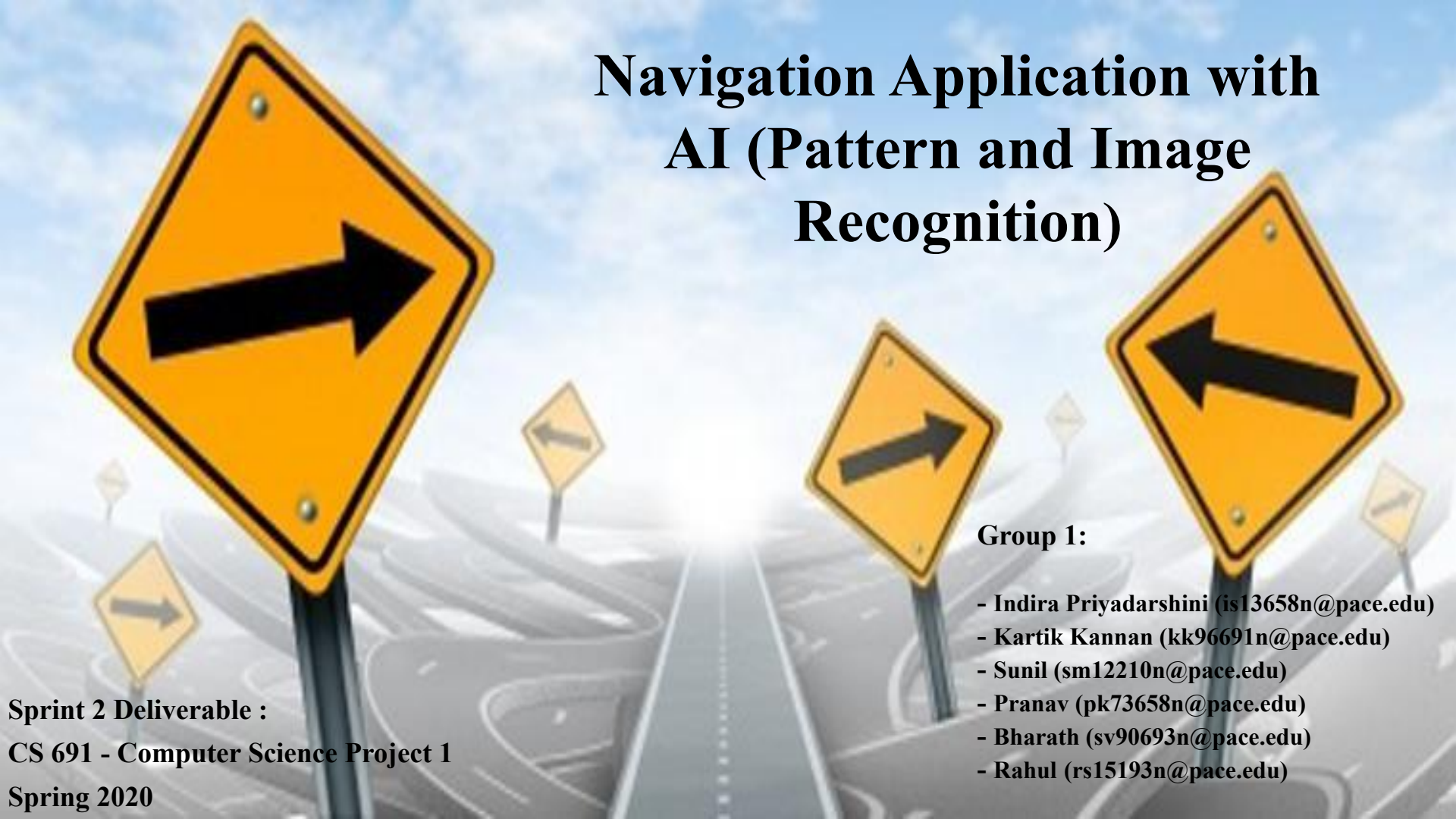
Navigation Application with AI (Pattern and Image Recognition)



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Sprint 2 Deliverable :

CS 691 - Computer Science Project 1

Spring 2020

Introduction

- Initially instant location recognition with an app - Location or scan interface with visual recognition and voice over.
- Identifying the locations and recommendations.
- Combining image classifications and deep learning on how the process works.
- Gathering images.
- Create a database that has - Information about the location selected like place, timing, season, travel fare (coupon, entry tickets, offers), location (by all means possible), search engine (advanced options like near to pier, downtown), other recommendations,reviews and feedback.
- On selecting the location.
- User interface has been created for login, signup and contact page.

