Nature Reserves Tourism System in Egypt Using Gis Case study

Ahmed Waleed , Eiad Fathy, Ahmed Mohamed , Mohaned Ahmed

Supervised By : Prof. Dr. Abdelnasser riad, Eng.MennatAllahHassan

December 2019

1 Introduction

1.1 Purpose of this document

Tourism is very important Topic for the economy of Egypt. It contains many tourist attractions sites. Improving tourism in Egypt would have great revenue on the economy. Our project main purpose is to create a tourism system in which it uses Geoinformation with certain tools (ex. Arch GIS 10.7) which will greatly improve tourism sector in Egypt. This project aims to exhibit the application of Geoinformation as a tool for im- proving the tourism sector by identifying the location of tourist facilities, Services and wildlife habitat locations in order to demonstrate them in a map so that tourists are well informed and directed in what to see and where to go.Tourism is defined by the World Tourism Organization as the act of traveling for the purpose of recreation and the provision of services for this act. It further explains that a tourist is someone who travels at least eighty kilometers from home for the purpose of recreation[1].

1.2 Scope of this document

This Software Requirements Speciation (SRS) is the requirements that specific Tourism Management System. This system targets tourists to 1- Plan their trips to visit these protected areas. 2- It will help them also to rate their experience in Protective Parks.

1.3 Overview

Our system is a mobile application that determine important and necessary places for tourism that it will help tourists to plan their trips to visit protected areas and it will give detailed information about the place that will also provide information of nearby Public Service close to this protected area. Also it will let

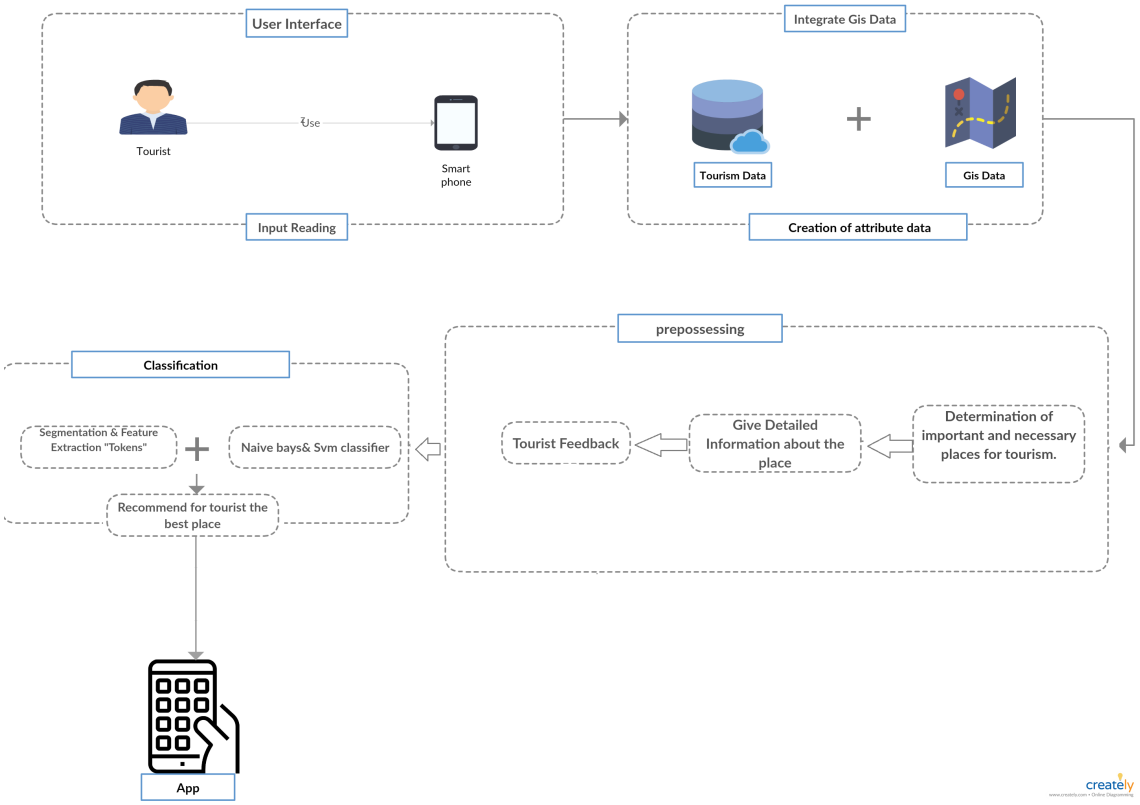

Figure 1: Overview Diagram

them to rate their experience in protective area. It will also increase the accuracy of identifying locations suitable to tourists based on detailed information generate RATING to give best decision.

1.4 Business Context

Our work is motivated by both related works and application domain. As the national parks play a huge role as a touristic point that attract tourists from all around the world (5).In Egypt we have 30 national parks and 14 other national parks will be formed in the future as published by the EEAA (6).also the system contain a rating system that will rate the service provided by the application similar as the one that Michael Kenteris, Damianos Gavalas and Aristides Mpitziopoulos has been tried to implement in greece (7). The project idea was presented to many companies that can invest in this field and they have shown a interest and if the system is working successfully they will invest in it.

