

Trek

Terms of Reference

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Version 1.0

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Document Information

Revision History

Date	Version	Status	Prepared by	Comments
2024-05-28	1.0	Approved	Trekkers	
2024-07-01	2.0	Approved	Matthew Kang	Revised requirements, deliverables, roadmap

Approval

Role	Name	Signature / Initial	Date
Developer	Jacob Zhu	JZ	2024-05-28
Developer	Justin Lieu	JL	2024-05-28
Developer	Kevin Xu	KX	2024-05-28
Developer	Matthew Kang	MK	2024-05-28
Developer	William Xiao	WX	2024-05-28

Introduction

Group 4: Trekkers is a dedicated team of five students from the University of British Columbia, enrolled in CPSC 455. The team members, Jacob Zhu, Justin Lieu, Kevin Xu, Matthew Kang, and William Xiao, are under the guidance of instructors Ian McLean and Firas Moosvi, with Justin Jiao and Michelle Kim serving as their designated project teaching assistant.

Driven by a shared enthusiasm for exploring new technologies in the ever-evolving tech landscape, we are thrilled to introduce Trek—an intuitive and personalized trip-planner designed to cater to travelers of all kinds. Trek harnesses the power of cutting-edge ML/AI technologies to offer personalized trip recommendations, coupled with a user-friendly interface that simplifies and enhances the trip-planning experience.

While the CPSC 455 course project is intended as a beginner-level software development exercise, our team is committed to designing Trek as a scalable, industry-grade product with a strong emphasis on scalable and user-centric design. Our approach ensures that, even as a student project, Trek meets high standards of quality and functionality, providing a robust foundation for future development and deployment.

Project Information

Project Deliverables

The deliverable will be under one website that contains multiple key interfaces including the following:

Interface to View User's Profile with Associated Trips - This interface includes a user's public profile, a public about me section, basic public statistics and information about the user, and lists of trips that the user is associated with (user created or user is participating or participated in) the trip.

Interface(s) to View/Create/Remove/Modify a User's Trip - This interface includes the user's trip, add/delete/modify new itinerary for a trip, manage budget, view a map of the trip, and view the overall summary of a trip.

Interface(s) of Personalized Recommendations to Modify a User's Trip - This interface exists within the interface to View/Create/Remove/Modify a user's trip. It enables the users to receive personalized recommendations, but also allows users to ask questions and receive responses.

Interface to Manage User's Information - This interface allows the user to view and manage the user's private and/or public information, which is used as data for personalizations of Trek through ML/AI integrations.

High-Level Project Description

The high-level initial project description is written as below:

Have you ever tried to plan a group trip with your friends, but it never "made it out of the group chat"? Then this web app is perfect for you! Trek provides a centralized place to do all of your trip planning - say goodbye to Google Docs! Once you log in, Trek allows you to design your ideal trip, with trip destinations, timeframes, accommodations, and more. Then save the trip and let Trek easily let you share your trips with a single click. Trek can intelligently recommend the best things to do by using API calls to sites like Tripadvisor to get up-to-date ratings on good places to visit, as well as through other Trek users' most popular destinations. Trek can also display everything on an interactive map to help you visualize your transportation planning! Trek might also be able to give your groups weather information, a full itinerary written up by an LLM, and

even specific transportation options with their costs.

Created by **Trekkers**

Out of Scope

Although we are building Trek to be an industry-level software, given the limitations in timeline, we are unable to design this product to include software/system administrators and analysts in our user base, and not be able to include an administrative interface for managing the software.

As an alternative, thorough documentation will be provided with the release of version 1.0.0 that outlines how administrators and analysts can extract key metrics and manage the app from the backend, as well as deployment and troubleshooting guides.

Constraints

As a student-led project without a sponsor, Trek has strict budget constraints that must be followed. Currently, our budget is set to be a total of \$100. Utilising ML/AI technologies with external APIs can build-up costs. Due to this budget constraint, this project will introduce an API rate limit to minimise costs.

Assumptions

Our usability assumptions are based on the typical operating environment for the solution. This web-based application is designed for use on various devices, including desktop and laptop computers, tablets, and mobile devices. It is optimized to function seamlessly on major and up-to-date web browsers, such as Chrome, Safari, Edge, and Firefox.

We assume the system will handle real-life production use without any load limitations. It is engineered to support up to 150 concurrent users, reflecting the class size of CPSC 455. The system's stateless design ensures efficient management, ease of implementation, and scalability while delivering a streamlined and responsive user experience.

Dependencies

Dependencies for this project include access to OpenAI and Google's API, which is crucial for personalisation and usability, along with various other functionalities. Funding for this dependency will be \$20 per team member, with a total of \$100 per member.

Development Roadmap

The development of Trek will happen in the phases mentioned below. The development phases are distinct from the deadlines and course schedule of CPSC 455, and not necessarily aligned with it.

