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Product Idea # 1 Smart Shop

For people such as myself who dread going to any store that requires grabbing enough items to use a cart, it would be super useful if there was an app that located everything for me! There are many stores out there that offer a location lookup on there website and tell you what aisle an item would be in. However, I think it would be even more useful if my phone virtually directed me to the location of an item just like a GPS. I could create my shopping list on the app from home, type in the store, and then enter the location. By the time I drive to the store and walk in, the app will already have a predetermined route for my all my items in the most efficient manner. It would have an arrow navigate me around the store on my phone screen with the name of the item and the aisle location one by one until I’ve fulfilled my entire list. I would like to integrate a smart cart docking system that allows me to dock my phone in between my hands on the cart handlebar. This mitigates having to push a cart with one hand while holding my phone in the other. This app would still be usable in the hand if a cart was not needed. The dock will charge my phone and automatically open the item locator app when used. I believe there is a market for this product as stores still want to maintain or even increase customer base as online shopping becomes ever more popular. Making in store shopping as convenient as possible is key to maintaining these customers. This system I believe is viable and executable but will require lots of coding and programing. On the electrical side of things, the smart cart docking system will be a compact rechargeable battery that charges your phone when docked and conveniently holds it in place. This compact dock will charge when docked with all other carts.

Product Idea # 2 Drone Plow

Campuses across the nation such as high schools, universities, and businesses require a lot of upkeep. These campuses include a large network of sidewalks to handle all the foot traffic. Many of these grounds are in states that have severe winters that cover pedestrian roads with ice and snow. All though it is easy for a professor or custodian to throw a little salt at the doorway that does not create a safe path for all walkways across the property. A solution to this problem is a network of drones that can handle winter upkeep. I would like to design an automated system of drones that has a programed and calculated route to cover walkways with salt or other forms of deicer. For this network to be feasible there would need to be a drone shelter where the drones can dock, recharge, and be stored. This shelter will house the deicer reservoir where an automated carrier located on the drone can pick up more deicer and then evenly disperse among sidewalks until cycle repeat. The deicing will be done during low traffic times such as very early in the morning. The drone will need to include a sensor to safely avoid any pedestrians. In the off chance the drone must avoid traffic the sensor will simply send a signal and the drone will fly a programmed safety avoidance flight pattern. This pattern will entail ascending to safe heights such as 15 feet or higher. This will solve liability issues and will mitigate tampering. I would like to design a two-port battery system where the drone can pick up and a new battery and then dock the old battery. This will increase the longevity of operation. Both this battery swap system, the safety sensor, and deicer carrier will need to be electrically designed and fabricated to meet the needs of the automated system. An app to interface this network of drones would allow for maintaining and reprogramming flights.

Product Idea # 3 Heated Tire

Roads during extreme winter conditions create dangerous driving environments. Heated tires can make for a convenient way to mitigate these conditions. To execute I would like to create a closed system much like a refrigerator that absorbs heat from the engine compartment and displaces it into the air of the tire. This would be a very challenging idea however I believe it could be feasible and it would include some mechanical engineering skills. Electrical and programming would be needed to regulate the amount of heat that is displaced into the tires to protect the integrity of the tire.