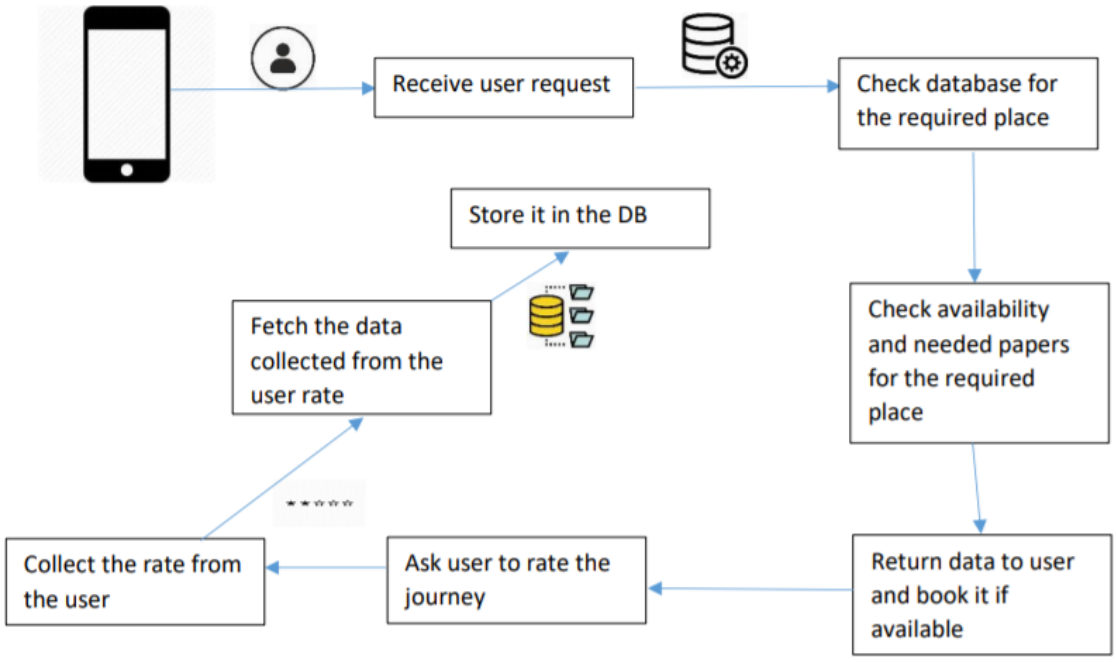

Figure2: Business context

2 General Description

2.1 Product Functions

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1. Pre-processing
   (a) The system will split text into separate words.
   (b) System removes all the stop-words to filter the document.
   (c) System returns back the base or dictionary form of a word
   (d) System removes Punctuation the document
   (e) System change Lower Case all character
2. Classification
   (a) System use SVM and Naive Bayes.
3. Guest System
   (a) Route Navigation System
   (b) Report System
   (c) Feedback System

