WanderLust: A Virtual Tour Assistant

Capstone Project Proposal

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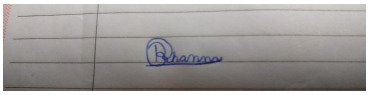
Mentor Consent Form

I hereby agree to be the mentor of the following Capstone Project Team

Project Title:		
Roll No	**Name**	**Signatures**
101803022	Kashish Tayal	
101803031	Rachit Khanna	
101803029	Aditi Dona	
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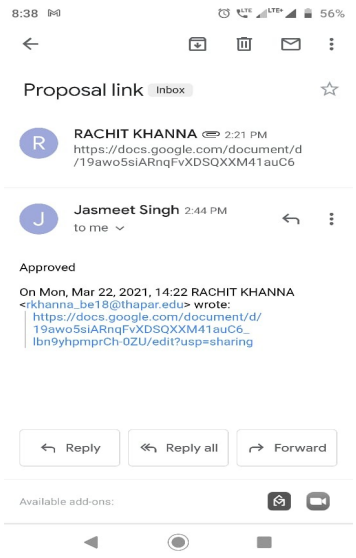

Project Overview

The introduction of smartphones has made a significant impact on the lives of the people leading to major improvements in mobile application developments during the past few years. These days' mobile phones are used to provide numerous functions in addition to conventional voice communications. The capabilities of smartphones enable the location-based augmented reality services a reality .Nowadays tourists expect to get personalized access to tourism information at any time, from anywhere through any media. There is a need of advancement in the field of Tourism and this need is fulfilled with the help of automated tourism guides.

Mobile tourism guides provide the user with such ubiquitous access . With the advancement of technology, mobile devices have made it easier to access information anytime, anywhere. The trend is to replace the printed tour guides with mobile applications. Travelers tend to use such mobile applications due to the convenience they present over conventional guide books. Mobile Tourism guide will reduce the job of the tourist guides and tourists can access all the functionality accomplished by the tourist guide on their mobile phone.

- Creating an App for online tourist guide that will have the facility of customized tourist package selection, one stop solution for transport facilities - road, air, ferry, shipping services.
- It will also have information about upcoming local tourist attractions and unexplored facts about the islands.
- It has an inbuilt translator which helps the travellers to read or listen to what the locals are speaking in their desired language and help them to understand better about the place in their Native Language.
- Application will contain customer help service chatbot along with the customer care support(if required).
- It will also contain Tourist safety measures for their personal Safety from the frauds and emergency call option.
- It will contain all your travel experiences and you can store your memories which can only be seen by you.

Problem Statement

To Design and Construct a Virtual Tour Assistant it reduces the need for a personal Tour Guide by analysing the needs of tourists and combining it into a single mobile application. This revolutionary application will be able to fulfill all the requirements starting from planning a tour to providing various facilities required while travelling like hotels, restaurants, shopping places etc. It will also provide features like storytelling, translator and secret tips etc. which reduces the need of a Tour Guide and hence saves money as well as feel safe as Application is more Trustworthy.

Need Analysis

Travelling involves a great deal of planning and careful coordination. There is a compendium of information you need at your fingertips to make sure things go according to plan. But as a busy business owner, do you really have the time to plan your travel?

We have many mobile applications who are involved in travel planning full time for many years. Closely analysing a few travel booking portals like MakeMyTrip, EaseMyTrip, Goibibo and others, we found out the following services being provided by them:

1. Domestic and international flight booking services.
2. Hotel reservation services.
3. Fully pre-planned holiday packages.
4. Transport reservations like rail and bus ticket reservation services.
5. Customer Support services

Following are some shortcomings realised in the portals after the above analysis:

1. None of the portals fulfill all the requirements of a user while planning a holiday.
2. The Holiday packages available are pre-planned and are not customised according to the user's interests and likings.
3. None of the portals provide location specific information like locally famous dishes and where to find them, local shopping markets etc
4. None of the portals provide tourists with a real-time language translator. Language barrier causes an immense amount of discomfort to tourists.
5. None of the portals have the feature of providing more information about the things the tourists see on the tourists sites, like translate an ancient text, understand the history behind the painting etc by extracting information from the picture the user clicks.
6. None of the portals have integrated a feature which could provide emergency care to tourists in case of need. Tourist safety is an area of major concern.

