Guide Guru - Interactive Travel Guide Project Report

Tobias Kothbauer, Veronika Leitner

February 2, 2024

Abstract

In today's ever-changing world of travel, Guide Guru steps forward as a personal solution, ready to revolutionize how users embark on their journeys. Rooted in the fusion of cutting-edge technology and user-centric design philosophy, this project endeavors to craft a travel guide application that avoids limitations of traditional planning methods.

At its core, Guide Guru is driven by the vision of empowering travelers with a personalized experience, one that seamlessly aligns with their interests, preferences and hobbies. Leveraging the capabilities of advanced large language models, the application will function as an intuitive digital companion, which adapts to the desires of each user. By fostering a tight relationship between technology and user input, Guide Guru endeavors to simplify the travel planning process, offering a platform where every journey is curated to reflect the personality of the individual.

Contents

Chapter 1

Aims and Context

The core objective of this project is to develop an intuitive and adaptable travel guide application that seamlessly integrates user input with language processing capabilities. Through the implementation of user surveys, Guide Guru should gather and evaluate individual interests, ensuring that every travel recommendation is finely tuned to match the user's specific desires and hobbies.

The envisioned application gives users a tool with a simple interface, allowing them to effortlessly select destinations and specify personal interests, thereby generating travel guides curated to their liking.

Moreover, Guide Guru will offer the practical functionality of exporting personalized guides in PDF format, enabling users to conveniently access their curated recommendations on various devices and platforms.

Upon completion, Guide Guru targets delivering a travel companion, that eases the planning process and allows a high levels of customization and efficiency. By placing the user at the center of the experience, Guide Guru aims to enhance the quality of travel adventures, empowering individuals to craft marvelous journeys that align, with their interests and preferences.

In order to accurately reflect user preferences in Guide Guru, a questionnaire was created. Thirty-three participants provided insights into their travel habits, hobbies, interests, and their perspectives on the ideal format for a travel guide. This data has allowed us to customize Guide Guru to cater to a diverse audience, requiring minimal user input while still meeting their needs effectively.

Chapter 2

Project Details

Throughout our project, we carefully navigated through crucial steps to ensure success and produce great outcomes for our Guide Guru. From crafting detailed surveys to choosing the best technology tools, our path was defined by strategic choices aimed at crafting a tailored and efficient travel guide experience.

2.1 Questionaire

Initially, we developed a questionnaire based on our understanding of the essential information required to create a straightforward yet impactful prototype with highly personalized outcomes.

This survey included questions about user preferences, assessments of the importance of different travel factors, and open-ended questions to uncover insights into hobbies and preferred content for the travel guide.

Key findings from the survey revealed that the majority of participants preferred selecting their destination rather than receiving recommendations. Primary considerations for their travels included the type of travel (e.g., relaxation vacation), the overall environment (e.g., beach or city), and the preferred season for travel. Discovering new hobbies ranked as the least important aspect. All participants expressed a preference for receiving the travel guide in PDF format, with a strong emphasis on the importance of suitable images. Additionally, 85% favored selecting their hobbies from a predefined list, with sports and art & culture emerging as the most frequently mentioned categories. Regarding desired information in the travel guide, participants highlighted sights and hidden gems, culinary recommendations, entertainment options, cultural insights, and information on country-specific risks and hazards.

2.2 Technology Stack

Simultaneously, we conducted research on potential technology stacks. Two components were predetermined: utilizing React[1] for frontend development to enhance our web development skills with this technology, and selecting ChatGPT from OpenAI[2] as our

[1] https://react.dev

[2] https://openai.com

preferred large language model (LLM), thus our supervisor thankfully could provide us with an API key for this model.

Following several iterations, we opted to employ Python[3] for backend development after discovering its well-documented approach to integrating a LLM into a web application. As well Flask[4], a micro web framework, was chosen to handle requests and CORS policies.

Given the importance of images as indicated by survey participants, and considering the multitude of cities and places of interest generated by user input, we needed a means to access online data for countless locations. To achieve this, we utilized a combination of the Google Places API[5] and Google Photos API[6] to download and display images from user recommendations, providing users with a simple yet effective insight into selected destinations.

To validate user input for potential travel destinations, we integrated the geonames API[7], which is user-curated and lists millions of places, allowing filtering for highly populated areas. This API facilitated the inclusion of destinations with populations exceeding 1000, ensuring a diverse range of travel destinations could be used to generate the guide.

