Project Proposal

Hotel Review's Sentiment Analysis and Recommendation System

Supervisor : Prof. Hasan Raza

By

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Bachelor of Science in Information Technology (2020-2024)

SCOPE DOCUMENT REVSION HISTORY

NO.	Comment	Action

Date: **Supervisor Signature:**

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Project Category: (Select all the major domains of proposed project**)**

- ○ A-Desktop Application/Information System
- ● B-Web Application/Web Application based Information System
- ● C-Problem Solving and Artificial Intelligence
- ○ D-Simulation and Modeling
- ○ E- Smartphone Application
- ○ F-Smartphone Game
- ○ G- Networks
- ○ H- Image Processing
- ○ Other (specify category)

Abstract

This project involves developing a web-based recommendation system for hotels in Pakistan, utilizing data scraped from Google. Initially, hotel data including reviews are collected through web scraping. These reviews are then subjected to sentiment analysis to gauge customer satisfaction and experiences. Leveraging the insights from the sentiment analysis, the system will generate personalized hotel recommendations based on the user's specified location. The goal is to enhance user experience by suggesting the best possible accommodations tailored to individual preferences and sentiment-driven evaluations.

Introduction

In the digital age, the hospitality industry heavily relies on online reviews and ratings to attract potential customers. Travelers often turn to the internet to read reviews and make informed decisions about their accommodations. In this context, the ability to provide personalized hotel recommendations based on genuine customer feedback becomes invaluable. This project aims to harness the power of data scraping and sentiment analysis to build an intelligent recommendation system. By collecting and analyzing hotel reviews from Google, we can gain insights into customer sentiments and preferences, which will serve as the foundation for our recommendation algorithm.

The proposed system seeks to enhance the hotel selection process for users in Pakistan by offering tailored recommendations based on their specified location and the sentiments expressed in previous customer reviews. Through advanced data scraping techniques, we will gather extensive hotel data, including reviews and ratings. Sentiment analysis will then be applied to this data to identify positive and negative trends in customer feedback. By integrating these insights into a recommendation engine, our platform will provide users with highly relevant hotel options that align with their preferences and expectations, ultimately improving their booking experience.

Problem Statement

The problem addressed by this project is the difficulty travelers face in finding suitable hotel accommodations in Pakistan that meet their preferences and expectations. Existing hotel recommendation systems often rely on static ratings and generic criteria, which may not accurately reflect current customer satisfaction and specific needs. Travelers require a more dynamic and personalized approach to hotel recommendations, one that considers the latest reviews and sentiments of previous guests. Therefore, there is a need for a system that can efficiently scrape up-to-date hotel data, analyze customer sentiments, and provide tailored hotel recommendations based on the user's location and

individual preferences.

Problem Solution for Proposed System

The proposed system includes the following solutions:

- **Data Collection**: Utilize web scraping techniques to gather real-time data from Google, including hotel information and customer reviews.
- **Sentiment Analysis**: Implement sentiment analysis algorithms to extract valuable insights from the collected reviews, gauging customer satisfaction levels and preferences.
- **Dynamic Recommendation**: Develop a recommendation system that incorporates dynamic sentiment analysis results, ensuring up-to-date and relevant hotel suggestions.
- **Personalization**: Tailor hotel recommendations based on the user's specified location and individual preferences, enhancing the relevance and usefulness of the suggestions.

Project Overview Statement

The project aims to develop a comprehensive web-based recommendation system for hotel accommodations in Pakistan. Leveraging web scraping techniques and sentiment analysis algorithms, the system will collect real-time data from Google, including hotel information and customer reviews. This data will be analyzed to extract valuable insights into customer sentiments and preferences, which will then inform the development of a dynamic recommendation algorithm. By considering the user's specified location and individual preferences, the system will generate personalized hotel recommendations, thereby streamlining the hotel selection process for travelers and enhancing their booking experience.

Related System Analysis/Literature Review

In System Analysis we collect data from different documents, manual and sites.

6.1 Table 1- Related System Analysis with proposed project solution

Application Name	Weakness	Proposed Project Solution
GestureSlide Navigator	The previous system relied on static ratings and generic criteria for hotel recommendations, which may not accurately reflect current customer satisfaction levels or individual preferences. The previous system lacked sophisticated data analysis techniques, such as sentiment analysis, which could provide deeper insights into customer sentiments and preferences.	Implement a recommendation system that incorporates dynamic sentiment analysis results, allowing for up-to-date and personalized hotel suggestions based on the latest customer feedback. Utilize advanced data scraping and sentiment analysis techniques to gather real-time data and extract valuable insights into customer sentiments and preferences, ensuring more accurate and relevant hotel recommendations.