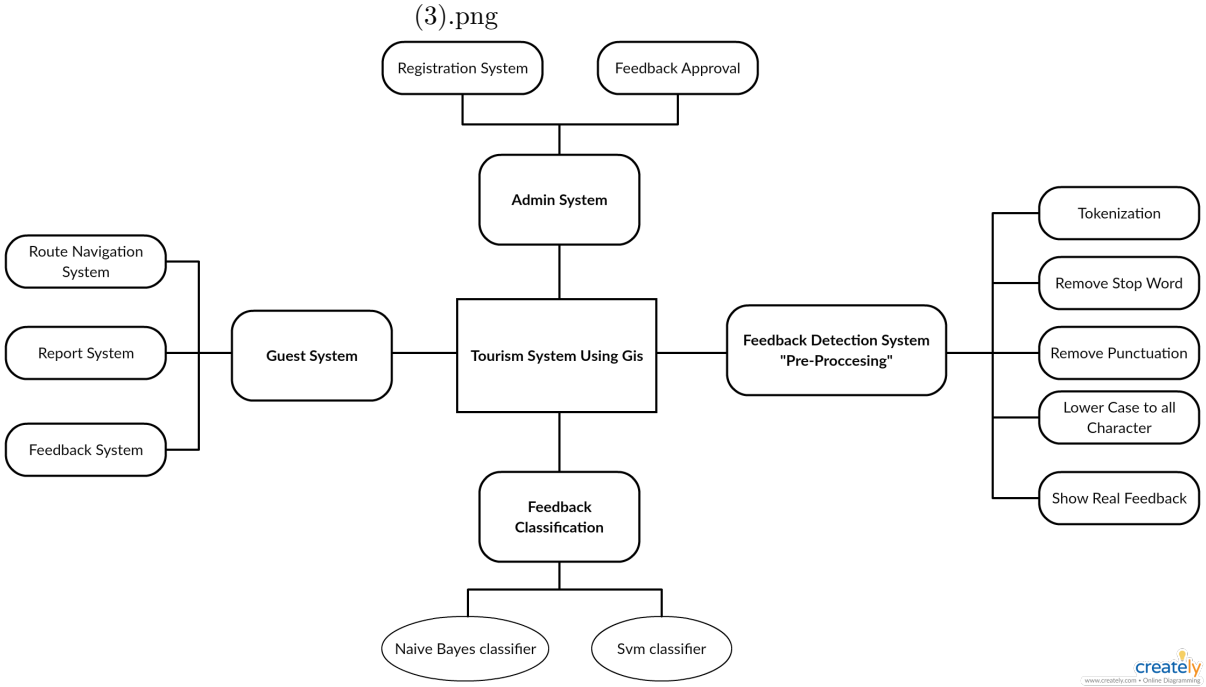


Figure 2: System context

4. Admin System
   (a) Registration System
   (b) Feedback Approval System

2.2 Similar System Information

Tourism has diverse definitions. Tourism is defined by the World Tourism Organization as the act of traveling for the purpose of recreation and the provision of services for this act. It further explains that a tourist is someone who travels at least eighty kilometers from home for the purpose of recreation[1]. Therefore, tourism can be said to be the activities of people traveling to and staying in places outside their usual environment for not more than one consecutive year for leisure, business and other purposes related to the exercise of an activity remunerated from within the place visited. The tourist destination is a geographical unit. How important any geographical unit is as a tourist destination or how important it is potentially; is determined by three [2]prime factors which constitute the tourism product. It comprises of the perceived and actual attractions of a place, the facilities and the destination's accessibility National Parks and Reserves are distinctive public lands or water bodies within a country which are set aside by the government to protect ecosystems, plant and animal species, scenic landscapes, geologic formations, historical or archaeological sites

and such.[3] There is a project has been made by a team in university of Nairobi their case study was AMBOSELI NATIONAAL PARK that demonstrates the importance of Geoinformation. A topographic map and other data from KWS have been used in this study to create a geodatabase and a digi- tal map of the Park using GIS software. Features were digitized on the scanned map and other data in form of shapefiles added as overlays. An attribute table was created to link the spatial data with their characteris- tics in order to provide more information for analysis. The problems that faced the project was Difficulties in updating existing graphical tourist guides and maps , Lack of digital information for tourism facilities and destinations, Lack of comprehensive information based on the internet and Inadequate analysis of the state's tourism. So they start to set their objective that was to create a digital map of Amboseli National Park with information on the available park facilities as well as features and sites of tourist appeal.[4] Their research is limited to the area covered by Amboseli National Park and a buffer distance of 1.3 kilometers from the external bounds of the park, This is the area that lies approximately between the latitudes of 020 30S and 020 45S and longitudes of 370 05E and 370 25E and their data were collected by using a GPS receiver . they have chosen to use a lot like ArcView 3.2 for changing the projection of the shapefiles to the preferred projection, Global Mapper 11 was used to georeference and geocode the topographic sheet, ArcGIS 10.[4]

2.3 User Characteristics

- 1. Tourist: -Must have basic knowledge on how to use android applications or ios applications according to his mobile device.
- 2. Admin: -must have full knowledge on how the application is working and the hierarchy of adding or deleting data from the application database.

2.4 User Problem Statement

There are insufficient information about the attractive areas in Egypt for example Google maps gives maps without Attributes of location so we will deploy Tourism Management System Using GIS for natural protected areas in Egypt to help tourists to plan their trips to visit these Protected areas. Also Increase the accuracy of Identifying locations suitable to tourists based on detailed information Generate RATING to give best decision. [1]

2.5 User Objectives

Our objectives is Deployment of Tourism Management System Using GIS for natural protected areas in Egypt to help tourists to plan their trips to visit these protected areas. Rate the Tourist experience in Protective Parks, provide information of nearby Public Service close to the user's location. Provide description as well as contact and address info of the place.

2.6 General Constraints

One of the main constraints of the system is the ability to collect all the data accurate from a credible source, also the ability to provide a true ranking system makes that could be a reference for the users before planning their trips, and to provide all needed papers and corresponding transportation for the chosen national park. Different problems would be challenging the system.

3 Functional Requirements

3.1 User Class 1 - The Admin

3.1.1 ID: FR1

Title	Adding a Trip
DESC	The Admin adds a Trip to the system
Input	Name ,Location ,Time ,Telephone , Website of The Park
Action	Checks if all fields are filled and if so the data is entered in a new record the database accordingly
Output	Confirmation message or error message if something went wrong upon validating the fields
Pre-condition	None
Post-condition:	Database is updated with a new Trip

3.1.2 ID: FR2

Title	Editing a Trip
DESC	The Admin edits a Trip's information
Input	Name ,Location ,Time ,Telephone , Website of The Park
Action	The information changed is taken and sent to the corresponding attribute in the Trip's record in the database to be updated
Output	Confirmation message or error message if something went wrong upon validating the fields
Pre-condition	Desired Trip information is already registered in the database
Post-condition:	Desired Trip record in the database is updated with the new information in the database