2.3 Prototype Design

Equipped with insights gleaned from our survey, we embarked on the development of an initial mockup for Guide Guru. Leveraging Figma[8], a collaborative design tool, we crafted a clickable prototype encompassing the entire user journey and a blueprint for our PDF guide. This mockup (see figure 2.1) enabled us to pinpoint necessary input parameters, map out pages, identify reusable components, and discover the inherent structure of our web application in a fast and efficient manner.

2.4 Implementation First Prototype

2.5 User Testing

2.6 Final Prototype

2.7 Challenges

2.8 Lessions Learned

[3] https://www.python.org

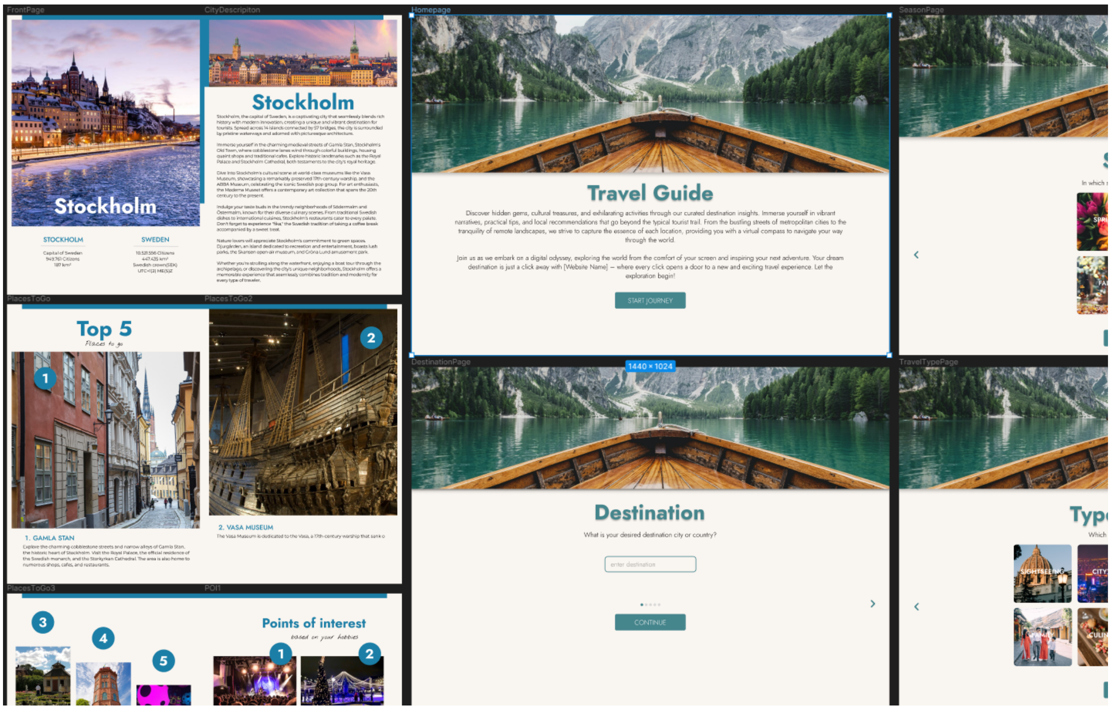
[4] https://flask.palletsprojects.com/en/3.0.x/

[5] https://developers.google.com/maps/documentation/places/web-service/overview?hl=de

[6] https://developers.google.com/photos?hl=de

[7] https://www.geonames.org

[8] https://www.figma.com/de



Stockholm, the capital of Sweden, is a captivating city that seamlessly blends rich history with modern innovation, creating a unique and vibrant destination for tourists. Spread across 14 islands connected by 57 bridges, the city is surrounded by pristine waterways and adorned with picturesque architecture.

Immerse yourself in the charming medieval streets of Gamla Stan, Stockholm's Old Town, where cobblestone lanes wind through colorful buildings, housing quaint shops and traditional cafes. Explore historic landmarks such as the Royal Palace and Stockholm Cathedral, both testaments to the city's royal heritage.

Dive into Stockholm's cultural scene at world-class museums like the Vasa Museum, showcasing a remarkably preserved 17th-century warship, and the ABBA Museum, celebrating the iconic Swedish pop group. For art enthusiasts, the Moderna Museet offers a contemporary art collection that spans the 20th century to the present.

