

ALPINE EDGE: SKI MARKETPLACE PLATFORM

Project Report - Team 16-1

TEAM MEMBERS

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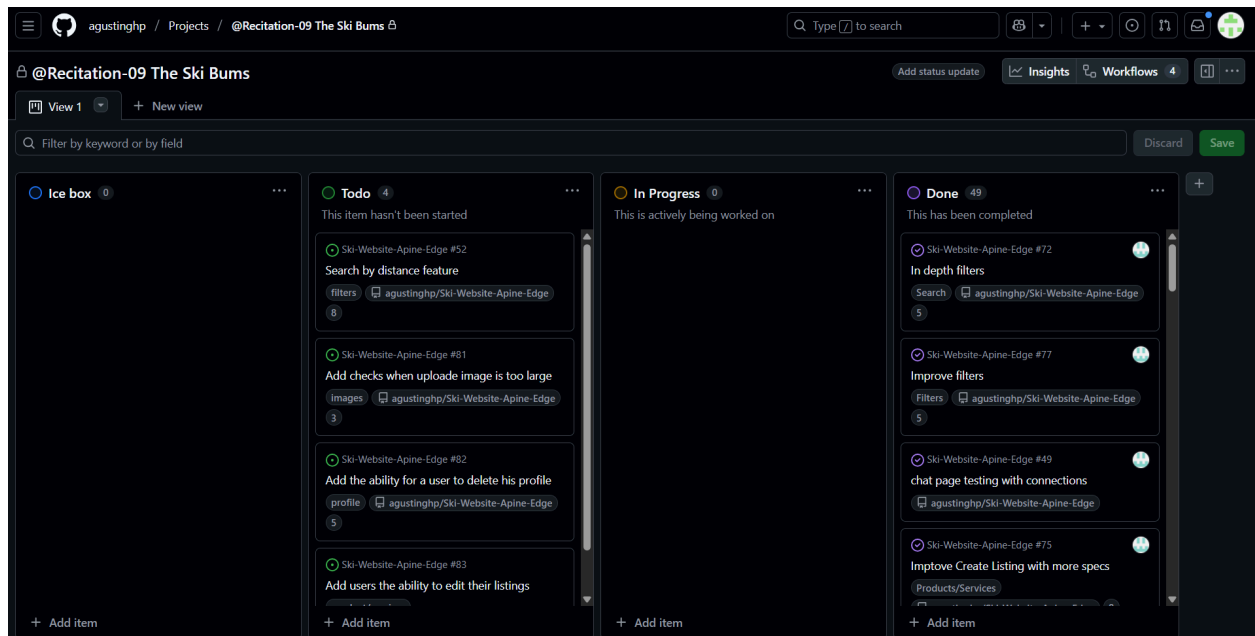
PROJECT DESCRIPTION

Alpine Edge is a comprehensive ski marketplace platform designed to connect ski equipment buyers, sellers, and service providers. The application enables users to list and search for ski products (equipment, gear) and services (ski tuning, lessons, rentals) in a centralized marketplace. Key features include user authentication, real-time messaging between buyers and sellers, advanced search with filtering capabilities, image upload for listings, location-based services, and a responsive design optimized for both desktop and mobile devices. The platform facilitates secure transactions and communications within the skiing community, making it easier for enthusiasts to find quality equipment and trusted service providers.

PROJECT TRACKER - GITHUB PROJECT BOARD

GitHub Repository Link:
<https://github.com/agustinghp/Ski-Website-Apine-Edge>
Project Board Link:
<https://github.com/users/agustinghp/projects/1>

Screenshot:



DEMO VIDEO

Video Link:

[https://github.com/agustinhp/Ski-Website-Apine-Edge/blob/main/Milestone%20Submissions/Vi
deo%20Demo.mp4](https://github.com/agustinhp/Ski-Website-Apine-Edge/blob/main/Milestone%20Submissions/Video%20Demo.mp4)

The demo video showcases the complete user journey including registration, product/service listing creation, search functionality, messaging between users, and the overall user experience.

