**Ref. No.:EIP.PT20.1078**

**Advance Shopping Cart**

**Objective:** The objective of the present invention is to make an advanced shopping cart.

**Key features:**

1. A microcontroller tomonitor and control the working operations of the sensors and various other components arranged with the device and customizing the programming of Arduino as per requirement. ---Required
2. Motorized omnidirectional wheels to move the cart instead of pushing or pulling and automatically move/follow the user. ---Not Required(Power for heavy shopping cart)
3. A touch integrated display screen to let the user provide inputs and at the same time display critical information to the user. ----Not Required(ML models and no use of phone)
4. The base of cart comprises multiple pneumatically actuated **telescopic pins** attached to its base to form multiple compartments based on the input of the user regarding various items to be put in the cart.
   1. Accordingly, the user can keep the products in the respective compartments to avoid the products getting damaged due to heavier goods.
   2. A slidable section arranged at the middle portion of the cart to cover the cart mid-way once the items are put into that section. The slidable section makes it possible to create another section to put items to. –Required(load cell?)
5. A GPS module is arranged with the cart in order to identify the shopping mart based on its location and thereby fetching the price of various items present in that particular shopping mart and at the same time connecting with the database of the shopping mart. --Required
6. A 360-degree rotatable **AI camera** is attached to the cart to determine the user and based on the facial recognition, the cart inside follows the user within the premises.
7. With the help of an AI camera, the determination of the name and type of the product or item is achieved and displayed to the user on the display.
8. The user can select the items he/she wants from the display, once the system has fetched the list of items and their respective prices from the database of the shopping mart.
   1. Accordingly, the trolley will guide the person towards the shelf where the desired products are kept. ---(hard to find the exact location)
   2. The user can also provide input regarding his budget and accordingly the brands with **lower prices** will be displayed on the screen so that the user can perform the shopping in a limited budget also.
9. The AI camera will also monitor and ensure that the product kept in the trolley by the user is added to the display also to avoid theft.
10. A **horizontal slider** is attached to the upper periphery of the cart and fabric is attached to it so that once the user is done with shopping the flapping unit will be closed to avoid the stealing/missing of the goods.

* The fabric will automatically be opened once the payment is done.
* An Alert will be sent to the respective authorities if the user tries to get outside the premises of the store without making the payment.

1. A **weight sensor** is attached to the device to measure the weight of the product being placed in the cart.
   1. Further, based on the weight and the type of the product, the price of the product item will be displayed on the display screen.
2. With the help of the weight sensor, the user will also be provided suggestions that the product of heavier weight is to be kept first and the lightweight item is to be kept afterward to avoid the breaking or spoiling of the product. --Required
3. A **ripeness determination sensor** is attached to the cart using which the ripeness of the fruit will be determined and accordingly suggest the life of the fruit/vegetable so that accordingly user can buy it as per his consumption timings. ---Not Required(spoils fruits)
4. It will also suggest the temperature to be maintained to increase the number of days to retain its freshness and avoid it from being spoiled.
5. A compressor-based cooling system in order to keep the contents of the cart at an ambient temperature.
6. An **ultrasonic sensor** integrated with a **laser sensor** is attached to the cart using which the area of the cart will be determined and accordingly suggest the user to place the product in a definitive manner thereby ensuring maximum utilization of space. ---Not required
7. A **speaker unit** is attached to the device.
8. The speaker is synchronized with the AI camera so that as per the observation of the AI camera the speaker unit will guide the user to keep the products. –Not Required
9. A **QR code** will be generated on the display once the user has been done with the shopping and the clippers will lose their grip once the payment is done.
10. A **horizontal slider** is attached to the cart in which multiple carry bags are attached to it with the help of a **motorized clipper.**
11. The carry bags can be used to fill the loose products, which does not include a bar code. ---Required(Needs clarity)
12. A **chamber** with a **nozzle** is attached to the cart to sanitize the cart as and when required.
13. The chamber contains fluid for sanitizing and a rod is attached to the cart by which sanitizing is achieved.
14. The rod is a telescopic hollow rod and a **motorized ball and socket joint** is attached to it so that it can be tilted to a required angle to sanitize the cart. Doable