Indulge your taste buds in the trendy neighborhoods of Södermalm and Östermalm, known for their diverse culinary scenes. From traditional Swedish dishes to international cuisines, Stockholm's restaurants cater to every palate. Don't forget to experience "fika," the Swedish tradition of taking a coffee break accompanied by a sweet treat.

Nature lovers will appreciate Stockholm's commitment to green spaces. Djurgården, an island dedicated to recreation and entertainment, boasts lush parks, the Skansen open-air museum, and Gröna Lund amusement park.

Whether you're strolling along the waterfront, enjoying a boat tour through the archipelago, or discovering the city's unique neighborhoods, Stockholm offers a memorable experience that seamlessly combines tradition and modernity for every type of traveler.

Discover hidden gems, cultural treasures, and exhilarating activities through our curated destination insights. Immerse yourself in vibrant narratives, practical tips, and local recommendations that go beyond the typical tourist trail. From the bustling streets of metropolitan cities to the tranquility of remote landscapes, we strive to capture the essence of each location, providing you with a virtual compass to navigate your way through the world.

Join us as we embark on a digital odyssey, exploring the world from the comfort of your screen and inspiring your next adventure. Your dream destination is just a click away with [Website Name] — where every click opens a door to a new and exciting travel experience. Let the exploration begin!

1. GAMLA STAN

Explore the charming cobblestone streets and narrow alleys of Gamla Stan, the historic heart of Stockholm. Visit the Royal Palace, the official residence of the Swedish monarch, and the Storkyrkan Cathedral. The area is also home to numerous shops, cafes, and restaurants.

2. VASA MUSEUM

The Vasa Museum is dedicated to the Vasa, a 17th-century warship that sank o

What is your desired destination city or country?

Figure 2.1: Mockup of Applicaton and Guide

Chapter 3

System Documentation

3.1 Backend

```
import numpy as np

def incmatrix(genl1,genl2):
m = len(genl1)
n = len(genl2)
M = None #to become the incidence matrix
VT = np.zeros((n*m,1), int)  #dummy variable
```

3.1.1 Large Language Model Integration

3.1.2 Integration of Google APIs

3.1.3 Geonames API

We utilized the geonames API to validate user input while keeping the range of possible destinations open. The geonames API contains data on approximately 4.8 million populated places, including details such as name, alternative names, country, population, geolocation, and categorization. To refine the user options, we set a threshold of including only places with over 1,000 inhabitants, ensuring that the travel guide's output remains relevant and accurate.

For the integration of this API into our Guide Guru, we used Express.js[1] to create the API Interface. After incorporating cors and axios middleware, we developed two interfaces for communicating with the geonames API.

To enhance user experience, we designed a mechanism to display only well-known and populous destinations upon the initial opening of the dropdown field. Upon rendering the destination page, a request is triggered, prompting an axios-request to the geonames API which can be seen in the below code. This request retrieves 25 cities with over 15,000 residents in its response, ensuring that users are presented with familiar and prominent locations.

```
app.get('/api/bigCity', (req, res) => {
  const apiUrl = 'http://api.geonames.org/searchJSON?cities=cities15000&maxRows=25&
    username=fhtravelguidews23';
```

[1] https://expressjs.com/de/

```
  axios.get(apiUrl)
  .then(response => {
    res.json(response.data)
  })
  .catch(error => {
    console.error('Error fetching data:', error);
  });
});
```

As soon as the user begins to enter into the input field an request is sended for ten places that match the input an have more than 1,000 citicens to allow a high variety of possible travel destinations.

Once the user starts typing in the input field, a request is sent to retrieve ten places that match the input criteria and have more than 1,000 inhabitants, thus providing a diverse range of potential travel destinations.

The processing of the API response data is detailed in the description of our Destination Page at 3.2.1.

3.2 Frontend

3.2.1 Pages

Homepage

Destination

Seasons

Travel Type

Result

3.2.2 Components

3.2.3 React PDF

Chapter 4

Summary

Give a concise (and honest) summary of what has been accomplished and what not. Point out issues that may warrant further investigation.

Appendix A

Supplementary Materials

The appendix is a good place to attach a user guide, screenshots, installation instructions, etc. Add a separate chapter for each major item.

References