

Application of Image recognition to improve Customer Service

Team Name: MatchNow

Team Member: Chahat Jain & Shweta Agarwal

The Problem: In the services industry such as retail stores, bank branches, restaurants etc with increased competition the customers are becoming more price sensitive and less brand loyal. In case of a restaurant, competitiveness is significantly dependent on the restaurant's ability to proactively satisfy their customer needs. It is difficult to -

1. Identify the loyal customers from new customers instantly
2. Get holistic view of customer preferences and last orders at one place in real-time
3. Capture customer emotions in real-time to provide personalized service

The Solution: We aim to develop an intelligent image recognition system as a tool for enhancing personalized customer relationship. Top features of the tool are following-

1. Recognize the customer as New or Existing
2. Recognize emotion of the customer entering the restaurant, allowing receptionist and table attendant to attend the customer accordingly
3. Fetch and generate all information of the customer for whom match has been found
4. Send all customer information to the table attendant assigned, enabling him/her to give food suggestions / services as per customer's preferences

Use case scenario:

- As the customer enters a restaurant he/she meets the receptionist to get the table
- The receptionist will press the button on her dashboard to capture the customer's image and match it with all customers' record in near real-time to identify the customer as NEW or EXISTING (pre tagged as Priority, Frequent or General customer)
- All customer information will be populated on the receptionist's dashboard and the receptionist will accordingly assign the 'table attendant' mapped to the tagged customer
- The receptionist will send all information including the emotion of the customer via link to the table attendant
- Table attendant can click the link to view the customer information on his device to engage with the customer

Advantage: This solution is designed to develop strong connections with customers by providing them with information directly suited to their needs and interests and by promoting faster and open communication. It *well suited for any services industry* where customer relationship is important. Also customer data can be shared at partner chains through sign-ups, to provide additional offers from face matching to the registered customers.

Privacy & Security: To avoid privacy issues it is important to ask the first time customers visiting the restaurants to sign-up /opt-in for face matching services to get personalized services and offers. For security purposes the customer data populated and shared over link should be done only on company internal secured devices.

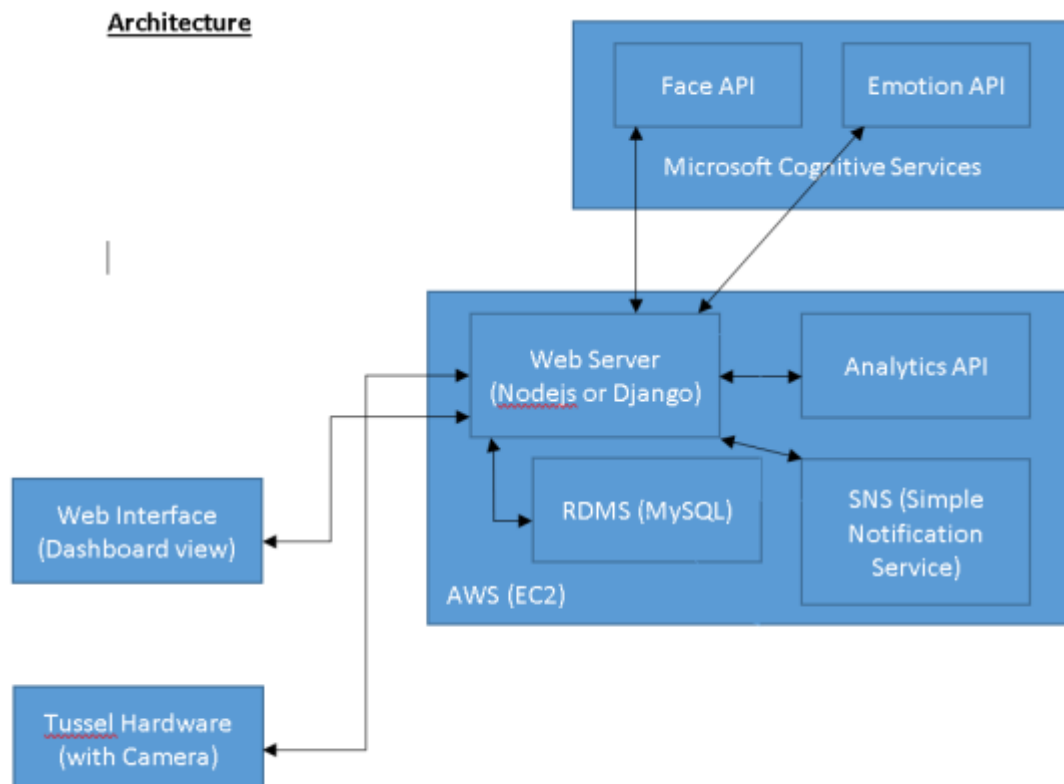
Why not identifying customer using RFID or polling Mobile phone using beacon technology?

The reason being with photo matching we can eliminate the dependency of identifying the customer from physical devices. The image recognition is one of the most reliable ways to identify the high priority customers.

Technologies to be used:

1. Image Recognition API
2. Emotion API
3. Tessel
4. Camera (IoT device)
5. AWS for web server (web service & database)

Following is the architecture of our Tool. Various modules have been listed in detail in the technology demonstration document.



Implementation plan: There several open source APIs available in market. During the course of the project we have evaluated and identified Microsoft Cognitive Services API (Face and Emotion API).

Microsoft Cognition API: <https://www.microsoft.com/cognitive-services/en-us/face-api>



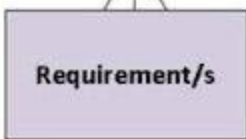
WEBSERVER & DATABASE MANAGEMENT SYSTEM: AWS

CUSTOMER 360 DEGREE PROFILE: Web Interface

Skill sets: Java, JavaScript, Web Services/API, Python, HTML, SQL, Product Design & Development, Machine Learning, R.

Risks:

- (a) Successfully integrating all the different components of our solution.
- (b) Able to strengthen our face emotion analysis, along with predictive analysis of a customer visiting restaurant.
- (c) Develop user interface with smooth user experience.

Complexity	Artifact	Information Captured	Participants	Lifecycle Approaches
Simple <i>Conceptual Level</i>		<ul style="list-style-type: none"> • Users • Scenario • Expectation 	<ul style="list-style-type: none"> • End User • SME • BA 	Agile & Waterfall
More Complex <i>Functional Requirement</i>		<ul style="list-style-type: none"> • Users • Preconditions • Behaviors / Events • Alternative Paths • Failure-conditions • Post-conditions 	<ul style="list-style-type: none"> • End User • SME • BA • Architect • Lead Developer 	
Detailed <i>Technical Requirement</i>		<ul style="list-style-type: none"> • Description (include reference to User Story / Scenario and Use Case) • Events / Process Flow • Data Definitions • System Information • Performance • Test Case • Failure-recovery • Post-conditions 	<ul style="list-style-type: none"> • SME • Architect • Lead Developer 	Waterfall
Copyright 2012 Semantech Inc.				