We therefore need a one stop solution for all the aforementioned problems. That's where our travel assistant comes into play, we plan to remove the above shortcomings and make travel planning as easy as a single tap of a button.

Literature Survey

S. No	Name	Roll Number	Author	Proposed Technique	Evaluation
1	Kashish Tayal	101803022	Mihai Duguleană, Victor alexandru Briciu, Ionut,-Alexandru Duduman and Octavian Mihai Machidon [1]	RASA NLU—IA project architecture	In this paper, we get knowledge about a AI virtual guide system architecture that can be developed fast and that is flexible enough to be used in multiple scenarios.The development of an intelligent virtual guide for museums represents a dynamic research endeavor that can be immediately applied, with sustainable benefits.
			M. Dahiya [2]	Pattern Matching	In this paper, we get the basics of chatbots and the core technique used to develop it.Chatbot is a rudimentary form of artificial intelligence software that can mimic human conversation. The Chatbots can be analyzed and improved. It can be used in various fields such as education, business, online chatting etc. It can be used in the field of education as a learning tool. The information necessary for education can be stored in the database and can be retrieved any time by querying the bot.
			Sameera A. Abdul-Kader ,Dr. John Woods [3]	Natural Language Processing [NLP]	It provides us with the technique of developing a chatbot using Natural language processing by giving the description of each step required . Natural Language Processing (NLP) techniques such as NLTK for Python can be applied to analyse speech, and intelligent responses can be found by designing an engine to provide appropriate human-like responses.

2.	Rachit Khanna	101803031	Lee, Gyu-Cheol, Jisang [4]	Maximally Stable Extremal Regions (MSER), Tesseract-OCR.	This paper proposes the use of Optical Character Recognition (OCR) to develop a recognition application that recognizes characters from images captured by a smartphone. The characters are extracted using Maximally Stable Extremal Regions (MSER) and recognized using Tesseract-OCR. The experimental results show that the proposed method shows an average recognition rate of 14.1% higher than other techniques.
			Sheng-YuanYang, Chun-LiangHsu [5]	Location-based services and Google maps-based information master system for tour guiding	This paper aims to develop a location-based service supporting a master multi-agent system on what the information is, using Google maps and an image recognition technology as a tourism information provider and as a route planner for tourists. It proposes to provide an easy-to-use interface, integrating smartphone GPS function, a QR/Barcode reader and easy access to a cloud database to find all of the required web services. The results of the research demonstrate performance superiority over a number of previous studies.
			Jamshed Memon; Maira Sami; Rizwan Ahmed Khan; Mueen Uddin [6]	Handwritten Optical Character Recognition (OCR)	The objective of this paper is to summarize research that has been conducted on character recognition of handwritten documents and to provide research directions. This review article serves the purpose of presenting state of the art results and techniques on OCR and also provides research directions by highlighting research gaps.