Pros/Benefits of Proposed System

With this we have multiple advantages like:

- Personalization
- Real-time Data
- Improved User Experience
- Relevant Suggestions
- Increased Customer Satisfaction
- Trustworthy Recommendations

Scope

The scope of this project encompasses the development of a comprehensive hotel recommendation system focusing on Pakistan, involving data collection through web scraping from Google, sentiment analysis of gathered reviews, and the creation of a recommendation algorithm. This system will feature a user-friendly web interface enabling users to input their location and receive personalized hotel recommendations based on sentiment analysis results and individual preferences. The project includes backend development to support data processing and recommendation generation, integration of the recommendation system with the user interface, rigorous testing for functionality and optimization of algorithms for efficiency and relevance, deployment on a web server for

accessibility, and provision of ongoing maintenance and updates to ensure the system's continued functionality and alignment with the latest data and algorithms.

Modules

- Data Collection
- Data Preprocessing
- Sentiment Analysis
- Recommendation Generation
- User Interface
- Backend Development

System Administrators

Administrators are people who add or control features for software and are responsible for administering the Visitors

End Users/Customers

The end customer will be the one who visits the website and take privilege from features.

System Limitations/Constraints

- Data Availability
- Language Limitation
- Accuracy of Sentiment Analysis
- Scalability
- Dependency on Internet Connectivity

Software Process Methodology

a) Agile-Scrum Software Model

a. Agile software methodology is a set of repetitive and incremental process

models. It is considered to be most flexible and easily maneuverable for restless requirement specifications environments. Unlike other process models where high formality is required and the specifications are expected to be known and verified before the commencement of design, agile models allow the use of increments or possible prototypes that can evolve into a more suited and validated requirements and eventually software application. Pressman (2004) defines it as a development pattern that encourages customer satisfaction and early incremental delivery of operational software; small, highly motivated project teams; informal methods; minimal software engineering work products; and overall development simplicity.

b. There are several evolving agile process models for different design scenarios which are considered flexible, incremental and repetitive in approach.

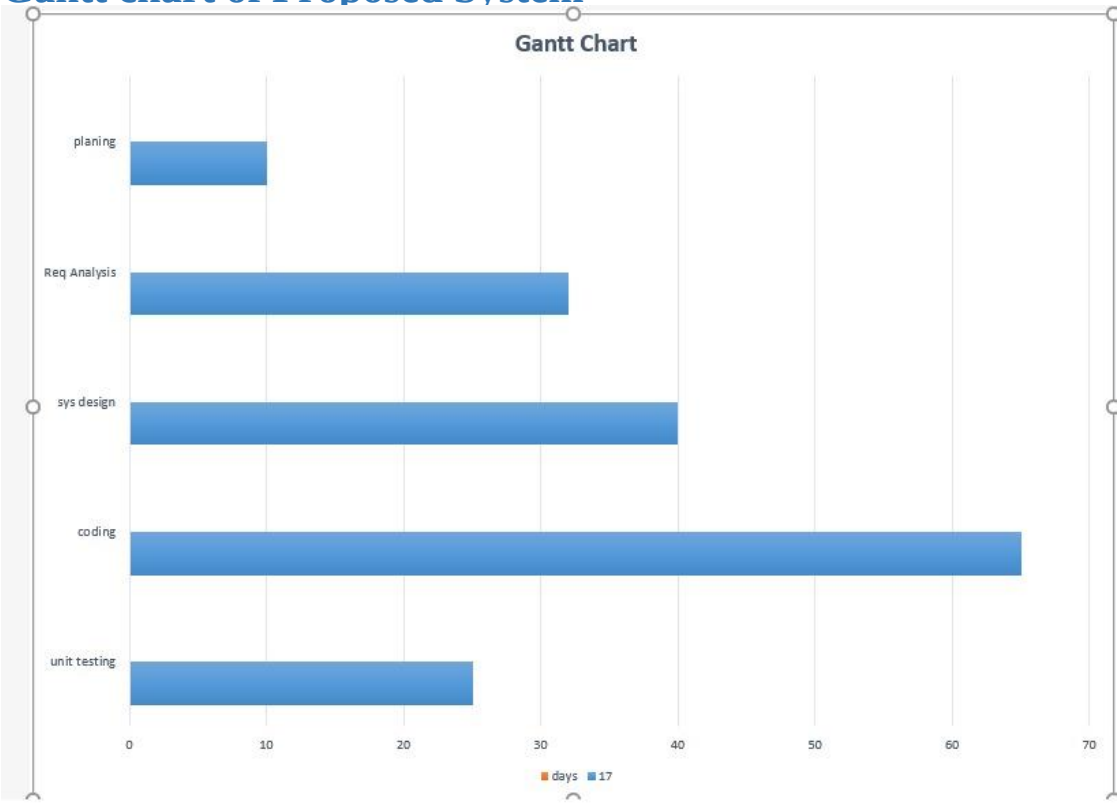
b) SCRUM Process Model

There are several evolving agile process models for different design scenarios which are considered flexible, incremental and repetitive in approach.For this project, we would be using SCRUM Agile process model because of its support for object oriented software design.

