

# 3 Project Proposals

Green

WMDD - 4985 Capstone

## TEAM

### Development

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### Design

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# Project Proposal: 1

## VanRentalHub: Revolutionizing Vancouver Rentals

**Industry:** Real Estate Tech

**Pain Point:** The pain point being addressed here is the inefficiency and complexity of the rental property market in Vancouver. Many individuals searching for rental properties face challenges such as outdated listings, unreliable information, and a lack of transparency. Property owners and landlords also encounter difficulties in effectively listing and promoting their rentals.

**User Motivation:** Renters and property owners would use VanRentalHub because it simplifies both processes (searching for an apartment and listing a property). Renters get access to a reliable platform with up-to-date listings and enhanced property information, including 360-degree video tours. Property owners benefit from an easy-to-use platform to list their properties, potentially reaching a wider audience. This platform addresses the pain points of both groups, making it a valuable resource in the competitive real estate market.

## Project Main features:

### 1. Gyroscope - Augmented Reality (AR) Property Tours:

Utilize the gyroscope to offer users immersive augmented reality property tours. When users take pictures through their device's camera, the gyroscope can detect their device's orientation and adjust the AR display accordingly. As users move their devices, they can virtually explore the property from different angles. This feature would allow potential renters to take virtual tours of properties, enhancing their understanding of the space.

### 2. Camera - Real-Time Video Viewing:

Integrate real-time video viewing capabilities into your platform. Property owners can conduct live video tours of their rental properties, and potential renters can join these tours through their device's camera. This feature allows renters to ask

questions in real time, request close-up views of specific areas, and get a better sense of the property without a physical visit.

**3. Light - Smart Lighting Recommendations:**

Use the light sensor to provide smart lighting recommendations for each rental property. When users view a property, the platform can analyze the lighting conditions in different areas and suggest optimal lighting setups. For example, it can recommend the best positioning for lamps or curtains to optimize natural light. Users looking for well-lit spaces would find this feature valuable.

**4. GPS - Location-Based Property Insights:**

Leverage GPS to offer location-based property insights. When users search for rental properties, the platform can provide information about the neighbourhood, nearby amenities, schools, and transportation options based on their current location or the property's address. This feature helps renters make informed decisions about the suitability of the location.

## **Major Feature A: Camera**

### **Why is this feature important to the user and application?**

The camera feature provides visual confirmation, real-time interaction, convenience, transparency, and trust-building for users. It allows users to visually verify rental property conditions. This feature saves time and effort, especially for long-distance relocations, while reducing misunderstandings through transparent property views, ultimately fostering trust in the rental process.

### **What problem is being solved?**

The camera feature solves the problem of providing users with visual confirmation and transparency when exploring rental properties online.

### **How is it being solved?**

The camera feature is solving these problems by enabling users to upload images/videos of rental properties, allowing users to visually confirm property conditions, engage in direct communication, and build trust through transparency, all while offering convenience and efficiency in the rental search process.

**In what way will the user interact with this feature?**

Users will engage with the camera feature for taking pictures and videos of rental properties and uploading them to the application.

**Why is this relevant to the user?**

The camera feature is relevant to users because it offers a convenient, immersive, and trustworthy way to remotely explore rental properties, saving time, reducing the need for physical visits, and providing confidence in their rental decisions.

**Major Feature B: GPS****Why is this feature important to the user and application?**

The GPS feature is vital for users, enabling them to make location-informed rental decisions, while also providing the application with a competitive edge and enhancing user engagement.

**What problem is being solved?**

The GPS feature solves the problem of users lacking essential location-based information when searching for rental properties, enabling them to make informed decisions aligned with their preferences and needs.

**How it is being solved?**

The GPS feature is solving this problem by integrating location-based services into the application, allowing users to access essential geographic information about rental properties, nearby amenities, and transportation options, thereby enabling informed decision-making based on their location preference.

**In what way will the user interact with this feature?**

Users interact with the GPS feature by searching for properties in specific areas, mapping property locations, obtaining directions, and accessing location insights to make informed rental decisions.

**Why is this relevant to the user?**

The GPS feature is relevant to users as it provides essential location-based information, making their property search more efficient and helping them choose rentals in areas that align with their preferences and needs, ultimately enhancing the rental decision-making process.

**Cloud Feature:****How will the cloud aspect be tied into the application?**

Utilize cloud-based databases such as MongoDB Atlas, and Firebase Firestore to store and manage application data, including user profiles, property listings, and user-generated content.

**Platform:****What platform will this feature be on and why?**

React Native as its single codebase that works on both iOS and Android platforms. This significantly reduces development time and effort compared to building separate apps for each platform.

Additionally, it integrates well with various backend services through RESTful APIs. This will allow us to connect our rental app to databases, servers, and other web-based resources seamlessly.