3.	Aditi Dona	101803029	Feng Jing, Lei Zhang and Wei-Ying Ma [7]	'Representative Sights Identification Algorithm' which will automatically identify the potential tourist sights of a location.	The paper suggests using images, as it will facilitate the travel plan as much as text. The user is able to see the location on the closely integrated map and then plan accordingly. Although this paper provides a unique service of travel planning we cannot ignore the fact that the user has to manually select the places he wants to visit i.e. he has to have information about the place he is going to choose which is out of scope of this paper.
			Carmelo R. Garcia, Santiago Candela, Jonatan Ginory, Alexis Quesada-Arencibia, Francisco Alayon [8]	Bluetooth and various Android Technologies like On Route Information Server (ORIS), the Android Client Application (ACA) and the Information Services Provider (ISP).	This paper has proposed to provide the user with the on-route information using bluetooth devices installed at relevant public places and Android Technologies. It is a simple service which intimates the user of nearby bus stations, public transports and the current stop and the next without having to keep track of it. The biggest limitation of this system is that it is able to notify the user of the nearest places within a small radius of 100 meters(max bluetooth limit)
			Aleš Tavčar, Csaba Antonya and Eugen Valentin Butila [9]	Natural Language Processing, Google Street View	This paper has proposed to have a enhanced user experience in museums by the development of a virtual museum assistant. The assistant is built to answer the user queries. It also has the ability to recommend the user with the location of interest in the museum using Google Street View. This was done to increase the interest of users in museums and also attract young minds.
4.	Ayush Bhatt	101853001	Tiago Duarte, Rafael Prikladnicki ,Fabio Calefato, and Filippo	Machine Translation (MT)	This paper has explained the concept of MT. It also explains the various APIs available which are used for this purpose of translating speech from one language to another for example: Microsoft Speech API, Sphinx, HTK etc.

			Lanubile [10]		
			Akshata Tayade, Mahima Thakur, Laxmi Vathari, Prof. Satish Kuchiwale	ASR-Automatic speech Recognition,STT-Speech to text, Example based machine translation (EBMT), Recurrent neural networks	The main aim of the project is to develop a system that will change voice input voice into text format. This project has given a clear overview of working of speech to text system (STT) in step by step process. The system gives the input data from mic in the form of voice, then preprocesses that data & converts into text format displayed on mobile.
			Dr. Kavitha. R,Nachammai.N, Ranjani. R, Shifali. J [11]	Discrete Cosine Transform (DCT), Mel Frequency Cepstral Coefficients (MFCC), Feature Matching, Fast Fourier Transforms (FFT), Dynamic Time Warping (DTW).	This paper explains about the speech based voice authentication system for Tamil language that has two major phases, feature excerption phase and feature matching phase. In the feature excerption phase, the system extracts the MFCC features from the voice input sample. In the feature matching module it identifies the Tamil words and the user using the Dynamic Time Warping algorithm that computes the warping distance between two time sequences. The two time series is similar when the warping distance between them is very small. Thus the system creates the voice password using Tamil words.

Objectives

We are going to work on the following objectives:

1. **Personalised Travel Plan :-** The application would understand the interests of the user and provide it with a personalised tour plan.The application will uniquely identify the places that will be suitable for the users about their choices in hotel they live, the type of food they like to eat, the shopping places for their memories etc.3
2. **General Customer Care Services :-** The application will ensure the safety of the tourists, by providing relevant security information to tourists. Application will have various SoS related features like emergency calling, Notifying first 4 contacts in case of an emergency . A chatbot will be an important feature of this application. It will be designed to fulfill customer queries 24/7.
3. **Storytelling:-** Application will allow the user to get "More Information" on anything which the user finds intriguing enough. The user will be able to get relevant details about historic places, unknown sayings in foreign languages and many more, by making use of the image processing and.
4. **Language Translator:-** Application will translate the people talking in foreign language using the concept of Natural Language Processing. Application will be able to translate any speech in the language of the tourist, will help the Tourist and the locals to understand each other.

5. **Additional Features :**
    - **Tourist Safety:** We will be working further to add a SoS feature for the Safety of the tourist.
    - **Offline Services:** We will be working further to provide the user with the whole tour plan offline so that he/she is comfortable in regions of no internet.
    - **Connect to people:** This feature will allow the tourist to meet and interact with new people who are currently on the same trip.

Methodology

Phase 1 - Data Collection:

1. Study the Problem Statement and Analyse the need for Datasets.
2. Search and collect the required Datasets and Databases.

Phase 2 - OCR implementation for Storytelling:

1. First we capture the image from the Camera or upload it from the gallery
2. Then we defined the variable which contains the path to the image file. This path is passed to the open function to create an image object out of our image.
3. After which we passed the image object to the text conversion function.
4. This function takes in argument an image object and returns the text recognized inside it.
5. In the end, we displayed the text which was found in the image.