Amazon Rekognition:

- Amazon Rekognition makes it easy to add image and video analysis to your applications using proven, highly scalable, deep learning technology that requires no machine learning expertise to use.
- With Amazon Rekognition, you can identify objects, people, text, scenes, and activities in images and videos, as well as detect any inappropriate content.
- Amazon Rekognition also provides highly accurate facial analysis and facial search capabilities that you can use to detect, analyze, and compare faces for a wide variety of user verification, people counting, and public safety use cases.
- With Amazon Rekognition Custom Labels, you can identify the objects and scenes in images that are specific to your business needs. For example, you can build a model to classify specific machine parts on your assembly line or to detect unhealthy plants.
- Amazon Rekognition Custom Labels takes care of the heavy lifting of model development for you, so no machine learning experience is required. You simply need to supply images of objects or scenes you want to identify, and the service handles the rest.

Amazon Rekognition

Deep Learning-Based Image Recognition Service

search, verify, and organize millions of images

Object and Scene Detection

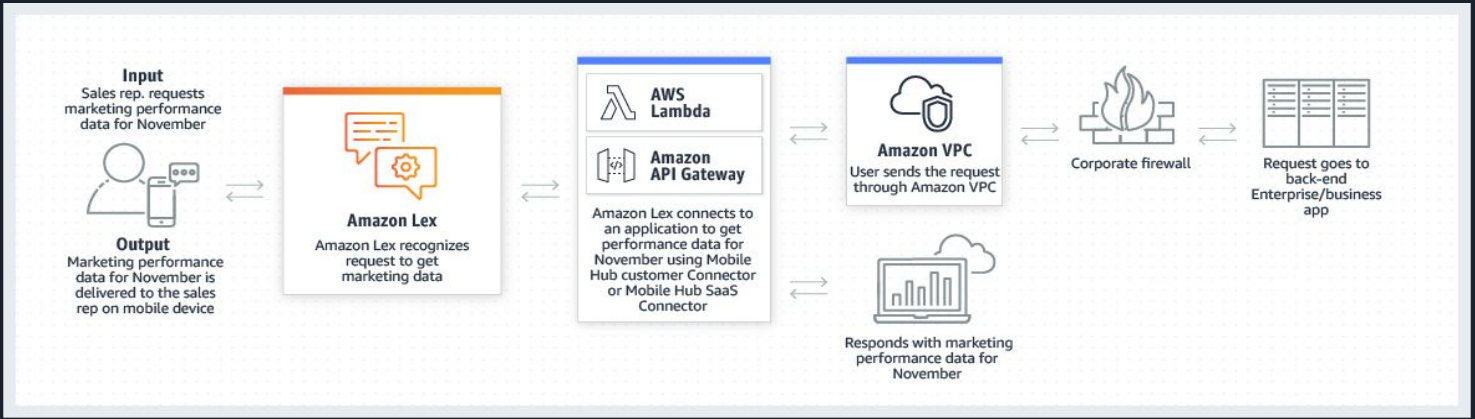
Facial Analysis

Face Comparison

Facial Recognition

Amazon Lex:

- Amazon Lex is a web service that allows users to include conversational interactions of voice and text in the software applications.
- It is a web service, which uses the technology that powers Amazon's virtual assistant Alexa. Lex uses automatic speech recognition to convert speech to text, natural language processing to understand spoken instruction and user intent. Similar to many AI devices work like Alexa, OK Google, Hey Siri,
- In our web app also an user will speak a word or a sentence and accordingly it will will give results. For example, if a user says Yankee Stadium on our web app, it will provide user with all the essential information and relevant pictures of the Yankee Stadium.



User Story

- If a person from Los Angeles visits New York to attend a game of soccer between New York City vs LA galaxy at Yankee Stadium, instead of him searching and asking people about the directions and important information about the stadium, he easily says Yankee stadium into our web app and it will easily provide user with all required information about the same.