# Project Proposal 2

## SmartTrack - Indoor Item Positioning with BLE

**Industry:** IoT and Smart Devices

**Pain Point:** The central challenge SmartTrack addresses is the common frustration of losing or misplacing valuable indoor items, leading to wasted time and stress. Existing solutions often fall short in terms of precision and energy efficiency, hindering their effectiveness.

**User Motivation:** SmartTrack is designed to simplify indoor item tracking for users by offering precise **Bluetooth Low Energy** (BLE) technology. Users are motivated to adopt SmartTrack because it excels in energy efficiency, ensures extended battery life, and provides real-time battery status monitoring. Additionally, the system offers precise item tracking through BLE-tag associations and seamless data synchronization with an online backup. The introduction of geofencing capabilities further enhances its value by helping users create and manage "not-to-forget" item lists, ensuring they receive timely alerts when moving away from these items. SmartTrack addresses users' pain points by saving time and reducing frustration, making it an essential tool for efficient indoor item management.

It runs only on mobile devices. (iOS/Android)

### Main features:

#### Feature A: Tap to find

For the user (mostly seniors) who has difficulty tracking private items, if there are a lot. The user could create a list in the App and pair each entry with a tag. Then, put this tag aside the item. The user could tap the button in the App to buzz the corresponding tag when the user forgets the position of such an item.

#### Feature B: Anti Lost

The user could program the tag to buzz when it loses the connection with the cellphone. One scenario is that the item is physically away from the cell phone. Therefore, such buzzing works as an alert for theft or loss.

## **Feature C: Battery Tracking**

Regularly reports the battery status back to the user. The App projects the time in the future for replacing the batteries for each tag.

## **Cloud Feature**

User registration and data backup.

# Project Proposal 3

## HomeHarmony - Streamlining Shared Living

**Industry:** Collaborative Living Solutions

**Pain Point:** HomeHarmony addresses the challenges faced by roommates sharing living spaces, including the lack of a unified platform for task management, chore allocation, bill sharing, and communication. These issues often lead to misunderstandings and disputes among roommates, impacting the quality of shared living.

**User Motivation:** Roommates are motivated to use HomeHarmony because it simplifies shared living by providing a digital collaboration tool inspired by Trello's task management. This tool ensures fair task distribution, promotes financial transparency and facilitates efficient communication among roommates. HomeHarmony's centralized platform fosters harmony by allowing roommates to coordinate responsibilities effectively, ultimately enhancing the overall quality of their shared living experiences.

### Major Feature A - Camera

Recognize and process text in images and documents using Optical Character Recognition (OCR).

**Why is this feature important to the user and application?**

This will be used to facilitate communication and task management between roommates. Users can take a picture of grocery lists, bills, receipts, and contracts, and upload them to the board.

The Optical Character Recognition (OCR) technology recognizes and processes text in images and documents. Users can take a photo of a document, whiteboard, or any image containing text, and the app will capture the image and store it in the cards on the board.

### **What problem is being solved?**

The main problem in shared living is communication and task delegation. This feature will help roommates share information and important documents for effective communication, holding each one of them accountable.

### **How it is being solved?**

The OCR will process the image to identify the text within it. The converted text is then extracted from the image and stored as actual data within the note. This makes the text searchable and allows users to copy and paste it like any other text.

### **In what way will the user interact with this feature?**

Using the camera and uploading the image file into a card on the board.

### **Why is this relevant to the user?**

It's very simple and easy to use. It requires minimum effort and helps roommates to stay organized to ensure a harmonious cohabitation.

## **Major Feature B - GPS**

A "Location-Based Chore Reminders" feature using GPS technology.

### **Why is this feature important to the user and application?**

This feature is essential for users as it directly addresses the pain point of chore allocation and task management in shared living spaces.

It ensures that roommates are reminded of their responsibilities at the right time and place, reducing misunderstandings and disputes.

Location-based chore reminders simplify the coordination of household tasks, making shared living more harmonious and stress-free.

### **What problem is being solved?**

The problem being solved is the lack of an efficient system for chore allocation and task management among roommates in shared living spaces. This often leads to

misunderstandings and disputes. The feature addresses this by using GPS technology to remind roommates of their responsibilities when they are in the appropriate location.

### **How is it being solved?**

The feature uses GPS technology to track the physical location of roommates.

Users can set up chore reminders associated with specific locations within their shared living space.

When a roommate enters the designated area linked to a chore, the app sends a push notification reminder.

This ensures that tasks are addressed when roommates are in the right place, streamlining chore allocation and reducing conflicts.

### **In what way will the user interact with this feature?**

Users will set up chore reminders and associate them with specific locations within their shared living space.

The app will automatically send push notifications to users when they enter the designated areas, reminding them of their tasks.

