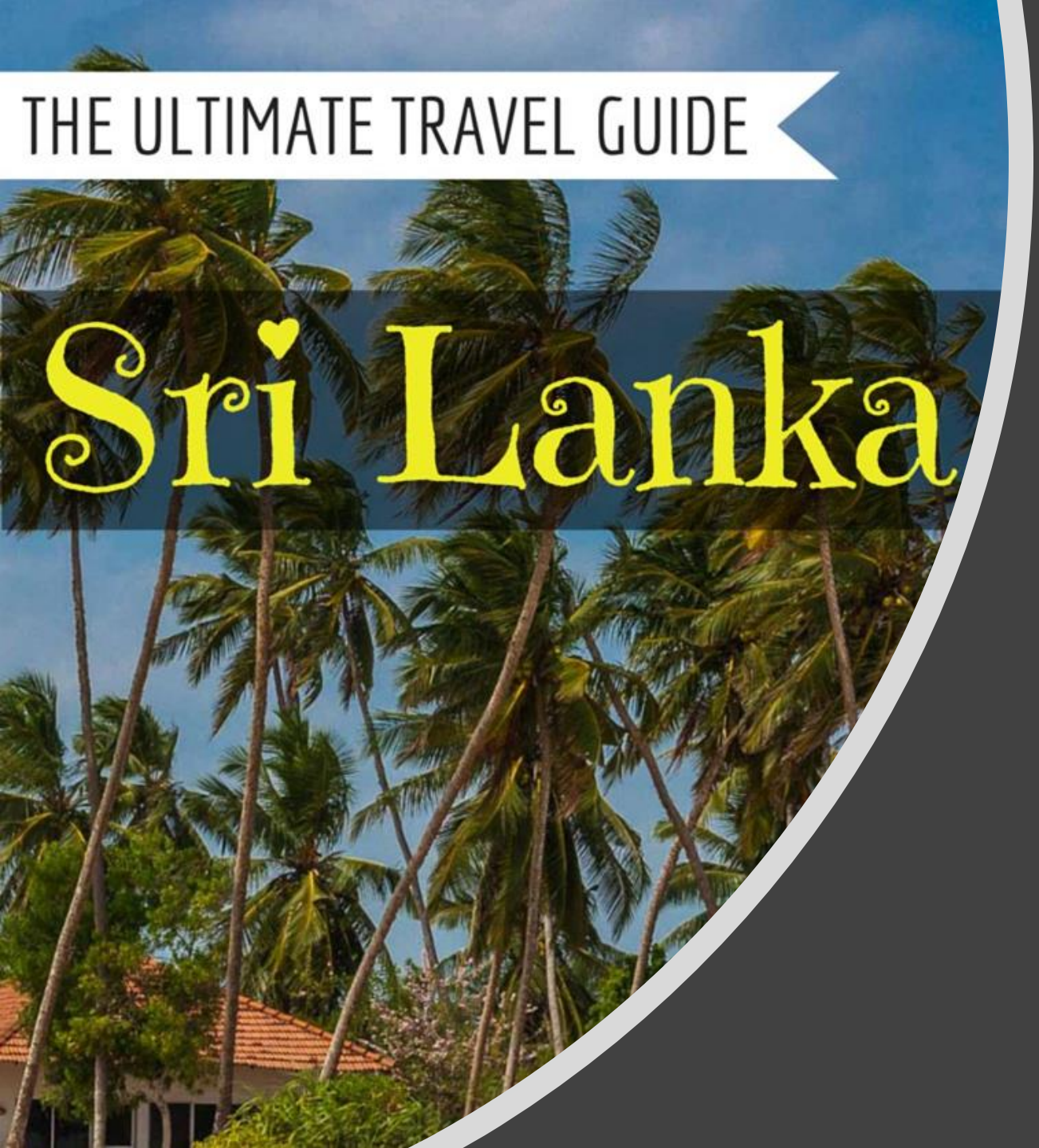


TourGuru

Project Proposal Presentation

Group : 19-018
Supervisor : Ms Asanthika Imbulpitiya
Co-supervisor :Mr.Nuwan Kodagoda

Contents

Contents

Introduction

As a very important area tourism produces a major income to a country. As local people we organize tours to visit religious places, natural wonders and various businesses.

