

HCI Phase 4: Smart shopping

Team Members: Rawan Walid, Rokaia Emad, Malak Mohamed, Farah Walid, Tarek Amr, Youssef Alaa

1. Evaluation Experiment:

- Users testing the system:
 1. The experiment was held on 9 users
 2. Age range of users 15-22
 3. 2 boys, 7 girls

- Usability Task:

The experiment was done on 2 scenarios using 3 different methods:

Scenario 1: Calculating time for users to choose from the circular menu using:

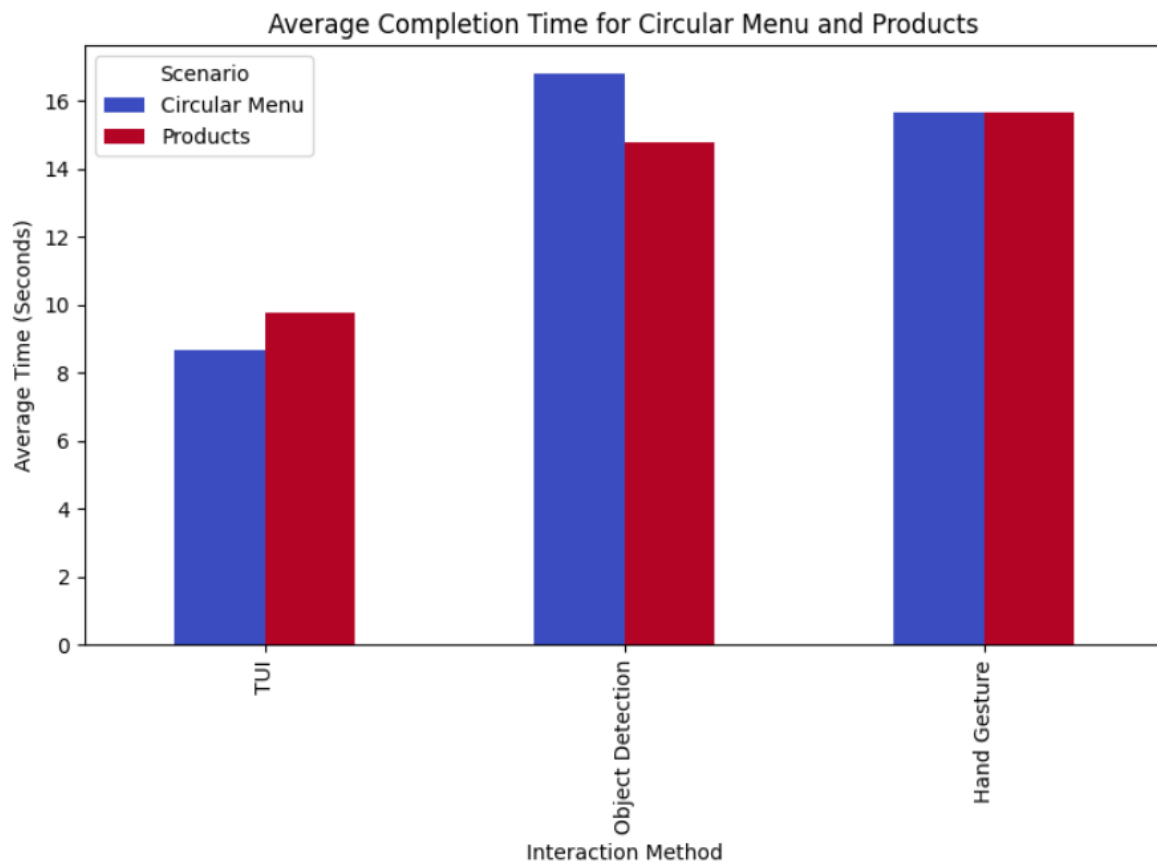
- Object Detection
- TUIO (marker)
- Gestures

Scenario 2: Calculating time for users to add/ remove from the cart using:

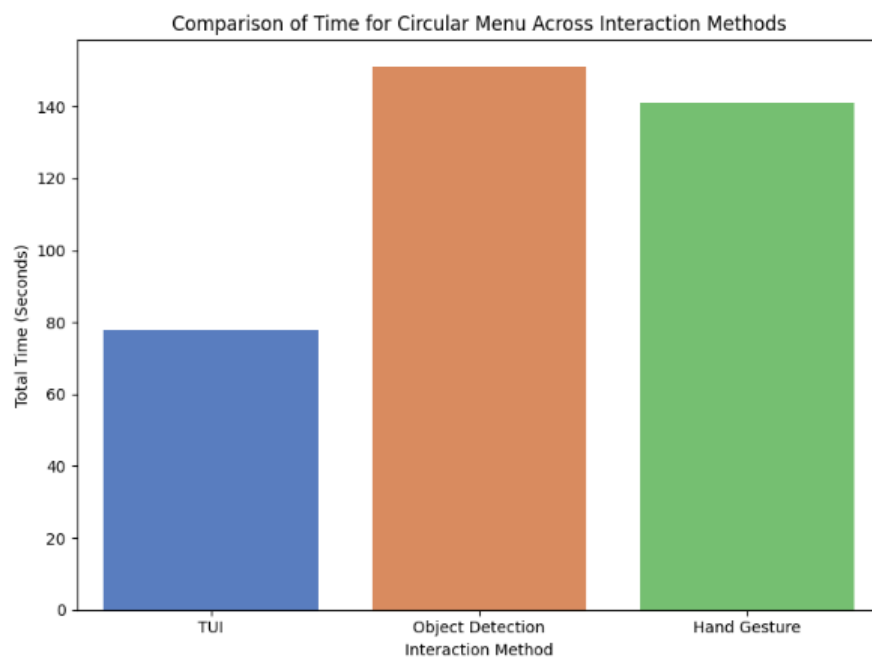
- Object Detection
- TUIO (marker)
- Gestures

2. Results of the Experiment:

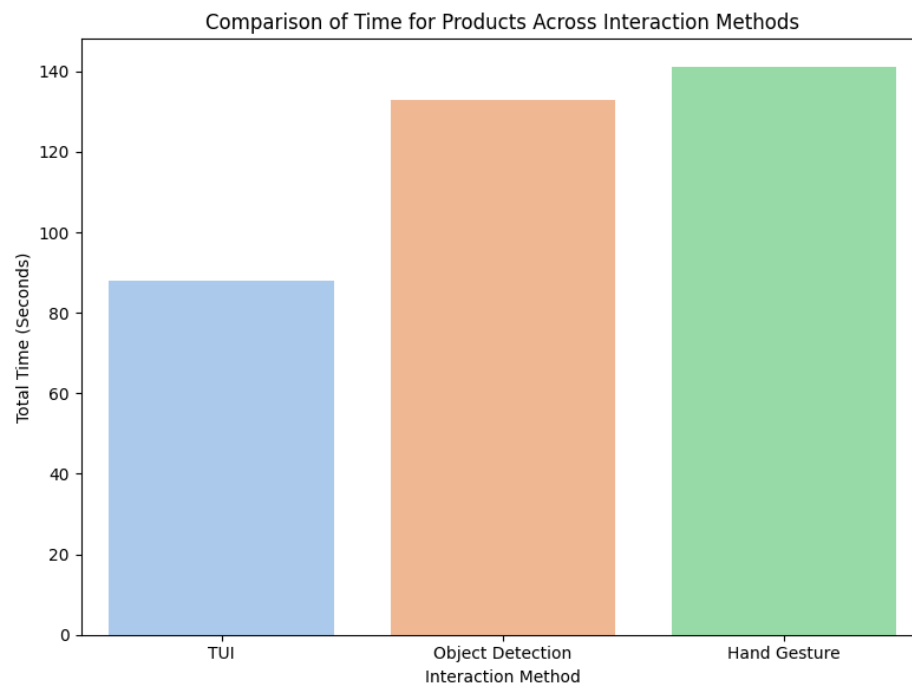
- Average completion time for circular menu and products:



- Comparison of time for circular Menu across interaction methods:



- Comparison of time for products across interaction methods:

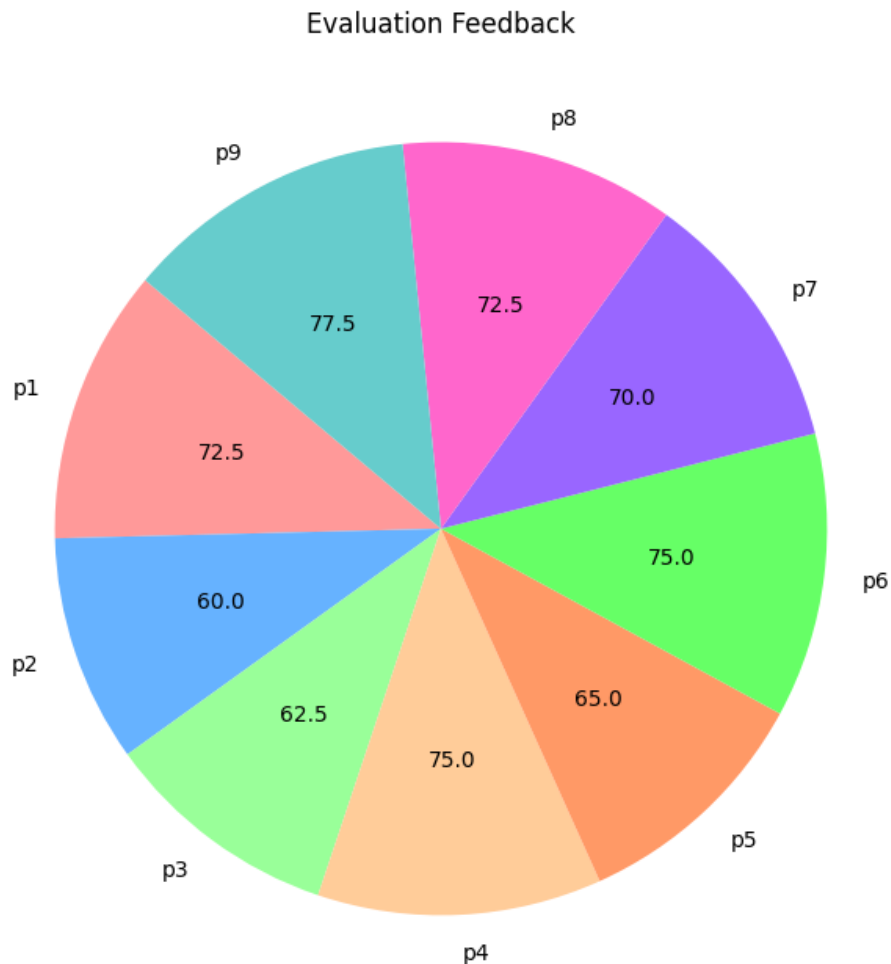


- Anova Single Factor results:

Anova: Single Factor						
SUMMARY						
Groups	Count	Sum	Average	Variance		
UserId	9	45	5	7.5		
TUI(page1) circular menu	9	78	8.66667	1.5		
TUI(page2) products	9	88	9.77778	3.94444		
Object Detection(page1) circular menu	9	151	16.7778	5.19444		
Object Detection(page2) products	9	133	14.7778	6.44444		
Hand gesture(page1)circular menu	9	141	15.6667	9.5		
Hand gesture(page2) products	9	141	15.6667	7.75		
Completion Time (Seconds)	9	727	80.7778	64.6944		
Number of Errors (how many times they got it wrong)	9	17	1.88889	0.36111		
ANOVA						
Source of Variation	SS	df	MS	F	P-value	F crit
Between Groups	40874.9	8	5109.36	430.206	1.4169E-57	2.06983
Within Groups	855.111	72	11.8765			
Total	41730	80				

3. Evaluation Feedback:

- We used the System Usability Scale (SUS) survey format to assess the system's usability. A total SUS score of 70 or higher is generally considered to indicate adequate usability. Based on the results:



- Scores above the threshold: Participants p1 (72.5), p4 (75.0), p6 (75.0), p7 (70.0), p8 (72.5), and p9 (77.5) achieved scores that meet or exceed the threshold, indicating good usability.
- Scores below the threshold: Participants p2 (60.0), p3 (62.5), and p5 (65.0) scored below the threshold, suggesting areas for potential improvement.
- Overall, the results indicate that most participants found the system to have **adequate usability**, though further investigation is recommended for

participants with lower scores to identify and **address specific usability challenges.**