Phase 3 - Development of Chatbot :

1. Gather all the requirements to understand what scenarios need to be addressed by bot i.e. Analyse all the queries that can be made by a potential traveller.
2. Generation of intents database according to the requirement.
3. Pre-Processing the Database.
4. Analyse various Algorithms to find the best suited one for the Chatbot & Build the Model
5. Training & Testing Model.

Phase 4- Development of a Language Translator :

1. Collection of Language Datasets
2. Clean and Pre-Process Data
3. Build Parallel Translation Model
4. Train & Test Model for Accuracy.

Work Plan

The Final Work Plan for the accomplishment of these objective are as follows

S No	Activity	Month	March		April			May			June				July				August				September				October				November				December			
		Week	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38
1	**Study and Analysis of Project**																																							
1.1	Project Study	Plan																																						
		Actual																																						
1.2	Research Work	Plan																																						
		Actual																																						
1.3	Proposal Preparation	Plan																																						
		Actual																																						
1.4	Project Initiation	Plan																																						
		Actual																																						
2	**Design Overview of Application**																																							
2.1	Designing of Different Screens of the project	Plan																																						
		Actual																																						
2.2	Optimizing and Modification of different screens of the Project	Plan																																						
		Actual																																						
3	**Building and Training Models for different Features**																																							
3.1	Development of General Application	Plan																																						
		Actual																																						
3.2	Development of the Personalized Travel Plan	Plan																																						
		Actual																																						
3.3	Development of the Chatbot	Plan																																						
		Actual																																						
3.4	Development of the OCR	Plan																																						
		Actual																																						
3.5	Development of the Language Translator	Plan																																						
		Actual																																						
3.6	Development of Additional Features	Plan																																						
		Actual																																						
3.7	Compiling the Different Models into The Application	Plan																																						
		Actual																																						
4	**Application Testing**																																							
4.1	Testing of Application and Quality checking	Plan																																						
		Actual																																						
4.2	Debugging and Evaluating Errors	Plan																																						
		Actual																																						
5	**Performing Modifications**																																							
5.1	Evaluating the Error and Proposing Modifications	Plan																																						
		Actual																																						
5.2	Modifying the application	Plan																																						
		Actual																																						
5.3	Testing of modifications	Plan																																						
		Actual																																						
6	**Result Evaluation**	Plan																																						
		Actual																																						
7	**Final Report**	Plan																																						
		Actual																																						

Project Outcomes & Individual Roles

The outcome of this project is that we achieve an environment that is a one stop solution for all the hassle free travels.We plan to achieve an application that has the features as mentioned below:

- The most important and significant feature of this application would be to understand the interests and likings of the user and provide them with a personalised tour plan of the chosen place of interest.
- This application will also be able to ensure the safety of the tourists, which is an area of major concern. We will be working on adding various SoS related features in our application like emergency calling, Notifying first 4 contacts in case of an emergency. In addition to this, we will have a customer helpdesk as well.
- Our application will be able to introduce the user to various things that he could find at a place of interest. The user will be able to find more information about historic places, unknown sayings in foreign languages and many more, by making use of the image processing. Through this application the user will be able to translate and understand the people talking in foreign language. Using the concept of Natural Language Processing the application will be able to translate the speech in the language of the tourist.

This app increases inclusivity, safety and convenience in the travel experience.

The following are the individual roles:

- Aditi Dona : OCR, Language Translator and Application Development
- Ayush Bhat : Voice translation, chatbot
- Kashish Tayal : Voice translation and chatbot , OCR
- Rachit Khanna : Team Leader ,Application Development, OCR and Chatbot

Course Subjects

- Database Management Systems(DBMS)
- Data Structures and Algorithms
- Design and Analysis of Algorithms
- Artificial Intelligence
- Machine Learning

- Software engineering
- Natural Language Processing

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