Understanding Customers' Interests in the Wild

Soowon Kang, Auk Kim, Jemin Lee, Ikhee Shin, Uichin Lee @ KAIST

Motivation

- Offline stores have great difficulty gaining an insight into their customer interests and needs by analyzing customer behavior.
- Since various sensors produce a large amount of data, a method to analyze the data is required.

Research Goal

- Propose a framework to estimate customer interests by using various sensor devices.
- Investigate needs about real-time recommendation services based on customer interests.
- Discuss how to utilize the sensor data that describe customer status.

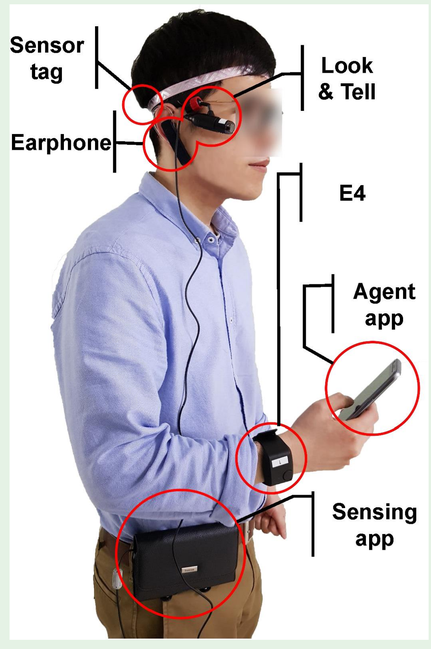
Framework Design | Customer interests analysis framework

Promising Scenario

Product showcasing,
Shopping assistance

Sensor data, Questionnaire,
Agent/customer interaction

Sentiment, Attention,
Interests



Sensor Data Collection and Analysis

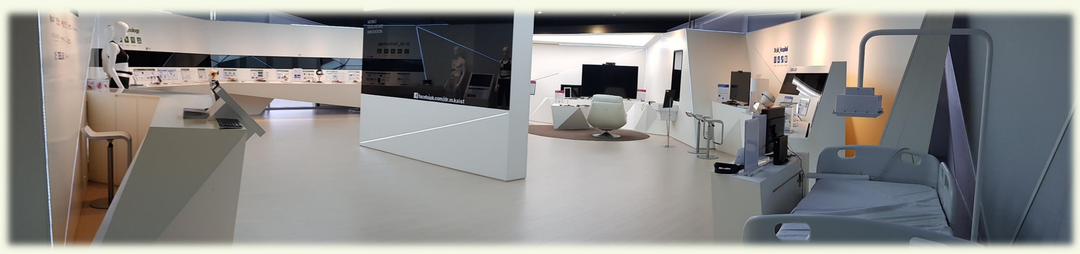
Device	Sensor	Signal
Smartphone, Sensor tag	Accelerometer, Gyroscope	Hand gesture, Head movement
Empatica E4	Accelerometer, *PPG, **EDA, Thermometer	Body movement, Physiological status
Look & Tell	Camera, Microphone	Gaze tracking, Voice recognition
CCTV	Camera	Motion tracking

* PPG: Photoplethysmography (heart rate validity), ** EDA: Electrodermal activity (skin conductance)

Pilot Study | Do people welcome recommendation services via their interests and needs?

Technology Showroom Environment

- Mimic a common in-the-wild offline store.
- Place 30 exhibits in circular order.
- Display each item with its short video clip.



Study Setup & Procedure

56 Participants (M:F=40:16), Mean age=23.07 (SD=4.29)

- The participants experience each product and answer a survey questionnaire.
- Each participant puts on the sensors and follows the guide from an agent.
- A smartphone app represents a virtual agent.

Sensor calibration

Audio guide,
Sensor data collection,
Interests survey

Post-interview

Results

- Greeted interest-based recommendation services. (80% answered "very satisfied" or "satisfied".)
- Preferred to collect data from a smartphone (85.2%) and smartwatch (72.2%).
- Allowed to provide location information only (68.5%).

Conclusion and Future Work

- People greeted the interest-based recommendation services, but they did not sacrifice privacy.
- In order to understand users, it is important to carefully consider what information they are reluctant to provide.
- Building a model to estimate customers' interests from the sensor data is part of our future work.

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