PATHSEEKER

YOUR SMART CAREER COMPASS

COURSE: 4495 - APPLIED RESEARCH PROJECT
SECTION: 002
TEAM MEMBERS:

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INSTRUCTOR: PADMAPRIYA ARASANIPALAI KANDHADAI
SUBMISSION DATE: APRIL 13, 2025

Introduction

1. Domain and Background

In today's fast-evolving technological landscape, students and early-career professionals often face confusion and uncertainty when navigating their career paths. With a multitude of academic disciplines and career options available, it becomes increasingly difficult for individuals to make informed choices aligned with their interests, strengths, and long-term goals. Traditional career counseling methods—often reliant on static assessments or generalized recommendations—fail to account for evolving job market trends, personal learning patterns, and individual potential.

The **PathSeeker** app is situated at the intersection of **career guidance**, **educational technology**, and **artificial intelligence**. It seeks to provide personalized, intelligent, and engaging career pathway recommendations to users by analyzing their academic background, interests, and goals. The app leverages **React Native with TypeScript and Expo**, **Firebase for backend services**, and **AI integration for generating career insights**, delivering a dynamic user experience on both Android and iOS platforms.

2. Framing the Problem

The core problem we address in this research is:
"How can we simplify the career decision-making process for students and young professionals using intelligent and personalized mobile technology?"

Key challenges within this space include:

- Overwhelm due to an overload of generic career information.
- Lack of real-time guidance aligned with market trends.
- Limited access to qualified career counselors.
- A gap between users' interests and actual career opportunities.

Addressing this issue is crucial not only for individual growth but also for improving overall workforce alignment, reducing career dissatisfaction, and supporting better educational outcomes.

3. Literature Review and Knowledge Gaps

Several applications and platforms attempt to tackle career guidance. Existing tools like LinkedIn Career Explorer provide static career recommendations or keyword-based suggestions. These platforms, while informative, typically:

- Lack mobile-first design and engaging UI tailored to Gen Z and millennial users.
- Are not integrated with AI capabilities for real-time, adaptive career suggestions.

Recent studies in educational technology highlight the increasing use of **AI-based recommendation systems** in e-learning platforms. Tools like Coursera and Udemy use AI to suggest courses but do not assist in long-term career planning. Similarly, research in mobile application development indicates that **React Native** is gaining popularity for building scalable, cross-platform apps with native performance.

However, a noticeable **gap exists in combining AI-driven personalization**, **career insights**, and **user-friendly mobile experiences** under one unified platform. This is where PathSeeker aims to make a meaningful contribution.

4. Hypotheses, Assumptions, and Benefits

Initial Hypotheses:

- H1: Users will find AI-based recommendations more relevant than traditional static suggestions.
- H2: A mobile-first approach will increase engagement and accessibility, especially among students.
- H3: Visual and interactive UI design will improve user satisfaction and retention.

Assumptions:

- Users will have at least basic knowledge of their educational background and interests.
- AI-generated suggestions can be meaningfully mapped to real-world career paths.
- Firebase provides a reliable and scalable backend for real-time data handling.

Potential Benefits:

- Provide students and job seekers with a tool that simplifies decision-making.
- Reduce anxiety and confusion around career planning.
- Encourage self-discovery and exploration of less known but relevant career paths.
- Offer institutions a scalable digital tool to support career counseling services.

Summary of the Research Project

The **PathSeeker** project is a mobile application designed to assist students and early-career individuals in discovering and planning their future career paths. Developed using **React Native** with **TypeScript** and **Expo**, the app delivers a cross-platform user experience compatible with both Android and iOS. It utilizes **Firebase** for backend functionalities, including authentication, cloud storage, and real-time database interactions.

Core Objective

The main goal of PathSeeker is to simplify and personalize the career discovery journey by offering AI-driven recommendations, visually appealing career path maps, and interactive feedback systems. It caters to a wide range of users, including students who are uncertain about their academic trajectory and individuals seeking to align their educational background with job market demands.