An Agile process model follows these activities:

- Planning
- Requirements Analysis
- Design
- Coding/Implementation
- Unit Testing
- Acceptance Testing

Gantt chart of Proposed System



Tools and Technologies

Below we mention some of major hardware/software tools and technologies with version number which will be used in implementation of the project.

Table 2- Tools and Technologies for Proposed Project

Below we mention some of major tools and technologies which will be used in implementation of our project.

- Html
- CSS
- JavaScript
- Python
- Git
- Collaboration Tool(Microsoft Teams)
- MS Power Point

Project Stakeholders and Roles

The project stakeholders and their roles are as:

Table 3-Project Stakeholders for Proposed Project

Project Sponsor	➢ Ayesha Rasheed ➢ Amina Ateeq
Stakeholder	Project Stake Holders with their roles and responsibilities. ➢ Developer ➢ End-User

Table 4-Team Member Work Division for Proposed Project

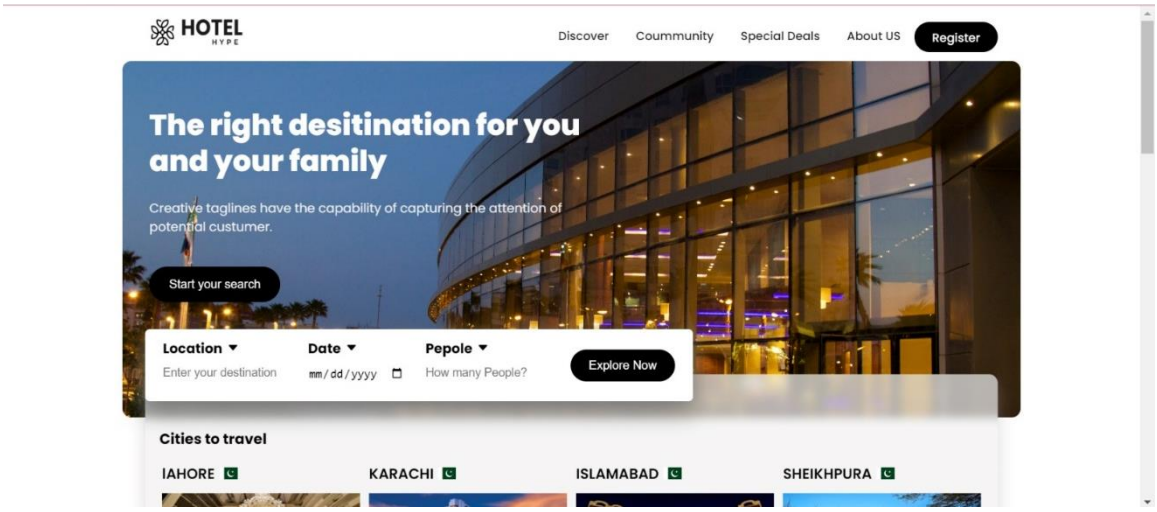
Student Name	**Student Registration Number**	**Responsibility/ Modules**
Amina Ateeq	Roll No: 050015	Frontend + Backend
Ayesha Rasheed	Roll No: 049948	Frontend + Backend

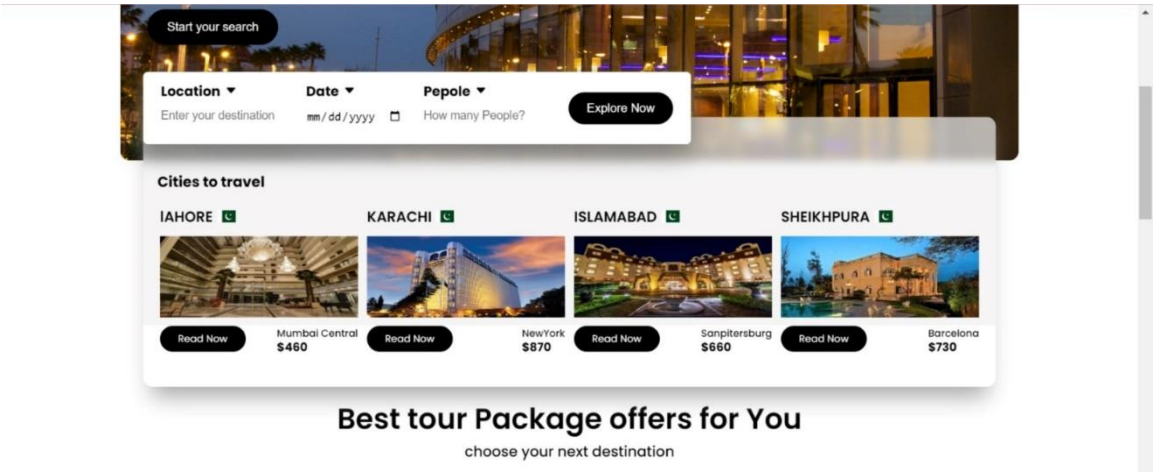
Data Gathering Approach

I have gathered all the information from the source of internet, and do self-write.

Mock-up

Here we are inserting mock-up regarding to our project for reviewing





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