VERSION CONTROL SYSTEM (VCS)

Git Repository:

<https://github.com/agustinhp/Ski-Website-Apine-Edge>

INDIVIDUAL CONTRIBUTIONS

David Poston:

Implemented the image storage system for product listings and user profiles using Multer and Sharp libraries. Developed the complete product and service implementation including database schema design, CRUD operations, and integration with the front end. Created the product detail pages with dynamic rendering of images, specifications, and seller information. Worked on the file upload middleware and image optimization to ensure fast loading times.

Technologies Used:

- Node.js
- PostgreSQL
- Multer
- Sharp
- Express.js

Features Contributed:

- Image storage and upload system
- Product CRUD operations
- Service CRUD operations
- Product detail pages
- Database schema design

Charlie Kasic:

Developed the pages and partials for the handlebars HTML front end design. Used CSS to create a style and theme for the page. Implemented the javascript middleware for registration, login and path navigation. Integrated unique search by location features into search and advanced search pages with precise location and rounding. Integrated database and user interface. Fixed important bugs with database indexing for uploading images to posts properly.

Technologies Used:

- HTML/Bootstrap/Handlebars
- Javascript authentication middleware.
- SQL indexing

- Haversine formula for distance in JS
- Google API integration with search

Features Contributed:

- Front end design pages and partials
- Login/registration middleware
- Authentication checking
- Distance filter/ search by radius

Agustin Garcia-Huidobro:

Implemented the real-time chat messaging system using Socket.io for bidirectional communication between connected users, saving the chat messages using PostgreSQL. Developed the advanced search functionality with filtering by product type, price range, brand, and category-specific attributes (dimensions, sizes, etc.), enabling users to search products, services, and users with multiple filter combinations. Enhanced the product listing page, with support for a variety of products (skis, snowboards, helmets, boots, poles, goggles, gloves, jackets, pants and other), with form fields that update based on the selected category. Also added robust error handling for the page for things like image size being too large or bound checking for numerical inputs and more. Integrated Google Maps Places API for the location autocomplete on the registration page, which allows users to select their location with automatic coordinate extraction, while making sure other users can only see other people's cities but not exact coordinates. Built and implemented the connections feature with the database, and the html pages using the handlebars. Users can send requests, reject them, or send them again after they reject someone. A connection unlocks the ability to chat with the connected user.

Technologies Used:

- Node.js
- PostgreSQL
- [Socket.io](https://socket.io/)
- [Express.js](https://expressjs.com/)
- JavaScript
- Handlebars
- Google Maps API

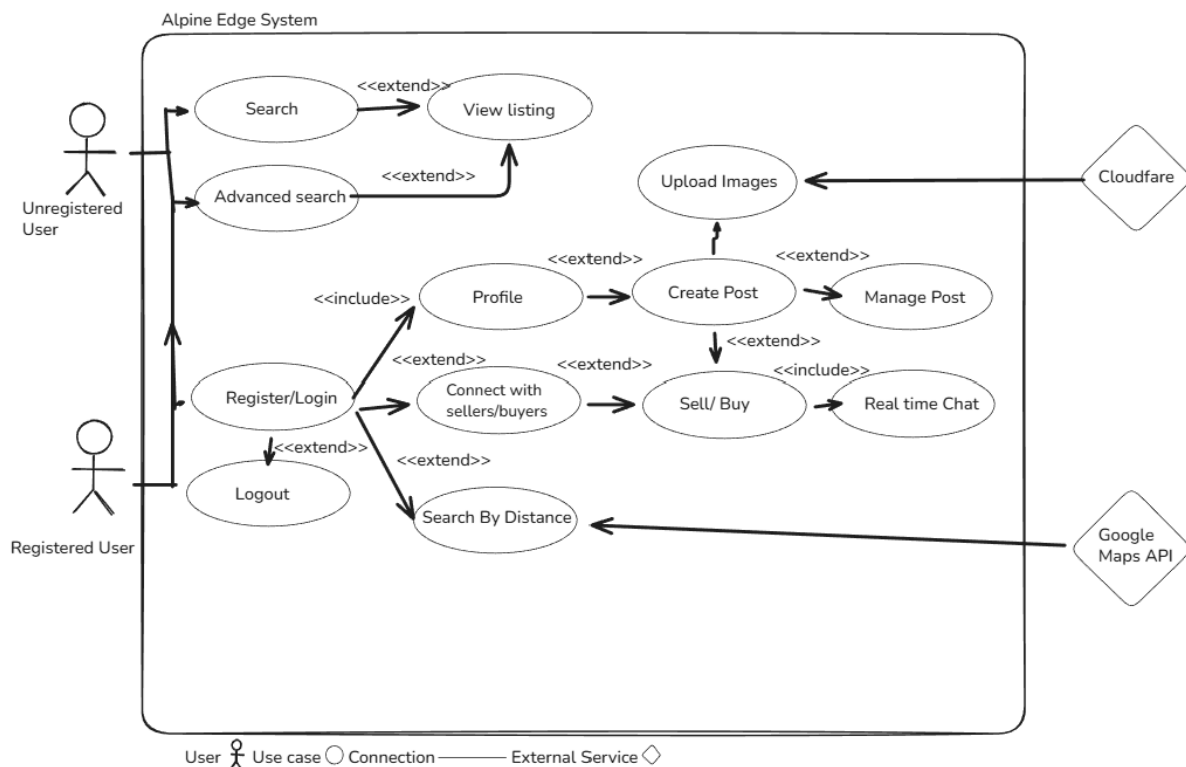
Features Contributed:

- Real-time chat messaging system
- Advanced search with multi-filter functionality
- Product listing form with dynamic fields for multiple product types
- Location autocomplete for user registration

- Connections/friend request system
- Database schema for products, services, users, connections and messages
- Other users profile page (Not your own but when you are viewing someone else's profile)

USE CASE DIAGRAM

The following use case diagram illustrates the interactions between different actors (Buyers, Sellers, Service Providers, Guests) and the system Functionalities.



ACTORS:

- Guest User: Can browse listings, view product/service details, search and filter
- Registered User: All guest capabilities plus create listings, message other users, manage profile
- Seller: List products, manage inventory, respond to inquiries, update listings

- Service Provider: List services, manage bookings, communicate with clients

MAIN USE CASES:

1. User Registration & Authentication

- Login
- Register
- Logout

2. Browse & Search Products/Services

- Search by keywords
- Filter by price, length, width, location
- View search results
- Sort results

3. Create Listings

- Add product with specifications
- Add service offering
- Upload images
- Set pricing

4. Manage Listings

- Delete listings
- View own listings
- View other listings

5. Real-time Messaging

- Send messages to other users
- Receive messages instantly
- View chat history

7. View Detailed Listings

- View product specifications
- View seller information
- Contact seller/provider option

WIREFRAMES

The following wireframes were created during the design phase of the project, **ALL WIREFRAMES IN GITHUB REPO:**

1. Home Page

Home Page to introduce the user, with a button to start searching

Home page

Alpine Edge

Home Search Advanced Search My Profile Chat Create Listing Logout

Welcome to Alpine Edge!

Start Searching ~>

2. Login Page

In the login user can log in with username and password, and redirect to the home page.

Login Page

Alpine Edge

Home Search Advanced Search Login Register

Login

username

password

[Register here](#)

3. Register Page

Users can register with a Username, Email, their location and password. The location field is with autocomplete help from Google Maps API. page redirects to the home page once registered successfully.

Register

Alpine Edge
Home
Search
Advanced Search
Login
Register

Register

username

Email

location

Password

[Login here](#)

4. Search Page

Search interface with location filter, and type filter (Services, products and users), and a search bar.

Search Page

Alpine Edge
Home
Search
Advanced Search
My Profile
Chat
Create Listing
Logout

Search Results

All types
Products
Services
Users

Within 10 mi
Within 25 mi
Within 50 mi
Within 100 mi
Any where

Products

Picture

Product name
Place
User name
Price
View details

5. Advanced Search Page


Page with more advanced search features to specify different products and their dimensions, can filter by brands, size and width/length for skis and snowboards, and different options depending on the product selected. Also has a search bar.

Advanced Search

Alpine Edge Home Search Advanced Search My Profile Chat Create Listing Logout

input box

Filters

Product type Search location use my  Radius miles

Brand

Amodeo Atomic OPS K2

Add brand for filter

Price Range min max Sort by Descend

Search

↓ (Products from search)

filters

Length

width

6. Product/Service Detail Page

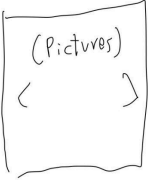
Comprehensive view of listing details, images, seller information, and contact Options.

