

SMART MARKET CART



Mohammed Alturki & Hazem Alsaadi: EE Meshal Alotaibi: ME
Mohammed Alsahli & Naif Albalawi: ICS Muath Abuqaqel: ISE

ELEVATOR PITCH

Market owners and clients face the challenges of long waiting lines, operation costs, and security concerns. These challenges create a need to :

- Cut the operation costs
- Reduce checkout time
- Enhance security

Smart Market Cart is a data-driven solution that reduces checkout time and operation costs and enhances security. Unlike Amazon Go, Smart Market Cart Respects privacy, Offers a full product selection and has lower integration cost.

PROBLRM STATEMENT

Current checkout processes in Saudi supermarkets are Inefficient in Cost & Time, Labor intensive and Hampering the customer experience. Smart Cart, a data-driven self-checkout system that revolutionizes the retail landscape in Saudi Arabia by emphasizing convenience ,taking away with lines and personalizing shopping experience.

OBJECTIVE

To design a revolutionary smart cart system that transforms the retail shopping experience in Saudi Arabia by eliminating checkout lines, personalizing trips, and emphasizing convenience through seamless integration of computer vision, sensor technology, and cloud-based services.

TARGET SPECIFICATION

- Battery Lifetime: 12V with duration of 2.5 hours
- Processing Time: 4.3 seconds per product
- Weight Sensor Precision: precision error within 3% per gram
- AI Model Accuracy: To achieve an accuracy rate of 95%

CONSTRAINTS

- Maintaining Security
- Sector Customization
- User Acceptability
- AI Algorithms Precision

SOFTWARE DEVELOPMENT



Order Summary

Check your items. And select a suitable payment method.

Product	Price	Quantity	Total
Water	1 ريال	1	1 ريال
Pomegranate, Ice Tea	4 ريال	1	4 ريال

Payment Details
Complete your order by providing your payment details.

Email:

Card Holder:

Card Details:

January 2024

Subtotal: 4.25 ريال
VAT (15%): 0.75 ريال
Total: 5.00 ريال

Place Order

COST ESTMITION



The total cost of the project is 3399.5 SR

PROTOTYPE DESIGN



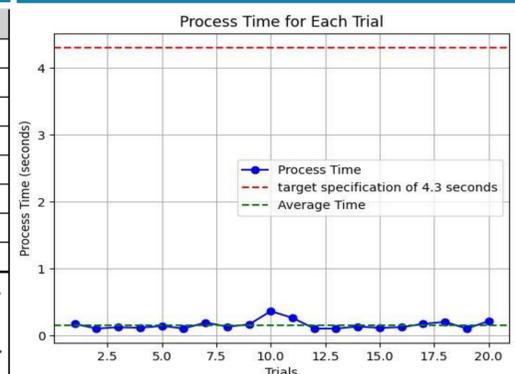
TESTING/ VALIDATION

BATTERY LIFETIME

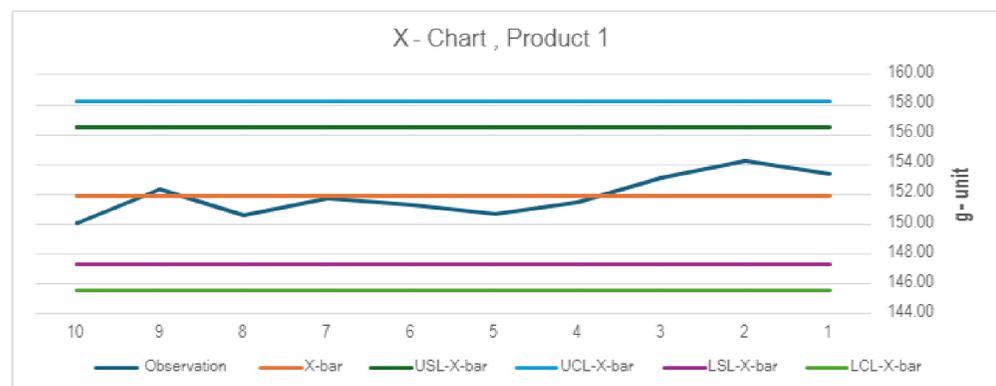
Component	Voltage (V)	Current (A)	Power (W)
Touchscreen	5	3	15
Raspberry Pi 4	5	3	15
Arduino	5	1	5
Weight Sensor	5.5	0.015	0.083
Ultrasonic (x2)	5	0.05	0.25
Raspberry Pi Cam	-	-	1.4
Barcode Scanner	5	1.3	6.5
Total			43.233

The specified battery must exceed 43.233 Wh in total capacity. A 12 V battery will be selected and regulated to 6V. Initially, the battery's capacity is 3.6 Ah, but it needs to be 9 Ah for 2.5 hours. Thus, a 12 V battery with a 9 Ah capacity meets the

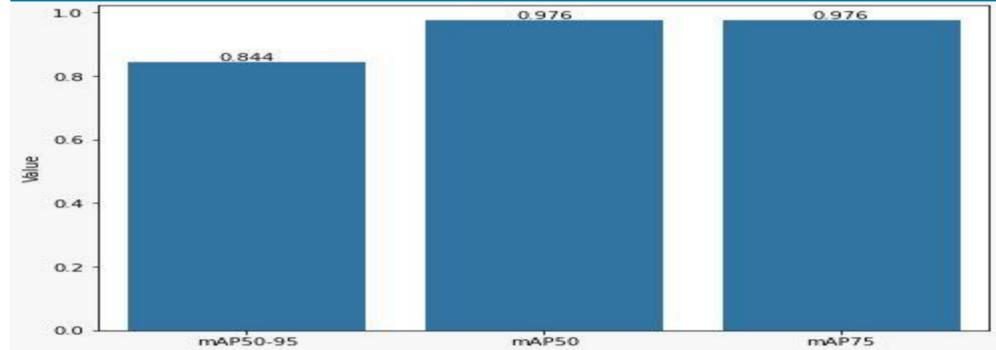
PROCESSING TIME



WEIGHT SENSOR PRECISION



TEST SET METRICS



TRAINING AND VALIDATION METRICS