Phase	Description	Duration
Planning	Define the objective MVP by establishing a target specification that includes key functionalities, integration, and a responsive UI.	May 18th, 2024 to May 25th, 2024
Requirements & Design	User stories and use cases for the web app defined through interviews, and integration points between the app and other dependencies specified.	May 26th, 2024 to May 30th, 2024
Complete Front-end Development	Complete frontend development of the web app without API hook-up	May 30th, 2024 to July 5th, 2024
API Design	Complete specification documentation for internal APIs	June 8th, 2024 to June 15th, 2024
Core Back-end Development	Core backend development including database and API hook-ups. Excludes ML/AI functionalities.	June 15th, 2024 to June 30th, 2024
Beta Testing	Conduct initial testing in a controlled environment, evaluate core functionalities and app usability, by gathering feedback from a small user groups (TAs, cluster classmates)	July 13th, 2024 to July 20th, 2024
ML/AI Backend Development	Integrate and Implement ML/AI features of the web app	July 1st, 2024 to July 15th, 2024
Testing and Final Implementations	Conduct extensive tests and thorough system testing with a coordinated and systematic test plan. Finalize implementation.	July 20th, 2024 to August 6th, 2024
Project Completion	Deploy and Publish Version 1.0.0	August 7th, 2024

Team Structure

Unlike most software development teams, our team does not have an explicit leadership role including project manager, front-end lead, back-end lead. All members are expected to show leadership in their areas of knowledge and interests, and all members are expected to be a full-stack developer. Much of the traditional project manager roles, such as maintaining development phases and deadlines belong to the documentation experts.

Experts

One of the strengths of our team is the diversity in knowledge and the shared goal to learn from one another. Instead of having lead roles, we have designated team 'experts' that act as a point of contact when a member is having difficulties during a development process. Members are encouraged to ping an expert on the appropriate communication channel when they require assistance or guidance. Our experts have a responsibility that **all team members** are able to produce high quality code and understand the code they produce. The list of experts will be updated throughout the project.

Area of Expertise	Experts
Web Design	Justin Lieu, Matthew Kang
React	Justin Lieu, Matthew Kang
Redux	Justin Lieu
Auth0	Matthew Kang
API Design	William Xiao, Matthew Kang
NodeJS	Jacob Zhu
Express	William Xiao, Jacob Zhu
MongoDB	TBA
Documentation	William Xiao, Matthew Kang

Communications Plan

Our team's central communication channel is Discord, which shares similar features as Slack. The team's Discord server (similar to "Slack Workspace") holds different channels of communications suitable for any type of project concerns.

Our team's availability is managed through a private When2Meet link shared on our Discord server. Team members are expected to keep their availability updated throughout the project's duration.

We have established four types of synchronous team meetings:

Weekly Sprint Planning Meetings: Held every Sunday from 10:00 a.m. to 11:00 a.m. on Discord, these meetings provide an opportunity for all team members to review each other's scrum report on what we have accomplished in the past sprint, and formalize new sprint goals.

Mid-Sprint Check-in Meetings: Taking place during registered lab times on Thursdays between 5:00 p.m. and 7:00 p.m., these meetings serve to provide brief updates between weekly sprint planning meetings. On weeks where there are Workshop Presentations, we do planning for presentations, writing documentations, etc.

Feature Meetings: These smaller meetings focus on a specific feature or group of features (sprints) to be developed. They can be scheduled at any time by two or more members using our shared availability on When2Meet.

Bi-Weekly TA Design/Code Reviews: Occurring every other Saturday workshop from 12:30 p.m. to 3:30 p.m., these reviews are dedicated to assessing current progress, obtaining feedback from TAs or other CPSC 455 teams, addressing blockers and risks, and ensuring the project stays on track.

All asynchronous communication for project needs will be conducted in the team's Discord server.

Trekkers' Code (Code of Conduct)

Each member of Trekkers believes that products of high quality work must necessarily be followed by high quality processes.

*"Strive to achieve high quality in **both** the **processes** and **products** of professional work."*

ACM Code of Ethics 2.1

Each member of the Trekkers commits to excellence in the quality of the process of the work, and pledges follow the Trekkers' Code.

1. **Inclusivity:** Encourage and support contributions from all team members, regardless of their level of experience or background.
2. **Respect:** Respect differing viewpoints and experiences. Provide constructive feedback and be open to receiving it.
3. **Patience:** Recognize that everyone is learning. Offer help and guidance, and be patient with those who may need more time to understand.
4. **Collaborative:** Work together to solve problems and achieve our project goals. Share knowledge and resources freely.
5. **Kindness:** Show empathy and kindness to all team members. Celebrate successes and provide support during challenges.
6. **Transparency:** Communicate openly and honestly. Share your progress, challenges, and decisions with the team to maintain trust and clarity.