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|  | Botshop: Your personal A.I. assistant for all shopping |
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| 11/19/2016 | Motivating example |
|  | In their effort to help customers with their financial matters, banks shall provide their customers with BotShop. The same way that banks have financial consultants to help their customers with investing their money, BotShop serves as the personalized A.I. assistant for the day-to-day financial practices. Empowered by a powerful A.I. backend, an up-to-date geographical information, as well as the preferences and past practices of the user, BotShop is able to provide the customer with detailed information about nearby promotions, compare it with his needs and provide insights about the true value of these promotions. BotShop is the meeting point of IoT, BigData and smart personal assistants, where the data rich data enabled by IoT is processed to provide the customers with rich and profitable shopping experiences. |

Botshop: Your personal A.I. assistant for all shopping

Motivating example

Consider our valuable customer John. John is now in Eaton Centre shopping. The Geo-communications Beacon protocol will detect that John is in Eaton center and establishes communication with him. Once communications is started, BotShop will get in, communicating with John’ cloud where the A.I. engine is running. The A.I. engine knows that it is November already and winter has started. John’s smart closet at home will also notify the A.I. engine that John needs a winter coat. The A.I. engine also knows John’s current budget and how much he pays for winter coats o average. The A.I., being aware of john’s location and the nearby stores, will communicate with the stores and get what special promotions they have for winter coats. The A.I. engine will then decide which offers are worthy of John’s attention, and inform him of the nearby stores, how much is the discount, and how different is the price from John’s past purchases. One example of a message that we send is “Winter Coat is under 50.0% discount at Store W&V. This is 34% cheaper that what you normally pay. You are 250 away from your average budget for this category.”

# Architecture

Personalized information about promotions

(4) Historical Data processing and budget prediction.

(5) Needs estimation.

(6) Promotions processing

BotShop

A.I. Engine

(2) BotShop location update and Beacon ID to A.I. Engine

(1) Beacon to Phone communication

(3) Promotion Query

Promotions Live Database

Store Beacon

# Beacon Communication and Raspberry Pi

# Back-End

# A.I. ENgine

Historical Transactions Data

Machine Learning Prediction

(Gaussian Process)

IoT Data

Predictions and Promotions Processing

Live Promotions Data

## Operation:

1. Process the historical transactions data and make ***prediction*** about the budget for each category of purchases for next month.
2. Keep an estimate for the average price spent per category.
3. Keep an updated estimate of the total expenses for current month.
4. For each promotion, find whether the price for the promoted category will break the budget.
5. If not, find how the announced price compares to the average value the user used to spend before.
6. Finally send the message to the user with the personalized information about how the promotion, the predicted budget and the true savings the user is making based on his past purchases.

The following figures show the performance of our A.I. prediction engine.