If we consider a tourist from a foreign country whenever needed to know locations to visit, he/she needs to relies on local people or internet-based applications. Even then most important information may be lost or even misled.

To approach this challenge, our target is on an internet based smart phone solution. They access maps and their current location through the mobile applications. But they are unable to know the important places nearby and their information in Sri Lanka from these solutions.

Overall Description

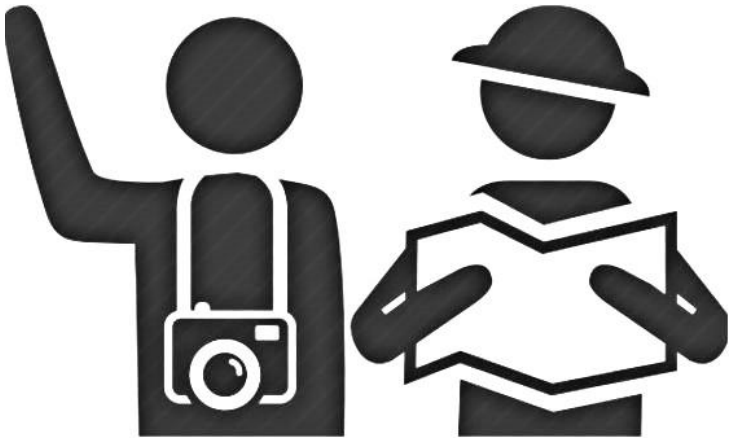
- Target Users
- Benefits and advantages

Target users

- Tourists
- Drivers
- Local travelers
- Guides

Benefits and advantages

- Able to navigate without any hassle.
- Quickly get to know places of interest with narrations.
- Finding the best path for your desired destination.
- User friendliness of walk and driving modes.
- The use of crowdsourcing to improve applications usability.



Research Gap

Features	TourGuru	Roadtrippers	Toureazy	Tour Buddy	සිංහලංකා AR
Intelligent Trip routing (automatic route creation)	✓	✓			
Trip editor (Add or update custom places)	✓	✓			
Categorize locations (monuments places, restaurant etc)	✓	✓			
Map Filters	✓	✓			✓
Shared user activity	✓	✓		✓	
Traffic management	✓			✓	
Narrations or alerts on point of interest	✓		✓		
Waypoint management	✓	✓			✓
Collaborator management	✓	✓			
Distance slider for radius adjusting (proximity alert and activation)	✓	✓			
AR object madling	✓		✓	✓	✓
Identification location (using AR. location means historical places and important building).	✓				

Technologies

This native app will be built through Flutter and Dart language.

Google Map Cloud API or alternative Application Programming Interface integrated for location-based information identification and creation.

- Natural Language Understanding to get the question idea.
- Natural Language Processing in Machine Learning to Summarize narrative content.