3.1.3 ID: FR3

Title	Deleting a Trip
DESC	The Admin Delete a Trip From the system
Input	Name ,Location ,Time ,Telephone , Website of The Park
Action	Checks for the selected Trip's record in the database to be deleted
Output	Confirmation message or error message if something went wrong upon removing the Trip from the system
Pre-condition	Desired Trip is already registered in the database
Post-condition:	Desired Trip record is removed from the database

3.1.4 ID: FR4

Title	Listing all Trip
DESC	The Admin lists all the Trips found in the system
Input	Name ,Location ,Time ,Telephone , Website of The Park
Action	Retrieves information about the Trips registered in the system from the database
Output	All Trips registered in the system and their information are previewed
Pre-condition	At least one Trip is registered in the database
Post-condition:	None

3.1.5 ID: FR5

Title	Searching For a Trip
DESC	The Admin searches for a desired Trip.
Input	Name
Action	Retrieves information about the Trip, whose name has been entered by the admin, from the database
Output	The desired Trip's information is previewed
Pre-condition	Desired Trips is already registered in the database
Post-condition:	None

3.1.6 ID: FR6

Title	Adding a Business Monitor
DESC	The admin adds a business monitor record to the database
Input	Name ,Location ,Time ,Telephone , Website of The Park
Action	Checks if all fields are filled and if so the data is entered in a new record in the database accordingly
Output	Confirmation message or error message if something went wrong upon validating the fields
Pre-condition	None
Post-condition:	Database is updated with new business monitor's account

3.1.7 ID: FR7

Title	Editing a Business Monitor's Account
DESC	The Admin edits a business monitor's account to the database
Input	Name ,Location ,Time ,Telephone , Website of The Park
Action	The information changed is taken and sent to the corresponding attribute in the Trip's record in the database to be updated
Output	Confirmation message or error message if something went wrong upon validating the fields
Pre-condition	Desired business owner is already registered in the database
Post-condition:	Desired business owner's record in the database is updated with the new information in the database

3.1.8 ID: FR8

Title	Deleting a Business Monitor's Account
DESC	The Admin deletes a business monitor's account from the database
Input	Business Monitor's name
Action	Checks for the selected business monitor's record in the database to be deleted
Output	Confirmation message or error message if something went wrong upon removing the business monitor from the system
Pre-condition	Desired business monitor is already registered in the database
Post-condition:	Desired business monitor's record is removed from the database

3.1.9 ID: FR9

Title	Listing all Business Monitors
DESC	The Admin lists all the business monitors found in the system
Input	User Type.
Action	Retrieves information about the business monitors registered in the system from the database
Output	All business monitors registered in the system and their information are previewed
Pre-condition	At least one business monitor is registered in the database
Post-condition:	None

3.1.10 ID: FR10

Title	Searching for a Business Monitor
DESC	The Admin searches for a desired business monitor
Input	Name
Action	Retrieves information about the business monitor, whose name has been entered by the admin, from the database
Output	The desired business monitor's information is previewed
Pre-condition	Desired business monitor is already registered in the database
Post-condition:	None

3.1.11 ID: FR11

Title	Deleting a Tourist's Account
DESC	The Admin deletes a Tourist's account from the database
Input	Tourist's name
Action	Checks for the selected Tourist's record in the database to be deleted
Output	Confirmation message or error message if something went wrong upon removing the Tourism from the system
Pre-condition	Desired Tourist is already registered in the database
Post-condition:	Desired Tourist's record is removed from the database

3.1.12 ID: FR12

Title	Listing all Tourist
DESC	The Admin lists all the Tourist found in the system
Input	User Type
Action	Retrieves information about the Tourist registered in the system from the database
Output	All Tourist registered in the system and their information are previewed
Pre-condition	At least one Tourist is registered in the database
Post-condition:	None

3.1.13 ID: FR13

Title	Searching for a Tourist
DESC	The Admin searches for a desired Tourist
Input	Name
Action	Retrieves information about the Tourist, whose name has been entered by the admin,from the database
Output	The desired Tourist's information is previewed
Pre-condition	Desired Tourist is already registered in the database
Post-condition:	None

3.2 User Class 2 - The Tourist

3.2.1 ID: FR14

Title	Registering
DESC	The Tourist registers with his/her information to create an account
Input	Name ,password ,Email ,Country ,Telephone , Gender of The Tourist
Action	Checks if all fields are filled and if so the data is entered in a new record in the database accordingly
Output	Confirmation Message and asks Tourist to log in or error message upon validating the fields
Pre-condition	None
Post-condition:	Database is updated with a new Tourist's account

3.2.2 ID: FR15

Title	Log in
DESC	The Tourist logs into his account
Input	Email and password of The Tourist
Action	Checks if all fields are filled and if so compares data entered to the database records
Output	The homepage is previewed and Login successful message or error message upon validating the fields
Pre-condition	Tourist is already registered in the database
Post-condition:	Redirected to the homepage