Product/Service detail

Alpine Edge Home Search Advanced Search My Profile Chat Create Listing Logout

Product Name

Seller information



SKU

Brand Model

Price:

Specifications

Length: . . . Width: . . .

☐ User name
location
Member since

7. Create Listing Page

Form interface for adding new products or services with image upload Capability.

Create Listings

Alpine Edge Home Search Advanced Search My Profile Chat Create Listing [Logout](#)

Create a Listing

Product Listings Service Listings

Product type

Ski:

Brand

Model

Product Name

Description

Ski length Ski width

Price


Images (Max 5)

8. User Profile Page

Dashboard showing user's own listings, account information, and management Options, such as changing profile image.

My Profile

Alpine Edge Home Search Advanced Search My Profile Chat Create Listing [Logout](#)



@asvachinshp
Builder

[change profile picture](#)

[Connection requests](#)

[Create listing](#)

Connections

—
—
—

My Products [Add Product](#)

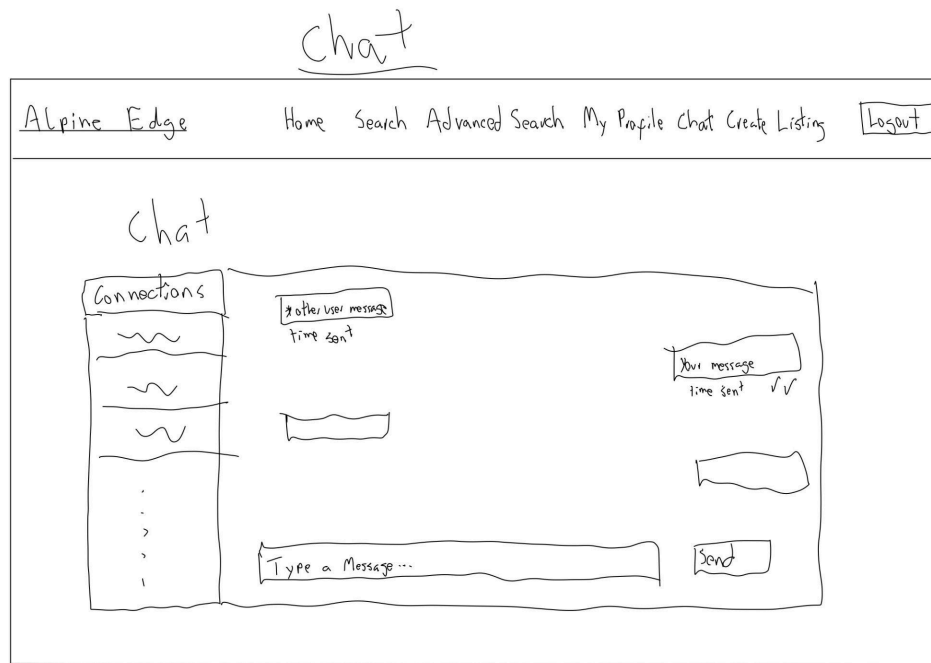
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My Services [Add Service](#)