Research Areas

eSociety Research Area

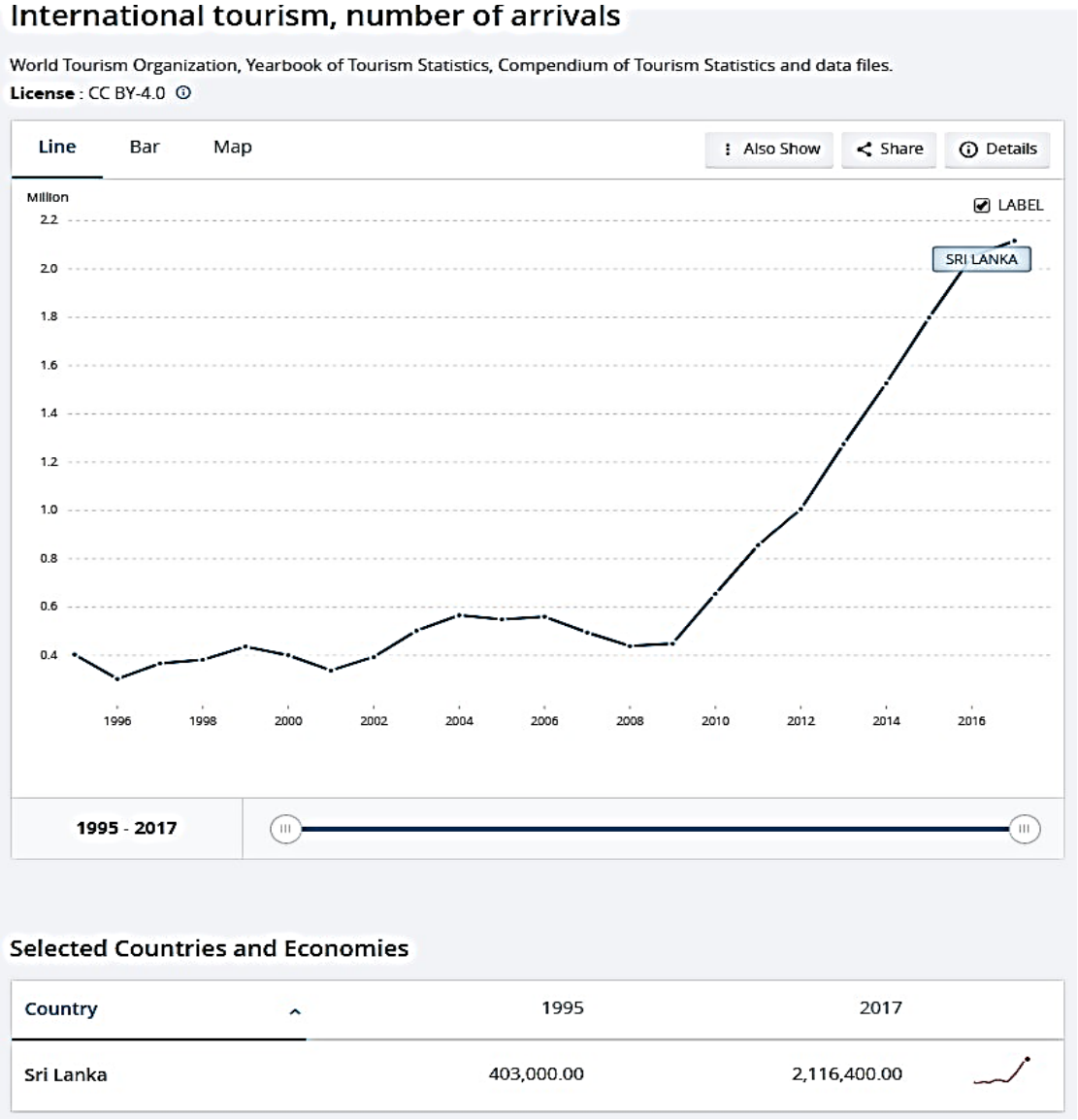
Augmented Reality

Machine Learning

Cloud Computing

UX/HCI Evaluations

Market capability

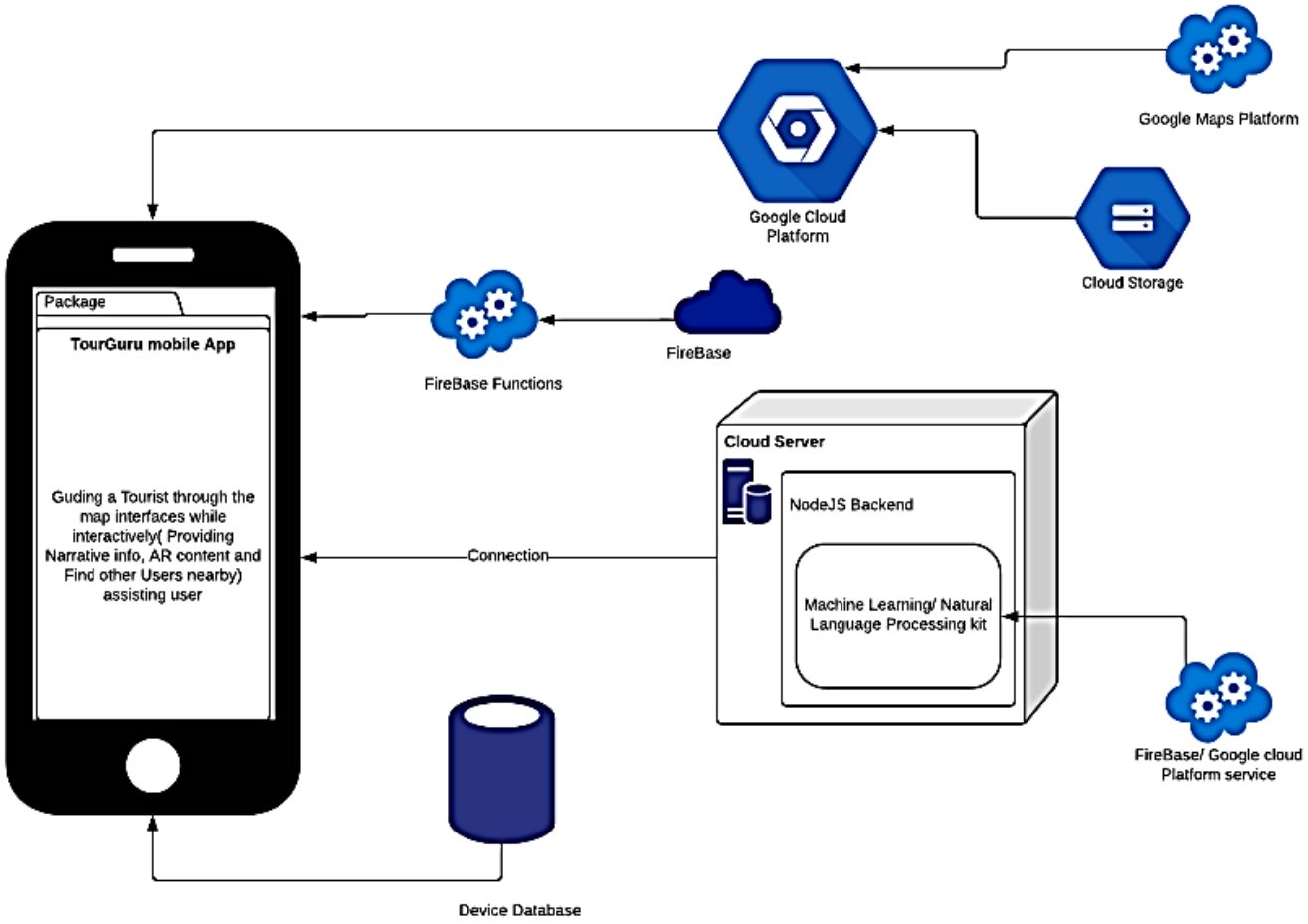


As the number show in this left figure, tourism is undeniably one of major industries. There are many major players like Acme Lanka (Pvt.) Ltd, Andrews Travel Service Ltd, Anton Jayakody Travels (Pvt) Ltd, Columbus Tours (Pvt) Ltd. Etc.

Over these near 8 years income progressed from .5 Million to 2.2 Million. In this current situation as a new market it is very wise to implement solutions that attracts many users.

Feasibility

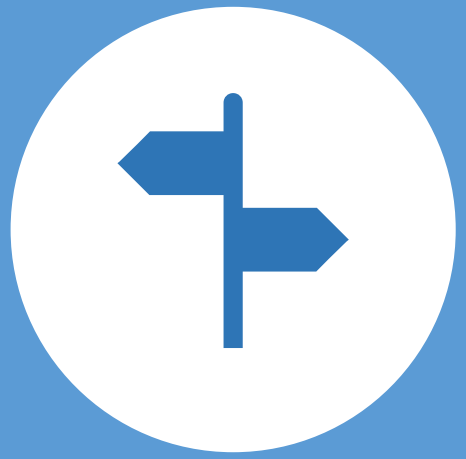
As our software architecture figure in right side it is safe to say the feasibility for implementation is very high.