3.2.3 ID: FR16

Title	Request Trip.
DESC	The Tourist requests a Trip sending his/her current location which is sent to Admin
Input	current location of The Tourist
Action	The Tourist chooses to request a Trip and allows his/her current location to be sent
Output	Message that request has been sent or error message that it hasn't
Pre-condition	At least one trip registered in the system
Post-condition:	Redirected to the homepage

3.2.4 ID: FR17

Title	Rate the Trip
DESC	The Tourist views the rating of the Trip that has accepted his request
Input	Feedback text
Action	The rating entered is used to calculate the new overall rating for the Trip. Note that this is the personal rating.
Output	message confirming that the rating has been done or error message upon validating fields
Pre-condition	The Trip is registered in the system
Post-condition:	Trip's rating is updated in the Trip's record in the database.

3.2.5 ID: FR18

Title	View Trip's rating
DESC	The Tourist views the rating of the Trip that has accepted his request.
Input	None
Action	: The rating of the Trip that has accepted the request is retrieved from his/her record in the database.
Output	The value of the Trip's rating is previewed.
Pre-condition	The Trip is registered in the system.
Post-condition:	None

3.3 User Class 3 - The Classification of Feedback

3.3.1 ID: FR19

Title	Tourist Review
DESC	Data consultant can list all the reviews have been written by the Tourist.
Input	Tourist ID or email
Output	all the Tourist reviews records
Pre-condition	no show of the list of reviews
Post-condition:	show the updated list of reviews for this Tourist

3.3.2 ID: FR20

Title	TokenizeText
DESC	It takes each review and splits it to array of words "Tokens" also removing all the spaces and the breaks in each review ,for simplifying the review processing
Input	Review Text
Output	Array of words
Pre-condition	text in it's original form
Post-condition:	it gets text without spaces or breaks

3.3.3 ID: FR21

Title	RemoveStopWords
DESC	It take the array of words output and removes any stopword such as :(”as”,”the”,”a”)
Input	array of words
Output	array of words without any stopwords
Pre-condition	text in it’s original form
Post-condition:	it gets text filtered from stopwords

3.3.4 ID: FR22

Title	LowerCase To All
DESC	It take the array of words output and Convert into Lowercase
Input	array of words
Output	array of words with LowerCase only
Pre-condition	text in it’s original form
Post-condition:	it gets text filtered from UpperCase

3.3.5 ID: FR23

Title	Remove Punctuation
DESC	It take the array of words output and remove Punctuation
Input	array of words
Output	array of words withput Punctuation
Pre-condition	text in it’s original form
Post-condition:	it gets text filtered from Punctuation

3.3.6 ID: FR24

Title	lemmatization
DESC	It take the array of words output and get the single forms of derived words such as:(”students ”::”student”)
Input	array of words
Output	array of words consist the singular of each word
Pre-condition	text in it’s original form
Post-condition:	it gets array of words with it’s single or If it gets confused between words

3.4 User Interfaces

Our Application will be user friendly. the user will not have more than five minutes to get acquainted of the application.the application will be on a an android smart phone.

3.4.1 GUI

3.4.2 API

the application programming interface, we used is pychram to be able to run and code the classifier and be able to manipulate and read the data-set into the classifier in order to train and test and have precise results.

3.5 Hardware Interfaces

- Computer
- Mobile

3.6 Communications Interfaces

- wireless LAN
- 3G or 4G

3.7 Software Interfaces

- Android Studio
- Arc Gis
- Pycharm

4 Performance Requirements

Specifies speed and memory requirements.

