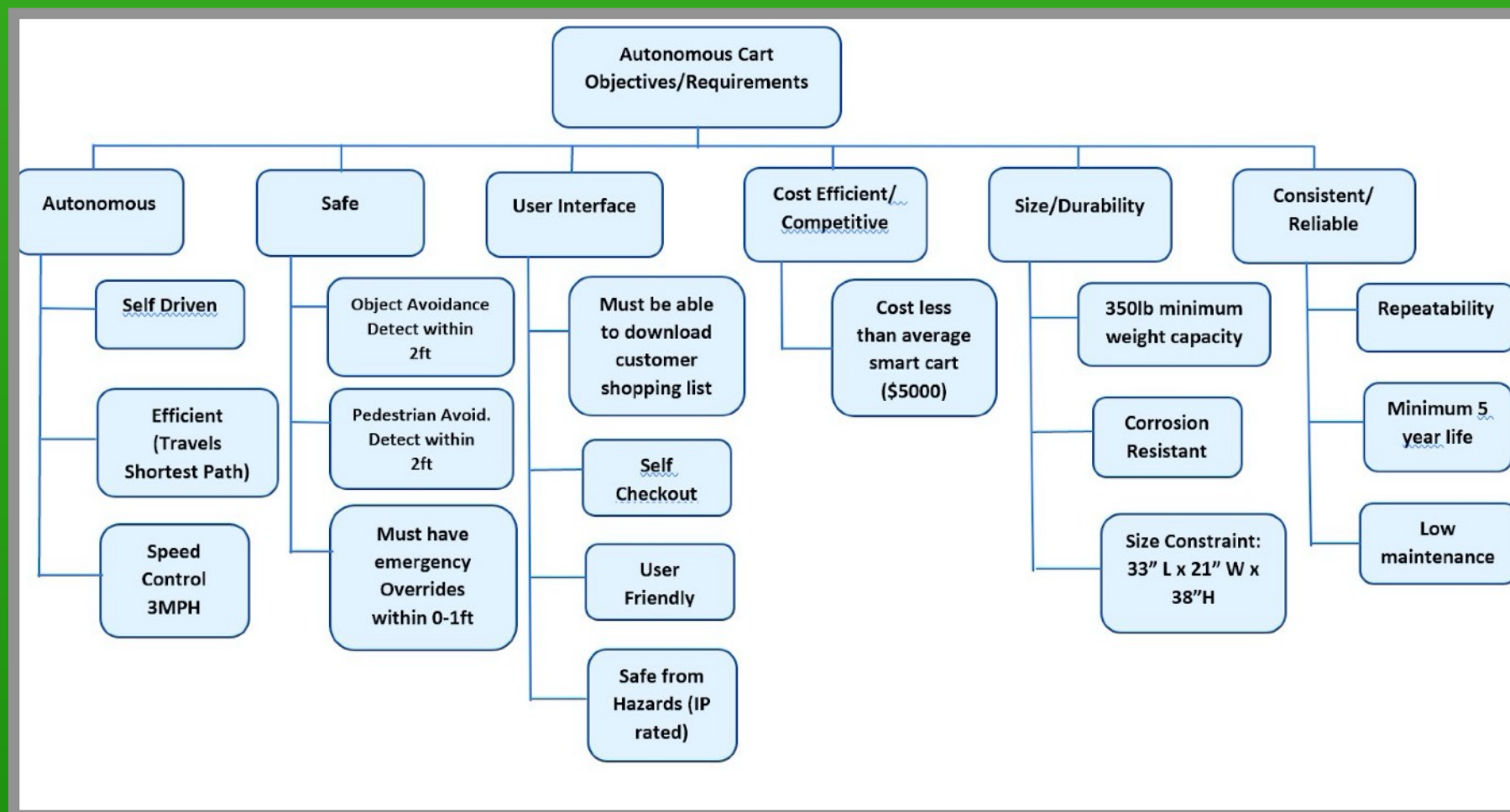


Introduction

Overview: Due to the pandemic there is a high demand for increased autonomous capabilities in everyday tasks such as shopping, leading to the need of a self driving cart that is able to move safely around the shop and navigate the customer to his or her items.

Objective: Design a steering system that is able to produce 250lb-in of torque and maintain the speed of 3mph. Design an autonomous system that will maneuver around the shop safely and stop when necessary

Challenge: design a reliable system.



Prioritized design requirement

Cost	Under \$2000
Sensor Reaction	Under 250 milisec
Torque	Over 250lb-in
Speed	Maintain 3mph



SPECIFICATION

Future considerations for redesign

- Have a scanner that is not hand held.
- Advancement for Indoor/outdoor use
- Whole cart weight scale

Performance

- Ultrasonic sensor is able to detect objects from 2-400cm
- For lidar system 27° degrees of view
- Stop within 2ft of an object
- Accuracy 0.5cm

Safety and Environment

- System design will not jeopardize the safety of public or environment.
- Cart will maintain 3mph speed.

Reference: <https://www.beetronics.com/10-inch-touchscreen>
<https://www.adafruit.com/product/4542>
<https://www.youtube.com/watch?>

Pre-existing solutions



Caper



KroGo