There are no region restrictions for any of these services. With the capability to market this mobile software these services may provide very convenient upgrades as we go on.

Core of the App

Core app is an Android and IOS mobile application with the user guiding through Map Interfaces, Narrations and assisting user by Question Answering and by connecting them with nearby tourists with our app.



Intelligent Route Mapping

R.D.T.N.Rajarathna

IT16003538

MACHINE LEARNING

CLOUD COMPUTING

Research Area & Technologies

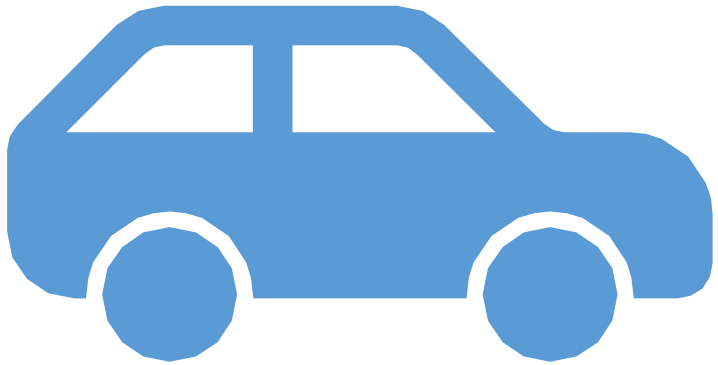
Problem and Solution

Problem

- Applications are not supported for walk/drive modes creatively.
- It is difficult to find best routes without user collaborations.

Solution

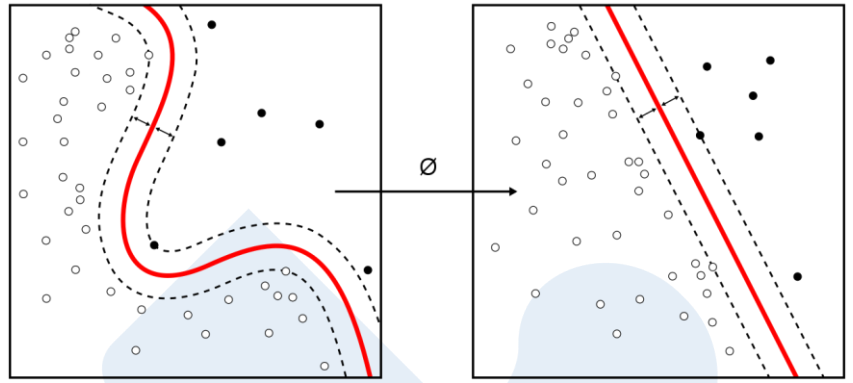
- We use walk, drive modes with better efficiency.
- We use machine learning methods for track routes with users collaboration.
- Using cloud storages to maintain data gathering and evaluation.



Maps Interfaces with Drive/Walk modes

- To guide user with intelligent interfaces
- Routes generation done by user flagged/ favorite places and predicted routing for another user
- In walk mode user will be able to hear more information and interact with many functions
- In drive mode quick proximity alerts for less interactivity.

Knowledge Gap



- Online map-matching based on Hidden Markov model for real-time traffic sensing applications[1].
- We focus on the traveling salesman problem (TSP) and train a recurrent network that, given a set of city coordinates, predicts a distribution over different city permutations[2].

[1]C. Y. Goh, J. Dauwels, N. Mitrovic, M. T. Asif, A. Oran and P. Jaillet, "Online map-matching based on Hidden Markov model for real-time traffic sensing applications," 2012 15th International IEEE Conference on Intelligent Transportation Systems, Anchorage, AK, 2012, pp. 776-781.