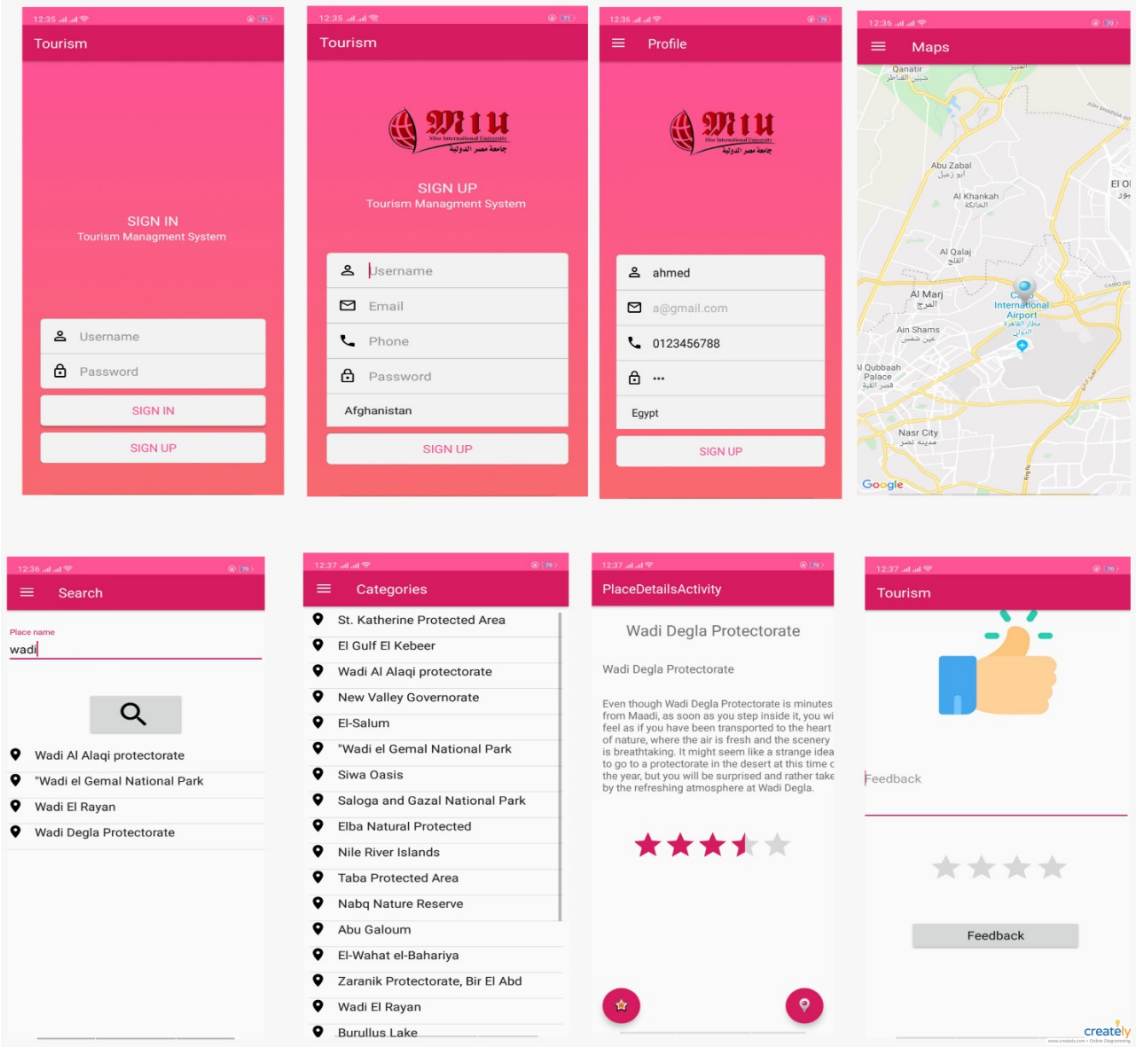
5 Design Constraints

- constraints of the system is the ability to collect all the data accurate from a credible source
- the ability to provide a true ranking system makes that could be a reference for the users before planning their trips
- to provide all needed papers and corresponding transportation for the chosen national park

6 Other non-functional attributes

6.1 Performance and Speed

The application must be interactive and fast to let the tourist choose what he desires.


Tourism
SIGN IN
Tourism Managment System
Username
Password
SIGN IN
SIGN UP
Tourism
SIGN UP
Tourism Managment System
Username
Email
Phone
Password
Afghanistan
SIGN UP
Profile
ahmed
a@gmail.com
0123456788
Egypt
SIGN UP
Maps
Search
Place name
wadi
Wadi Al Alaqi protectorate
"Wadi el Gemal National Park
Wadi El Rayan
Wadi Degla Protectorate
Categories
St. Katherine Protected Area
El Gulf El Kebeer
Wadi Al Alaqi protectorate
New Valley Governorate
El-Salum
"Wadi el Gemal National Park
Siwa Oasis
Saloga and Gazal National Park
Elba Natural Protected
Nile River Islands
Taba Protected Area
Nabq Nature Reserve
Abu Galoum
El-Wahat el-Bahariya
Zaranik Protectorate, Bir El Abd
Wadi El Rayan
Burullus Lake
PlaceDetailsActivity
Wadi Degla Protectorate
Wadi Degla Protectorate
Even though Wadi Degla Protectorate is minutes
from Maadi, as soon as you step inside it, you wi
feel as if you have been transported to the heart
of nature, where the air is fresh and the scenery
is breathtaking. It might seem like a strange idea
to go to a protectorate in the desert at this time
the year, but you will be surprised and rather take
by the refreshing atmosphere at Wadi Degla.
Tourism
Feedback
Feedback
creately

6.2 Reliability

The application is reliable. It must make sure that the system is reliable in its operations. This would be mainly focusing on the detection and classification. As detection of rating should be accurate and error free. When a detected wrong response from the tourists it must be classified, so it the system knows about this response and keep it in the system database.

6.3 Scalability

The Application is scalable. It should be easy to maintain to Minimize the amount of changes that would be done to the code.

6.4 Usability

Proportion of functionalities or tasks mastered doesn't need time to be learned. Also, this system is easy to be memorized due to the small number of tasks the Users will do.

6.5 Portability

The Application is Portability. The system is designed to be with tourists at all time. The designed system is integrated as mobile application.