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—

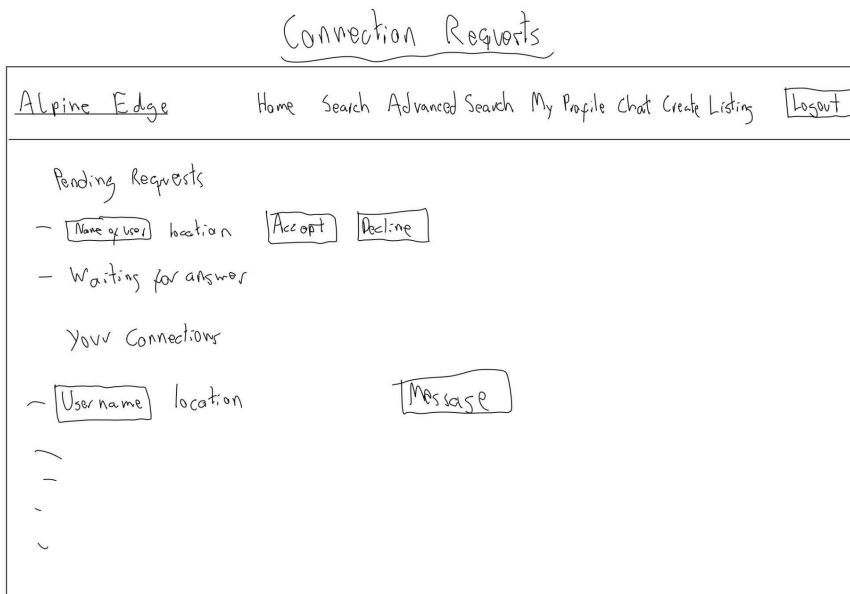
9. Chat/Messaging Page

Real-time messaging interface with conversation history and contact list.



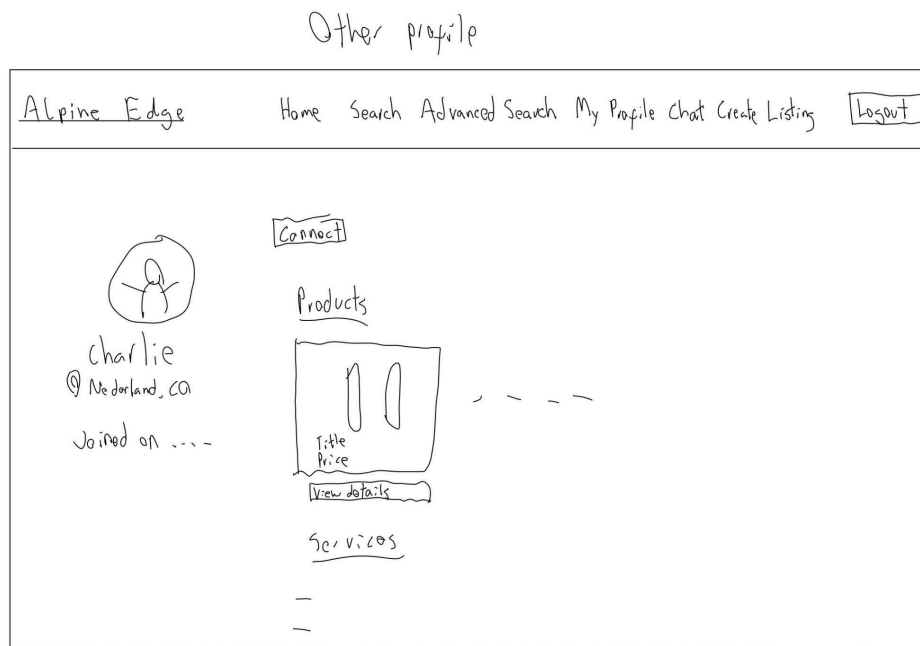
10. Connections Page

List of all current, pending and incoming connection requests.



11. Other Users Profile Page

Dashboard showing this user's listing, connection status and information if available. Shows more information if a connection is set



USER ACCEPTANCE TEST RESULTS

Based on the User Acceptance Test Plan from Lab 10, the following tests were Conducted.

Test cases:

1. User registration and login
2. Product Posting
3. Chat testing

KEY OBSERVATIONS FROM USER TESTING:

For all the testing, the application worked as expected:

They were able to create a user, and it automatically logged them in their account

They were able to post a ski product, and it appeared in the search results.

They were also able to chat with other users in real time.

Upon further testing we received feedback that our search page was lacking some clarity and the ability to do more filtering. So we added the advanced search page with a lot more filtering and better styled the regular search page.

DEPLOYMENT

Live Application URL:

<https://alpineedge-web.onrender.com/>

TECHNOLOGY STACK:

Backend:

- Node.js with Express.js framework

Database:

- PostgreSQL 15

Template Engine:

- Handlebars.js

Real-time Communication:

- Socket.io

Image Processing:

- Multer + Sharp

Frontend:

- Bootstrap 5, CSS3, JavaScript ES6+

Containerization:

- Docker & Docker Compose

Session Management:

- Express-session with connect-pg-simple