Natural Language Processing

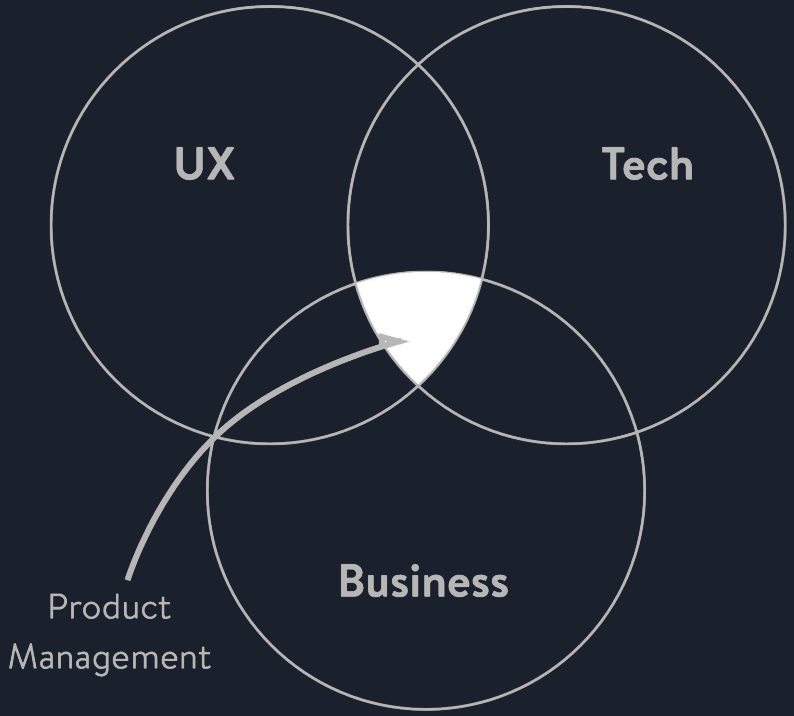
Natural Language Processing, usually shortened as NLP, is a branch of artificial intelligence that deals with the interaction between computers and humans using the natural language. The ultimate objective of NLP is to read, decipher, understand, and make sense of the human languages in a manner that is valuable.Natural language processing (NLP) is a subfield of computer science and artificial intelligence concerned with the interactions between computers and human languages, in particular how to program computers to process and analyze large amounts of natural language data. The tasks in using NLP are:

- **Content categorization:** A linguistic-based document summary, including search and indexing, content alerts and duplication detection.
- **Topic discovery and modeling:** Accurately capture the meaning and themes in text collections, and apply
- **Contextual extraction:** Automatically pull structured information from text-based sources.
- **Sentiment analysis:** Identifying the mood or subjective opinions within large amounts of text, including average sentiment and opinion mining.
- **Speech-to-text and text-to-speech conversion:** Transforming voice commands into written text, and vice versa.
- **Document summarization:** Automatically generating synopses of large bodies of text.
- M**achine translation:** Automatic translation of text or speech from one language to another.

MVP (Minimum Viable Product)

1. DO -Scan the picture and navigate with useful information
2. PLAN - Clone the Google API with required information in mobile application
3. DELEGATE- Consider third-party permitted applications
4. ELIMINATE - Remove multiple web pages and make it user friendly.

MVP (Minimum Viable Product)



Product Backlog

SPRINT 2	Module	Priority	Issues Encountered	Status
Task 1	Image Collection with name tag	High	None	Completed
Task 2	Sign up and login page	High	Coding	In Progress

Test Cases

Cases	Acceptance Criteria
As a User who has an account for the website: As a logged-out user, the user wants to be able to sign in to a website. So that I can find access it through his profile. System user signs in with valid credentials. When the user fills in the “Username” and “Password” fields with my authentication credentials and clicks the Sign-In button Then the system signs the user in.	To ensure the application user is able to: - Navigate through the login page -To login and logout on demand
As a website user: As a website user, if the user wants to submit feedback regarding the website or the application. So that the website owners can consider the opinion or concern of the users who use the application, during future website updates and bug fixes.	To ensure the application user is able to: -Navigate through the website to find the feedback option -Write out feedback and to send it to the website owner.
As a website user: As a website user, the user wants to have an option of creating an account to use the application with a better user experience. So, the website provides a sign up option on the login page through which the user can create an account, with a unique username and a password. The user uses his login credentials which were created at the sign up page, to login and use the application.	To ensure the application user is able to: -To be able to create an account using sign up page -To be able to use login credentials created with the sign up page