7 Preliminary Object-Oriented Domain Analysis

The class digram presents a list of the fundamental objects that must be modeled within the system to satisfy its requirements. The purpose is to provide an alternative, structural in order to view on the requirementsand how they might be satisfied in the system.

7.1 Inheritance Relationships

in our class digram we used inheritcance relationship and other relationships, foucinsing on Inheritance Relationships for example: we used primary inheritance hierarchy for the system.

8 Operational Scenarios

8.1 User

The user should make sure that he is connected to the internet, then he will start to create an account on our application server. After creating an account he should be able to log in after entering his username and password correctly,

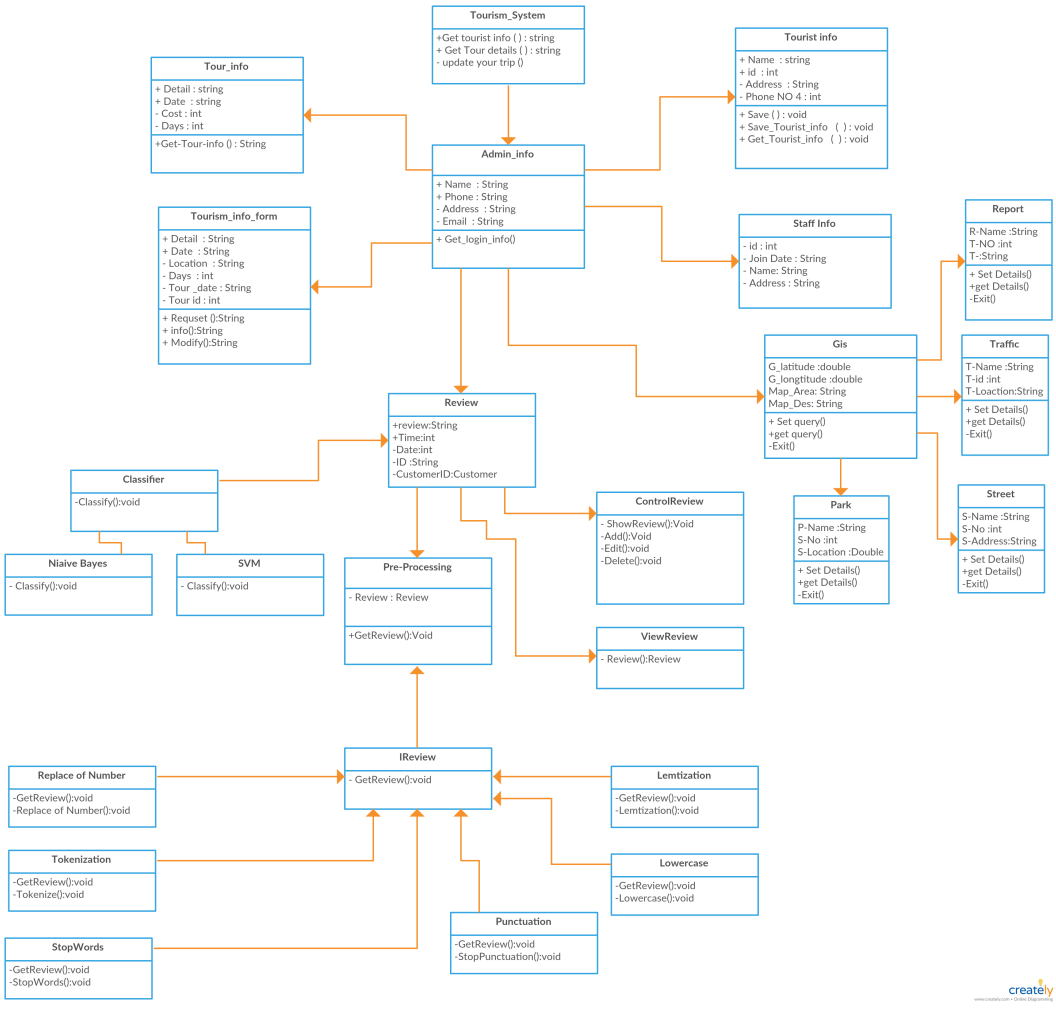

Tourism_System
+Get tourist info ( ) : string
+ Get Tour details ( ) : string
- update your trip ()
Tourist info
+ Name : string
+ id : int
- Address : String
- Phone NO 4 : int
+ Save ( ) : void
+ Save_Tourist_info ( ) : void
+ Get_Tourist_info ( ) : void
Tour_info
+ Detail : string
+ Date : string
- Cost : int
- Days : int
+Get-Tour-info () : String
Admin_info
+ Name : String
+ Phone : String
- Address : String
- Email : String
+ Get_login_info()
Tourism_info_form
+ Detail : String
+ Date : String
- Location : String
- Days : int
- Tour _date : String
- Tour id : int
+ Requset ():String
+ info():String
+ Modify():String
Staff Info
- id : int
- Join Date : String
- Name: String
- Address : String
Report
R-Name :String
T-NO :int
T-:String
+ Set Details()
+get Details()
-Exit()
Gis
G_latitude :double
G_longtitude :double
Map_Area: String
Map_Des: String
+ Set query()
+get query()
-Exit()
Traffic
T-Name :String
T-id :int
T-Loaction:String
+ Set Details()
+get Details()
-Exit()
Review
+review:String
+Time:int
-Date:int
-ID :String
-CustomerID:Customer
Classifier
-Classify():void
Niaive Bayes
- Classify():void
SVM
- Classify():void
Pre-Processing
- Review : Review
+GetReview():Void
ControlReview
- ShowReview():Void
-Add():Void
-Edit():void
-Delete():void
ViewReview
- Review():Review
Park
P-Name :String
S-No :int
S-Location :Double
+ Set Details()
+get Details()
-Exit()
Street
S-Name :String
S-No :int
S-Address:String
+ Set Details()
+get Details()
-Exit()
IReview
- GetReview():void
Replace of Number
-GetReview():void
-Replace of Number():void
Tokenization
-GetReview():void
-Tokenize():void
StopWords
-GetReview():void
-StopWords():void
Punctuation
-GetReview():void
-StopPunctuation():void
Lowercase
-GetReview():void
-Lowercase():void
Lemtization
-GetReview():void
-Lemtization():void
creately

Figure 1: Inheritance Relations

if they weren't entered correctly the system will pop up a message to the user to check username and/or password, after logging in successfully the user will be entered to a screen where he is able to search for his target national park he want to visit or he can explore our list of most rated national parks. Then he will choose a national park and a screen will appear to the user with all data of his chosen national park like prices, description, if any security papers or conditions will be provided throw this screen. Finally, after reading all documents needed and the user select this national park he will receive an option if he want to check about available transportations that go toward this national park (bus, train, cars). Also, an accommodation could be suggest if there is any available hotel near the national park. Then, check out page will appear to the user with all date that he/she has booked and asking for the user confirmation to confirm all data and email them to the user with all confirmations.

8.2 Admin