URL:http://ieeexplore.ieee.org/stamp/stamp.jsp?tp=&arnumber=6338627&isnumber=6338591

[2] Neural Combinatorial Optimization with Reinforcement Learning .Bello, Irwan; Pham, Hieu; Le, Quoc V.; Norouzi, Mohammad; Bengio, Samy

Location Crowdsourcing and Proximity Narrations

M.S.B.W.T.M.P.S.B. Thennakoon

IT16160262

Research Problem

- In Sri Lanka, there are Map Based Mobile Applications for Proximity narrations on the nearby attractions.
- Screen interaction not appropriate while in the driving mode and should not have much Driver Interaction

Storytelling like Narrative expeiene in tour guidance

Solution

- Proximity storytelling like guidance alerts will passively alert user and notify tour change or near place update
- Crowdsourced information will be used to update future users about these sourced data/ location information's
- Narrations will be activated for updated database by the crowdsourcing.
- Assisting Driving tourists with quick narration in the map interface drive mode

Knowledge Gap

TripAdvisor: Recommendation Agent[1]

Classification And Regression Trees(CART) used to review social media posts done by Tourists to select Consumer Preference rather than Crowdsourcing

Intelligent Tourist Attraction System[2]

Bayesian Model utilized to get the probability of tourist attraction modelled by an EBM model.

[1] Mehrbakhsh Nilashi , Othman Ibrahim, Elaheh Yadegaridehkordi, Sarminah Samad, Elnaz Akbari, Azar Alizadeh : Travelers decision making using online review in social network sites: A case on TripAdvisor

[2] Fang-Ming Hsu, Yu-Tzeng Lin, Tu-Kuang Ho: Design and implementation of an Intelligent Tourist Attractions System (ITAS) for tourist attractions: The integration of Engel–Blackwell–Miniard (EBM) model, Bayesian network and Google Maps

Comparison

- Toureazy — Only for Location Alert about notifying user reaching the Point Of Interest(POI) and providing their AR content which is limited.
- Roadtrippers — Crowdsourcing locations for, on-route discovery rather than generating location information
- TourBuddy — AR based solution with Traffic Management,

Research Areas

- Software Engineering: Cross-Platform Mobile Application
- Cloud Computing: Text summarization, creating narratable content done in a deployed cloud backend(Baas)
- Cloud Database: Crowd-Sourced database should be 24/7 available
- Natural Language Processing with Deep Learning(Subset of Machine Learning)

Using AR to identify a location, monument, ruins and other attractions

M.P.D.S.M kumara

IT16117488

Research Area

Augmented Reality (AR)

Research Problem and Solution

Tourists can not feel ancient monuments, ruins so we can use Augmented Reality(AR) based solution for this problem

Augmented Reality (AR)

- The user can hold the device towards the general direction of a certain monument and the app will show some AR content related to that monument.

  Eg: Object Model, historical references, special attributes, images

- Location information (Historical, Attributes, Queried information …etc..) will be processed for identified place/monument.
- The AR content will be displayed on the mobile device by the user choosing(object image 3D,2D)

3D model Constructor

- Collect the details via history books and imagine the kingdom.
- Create the sketch of 3D models
- Then create fully completed 3D Models and export to Unity. Authors propose Unity3D for create mobile interface and integration 3D models into real environment

Q & A(question and provide answer)

One of most important features that is at the core of the application is that it will be able to identify the users question content and provide answer content

Q&A

This component will use Natural Language Understanding to process user's question and separate its important phrase and querying it to get the answer from well-known online databases/sites. (Wikipedia, Google etc.)

UX Testing

This component will look into Testing the UX using HCI evaluation techniques and using them to improve the user interface.

Ways of Conducting HCI evaluations

- **Formative**
- Check functionality
- Requires small amount of users

- **Summative**
  - real life use
  - User satisfaction
- E.g.: heuristic evaluation:
- assessment of digital experience to identify usability issues
  - which conflict with known practices

Ways of Conducting HCI evaluations

- **Behavioral**
- Observing user behavior
- **Attitudinal**
- Self-reported by users
- **Quantitative**
- Usability tests
- **Qualitative**
- field study(observe user behavior)
- survey

Ways of
Conducting HCI evaluations

- **Controlled environment**
- focus groups
- lab usability test
- interviews
- **Contextual environment**
- remote usability test
- field studies
- video studies
- Intercept studies

Adding a social network aspect to the app

- Mine data from users depending on their permissions.
- Create a platform for users to interact


THANK YOU