Acceptance Criteria: Description

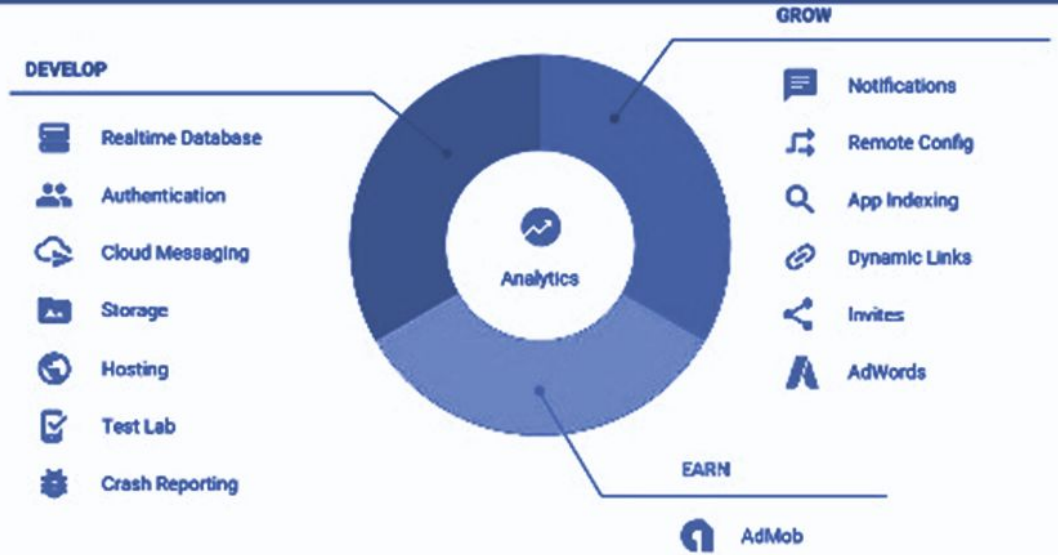
- **Acceptance criteria (AC)** are the conditions that a software product must meet to be accepted by a user, a customer, or other system.
- **Feature scope detalization:** It defines the boundaries of user stories. They provide precise details on functionality that help the team understand whether the story is completed and works as expected.
- **Setting communication:** Acceptance criteria synchronize the visions of the client and the development team.
- **Feature estimation:** Acceptance criteria specify what exactly must be developed by the team. Once the team has precise requirements, they can split user stories into tasks that can be correctly estimated.
- **Streamlining acceptance testing:** AC are the basis of the user story acceptance testing. Each acceptance criterion must be independently testable and thus have a clear pass or fail scenarios.

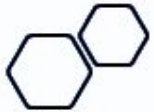
Test Cases

Sl. no	Description	Status	Priority
1	Make content Searchable	In progress	High
2	Flag Inappropriate Content	In progress	High
3	Enable Digital Identity	In progress	High
4	Quick responses to safety	In progress	High
5	Identify Products and Landmarks	In progress	High
6	Analyze patterns	In progress	High

What is Firebase?

Realtime Application Platform





- Firebase is a mobile and web app development platform that provides developers with a plethora of tools and services to help them develop high-quality apps, grow their user base, and earn more profit.
- Firebase Services can be divided into two groups:

Develop & test your app

Realtime Database
Auth
Test Lab
Crashlytics
Cloud Functions
Firestore
Cloud Storage
Performance Monitoring
Crash Reporting
Hosting