The admin should be connected to the server through an internet connection. To make sure he logged in with the correct username and password of an admin account, he/she will redirected to the admin page where he could find all features available for an admin like collecting the feedbacks of a national park, edit data about each and every national park, can collect analysis for each national park and for each user, has the ability to delete a feedback or a review with bad language, also he can add or remove a national park according to any change could happen. The admin has the ability to accept or ignore any feedback or user according to the ethical rule or being a fake account, also the admin must accept each and every account of employees to make sure there isn't any account have access to the system outside the company

9 Preliminary Schedule Adjusted

Task	Start-Date	End-Date
information Gathering	20/8/2019	30/8/2019
Survey and Proposal	1/9/2019	25/9/2019
Proposal Presentation	26/9/2019	16/10/2019
SRS Writing and Presentation	17/10/2019	10/11/2019
SDD Writing and Presentation	11/11/2019	20/1/2020
Implementing GUI design	21/1/2020	1/2/2020
Design Database	2/2/2020	15/2/2020
Implementing Application	16/2/2020	31/5/2020
Validating and Testing	1/6/2020	25/6/2020
Final Presentation	26/6/2020	26/6/2020

10 Preliminary Budget Adjusted

- Any smartphone with Android version 5.0 and up. On the user end,the minimum cost of any sufficient internet package required to operate the program which varies from 50 EGP to 250 EGP. on the back end, we also require a Non-sql database such as Fire-base for real-time updates which costs around 1,650 dollars. The price of an appropriate mid-range sever is between 4000 dollars and 4,495 dollars.

11 Appendices

11.1 Definitions, Acronyms, Abbreviations

- ArcGIS: a geographic information system (GIS) for working with maps and geographic information. It is used for creating and using maps, compiling geographic data, analyzing mapped information, sharing and discovering geographic information, using maps and geographic information in a range of applications, and managing geographic information in a database. The system provides an infrastructure for making maps and geographic information available throughout an organization, across a community, and openly on the Web.

- GIS: A geographic information system (GIS) is a system designed to capture, store, manipulate, analyze, manage, and present all types of geographical data. The key word to this technology is Geography – this means that some portion of the data is spatial

- Google maps: Google Maps is a Web-based service that provides detailed information about geographical regions and sites around the world. In addition to conventional road maps, Google Maps offers aerial and satellite views of many places. In some cities, Google Maps offers street views comprising photographs taken from vehicles.

- Semantic analysis: is the process of relating syntactic structures, from the levels of phrases, clauses, sentences and paragraphs to the level of the writing as a whole, to their language-independent meanings. It also involves removing features specific to particular linguistic and cultural contexts, to the extent that such a project is possible. The elements of idiom and figurative speech, being cultural, are often also converted into relatively invariant meanings in semantic analysis. Semantics, although related to pragmatics, is distinct in that the former deals with word or sentence choice in any given context, while pragmatics considers the unique or particular meaning derived from context or tone. To reiterate in different terms, semantics is about universally coded meaning, and pragmatics, the meaning encoded in words that is then interpreted by an audience.

12 References

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