### **Why is this relevant to the user?**

This feature is relevant to users because it simplifies their daily lives in shared living situations, reducing conflicts and misunderstandings. It ensures that chores are completed in a timely manner, promoting a harmonious living environment.

By using GPS technology, it offers a modern and convenient solution that aligns with the way users navigate their living space, making it highly relevant to their daily routines and needs.

## **Cloud Feature**

### **How will the cloud aspect be tied into the application?**

App will utilize cloud storage services to securely store user data, such as chore schedules, task allocations, and communication history. This data will be synchronized across all devices and accounts associated with a particular living space.

Cloud-based synchronization ensures that any changes made by one roommate are instantly propagated to all other roommates in real-time. For example, if a chore reminder is marked as completed, all roommates will see the updated status simultaneously.

## **Platform**

**What platform will this feature be on and why?**

React Native as its single codebase that works on both iOS and Android platforms. This significantly reduces development time and effort compared to building separate apps for each platform.

# Design/Development Plan

## Sprint 1 (1 week)- Project Kickoff

- Define project goals, objectives, and scope.
- Create a detailed project plan.
- Set up development environments and tools.
- Estimate and allocate resources.
- Conduct initial research and requirements gathering.
- Hold a project kickoff meeting.
- Starting user testing to create wireframes.

## Sprint 2 (2 weeks)- Backend Foundation

- Set up the backend server using Node.js and Express.js.
- Initialise the MongoDB database (MongoDB Atlas).
- Implement basic user authentication (Firebase Authentication).
- Develop API endpoints for user profiles.
- Creating Wireframes.

## Sprint 3 (1 week) - User Authentication

- Enhance user authentication and authorization.
- Implement secure login and registration flows.
- Develop API endpoints for property listings.

## Sprint 4 (2 weeks) -Web Frontend

- Start developing the web frontend using React.js.
- Design and create UI components based on wireframes.
- Integrate user authentication into the web frontend.
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## Sprint 6 (2 weeks) - Real-time Features

- Implementing main features such as camera and GPS in frontend.

## Sprint 7 (1 week) - Mobile App Structure

- Design and implement core app screens.
- Build property listing and search features for the mobile app.

**Sprint 8 (1 week) - Mobile Functionality**

- Conduct mobile app testing for functionality and responsiveness.

**Sprint 9 (1 week) - Testing and Quality Assurance**

- Conduct comprehensive testing and bug fixing.
- Ensure cross-platform compatibility and responsiveness.
- Prepare for user acceptance testing.

**Sprint 10 (1 week) - Deployment Preparation**

- Prepare the application for production deployment.
- Conduct final pre-launch testing and optimization.

## Team

### **Sanjana** - Front End Developer

Innovative web developer with 2 years of Front-End experience building and maintaining responsive websites. Proficient in HTML, CSS, JavaScript; plus modern libraries and frameworks. During the Capstone Project I will be designing the frontend components and user interface ensuring an exceptional user experience.

### **Mahima Mukhi** - Full Stack Developer

Worked as a Backend Developer for 2 years. The Capstone Project will be working as full stack developers from creating user-friendly interfaces using React Native to developing APIs to allow communication between the front-end and back-end systems using Node.js.

### **Lais Alves** - Project Manager and Front-End Developer

Background in Digital Marketing and data analysis. In the Capstone Project responsible for keeping track of the development process and promoting effective communication within the team. Also, part of the front-end developer team to create an application that delivers the best possible user experience to its users.

### **Madhu Nyoupane** - Dev Lead

Worked as a lecturer for 3.5 years for undergraduate computer engineering students in Nepal. In the Capstone project, will be working as a full-stack developer using React Native for the front end and Node.js for the back end, along with MongoDB and Firebase as databases.

### **Natasja Berzoini** - UX/UI Design Lead

Background in UX/UI design, working on projects for startups and non-profit organizations. In the Capstone Project will lead the design team for effective collaboration, managing all the stages of the design process to deliver a solution that meets both business goals and user needs. Plan the design handoff and implementation with the development team to ensure visual consistency across all devices.

### **Xiaozhou Ji (Sean)** - Full Stack Developer

In the Capstone Project will be responsible for implementing the assigned feature throughout the tech stack and assist other developers once needed.

**Monica Varma** - UX/UI Designer

As a UX/UI Designer with a background in graphic design and architecture/interior design, I merge creativity and functionality to deliver user-friendly digital products. In the Capstone Project, will encompass user research, wireframing, intuitive interface design, usability testing, cross-functional collaboration, promote accessibility, integrate graphic design principles, manage design documentation, and effective design communication.

**Evelyn** - UX/UI Designer

I am a professional designer with project experience in UX and UI design. For the Capstone Project I will focus on accessible design to create an app that can be used by everyone. A background in law has helped me develop problem-solving and attention to detail. I will be responsible for ensuring that there is consistent navigation and components through the entire app.