Grow & Engage your audience

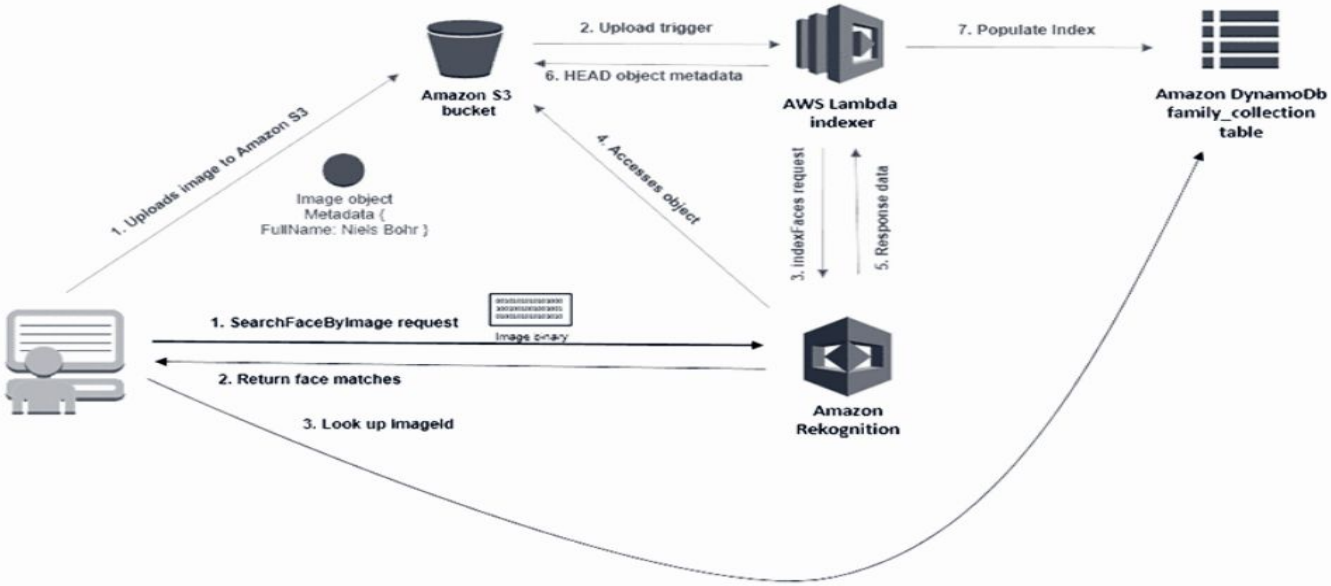
Firebase Analytics
Invites
Cloud Messaging
Predictions
AdMob
Dynamic Links
Adwords
Remote Config
App Indexing

Technologies Used

How it works

The following figure shows the application workflow. It's separated into two main parts:

- **Indexing** (blue flow) is the process of importing images of faces into the collection for later analysis.
- **Analysis** (black flow) is the process of querying the collection of faces for matches within the index.



Schedule

DELIVERABLE 1	STATUS	TIMELINE	DATE
Project Name/Info	Done	Feb 14- Feb 19	Feb 14
User Stories	Done	Feb 14- Feb 19	Feb 16
Technolgies	Done	Feb 14- Feb 19	Feb 14
Deliverable 1 PPT	WIP	Feb 14- Feb 19	Feb 19

DELIVERABLE 2	STATUS	TIMELINE	DATE
Test Cases	In Progress	Feb 24- March 11	Feb 26
Updates/Other Criteria	Done	Feb 24- March 11	March 2
Product Backlog	Done	Feb 24- March 11	March 7
Deliverable 2 PPT	Done	Feb 24- March 11	March 12

DELIVERABLE 3	STATUS	TIMELINE	DATE
Prototype Design		March 13- April 16	March 18
Initial Web App Design		March 13- April 16	April 24
Final Requirements		March 13- April 16	April 4
Deliverable 3 PPT		March 13- April 16	April 16

DELIVERABLE 4	STATUS	TIMELINE	DATE
Final modifications		April 16 – May 14	April 20- May 14
Uploading the source code		April 16 – May 14	May 4
MVP		April 16 – May 14	May 4
Deliverable 4 PPT		April 16 – May 14	May 14

Retrospective

What went well	Votes
Team collaboration went well	6
all the team members are aware about goals of the project and know their roles and responsibilities	6
gathered pictures,resources and requirements related to our porject	4
initially started working on building User interfaces.	3

What could've been better	Votes
we should try to get more resources and information that would be helpful for our project.	2

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