Final Form and Architecture

The final version of the PathSeeker app is structured in a modular and scalable manner, as evident from the folder organization:

- **app/** – The entry point of the application and navigation logic.
- **assets/** – Contains images, icons, and multimedia assets.
- **components/** – Reusable UI elements such as buttons, cards, and form inputs.
- **constants/** – Static values and configuration constants used across the app.
- **context/** – Context APIs for managing global state (e.g., user authentication).
- **hooks/** – Custom React hooks for encapsulating logic (e.g., data fetching, theming).
- **scripts/** – Utility scripts for build and deployment automation.
- **utils/** – Utility functions like formatting, validation, and helpers.

Functionality Highlights

- **Authentication:** Firebase authentication with secure sign-up/sign-in via email.
- **User Profile Setup:** Allows users to input academic background, interests, and goals.
- **AI-Powered Recommendations:** Uses OpenAI API to generate tailored career suggestions.
- **Roadmaps and Exploration:** Offers visual maps and tips for careers like Data Scientist, Developer, and Product Manager.
- **Feedback and Refinement:** Users can rate recommendations and provide feedback to refine future suggestions.

Tools and Technologies

- **Frontend:** React Native, TypeScript, Expo.
- **Backend:** Firebase (Authentication, Firestore, Storage).
- **DevOps & Tools:** Git, VSCode, Node.js, and various open source React libraries.

- **APIs:** Integration with OpenAI for career suggestion logic.

Changes to the Proposal

Few changes have been made since the initial proposal to enhance **PathSeeker's** functionality, feasibility and ease.

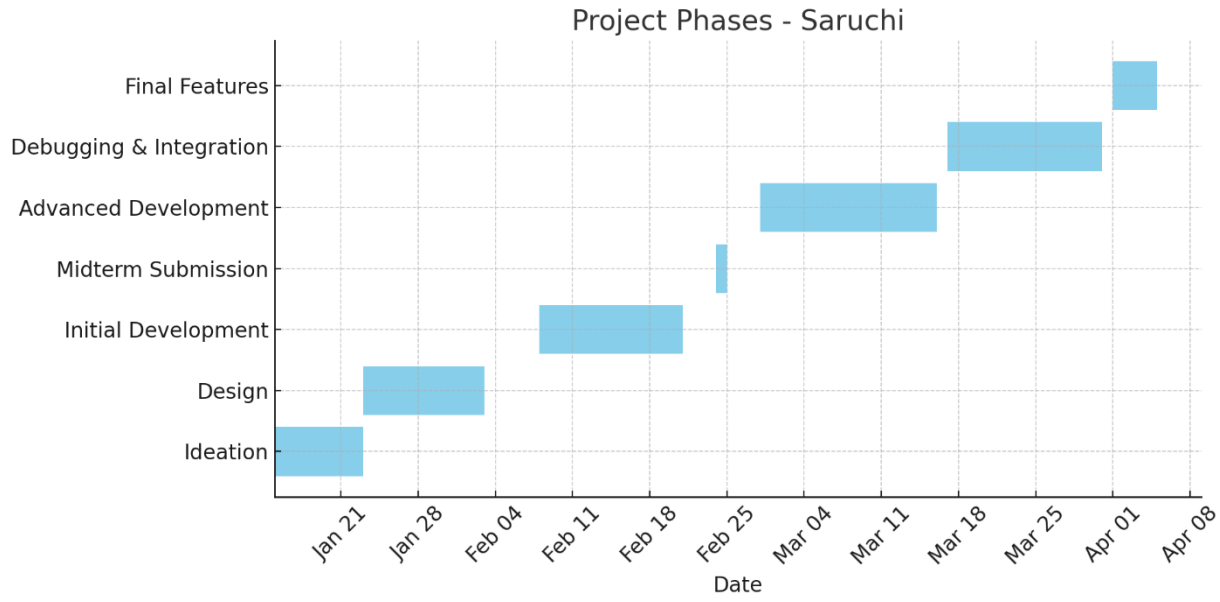
Feature/Technology	Initial Proposal	Updated Approach	Justification
Data Storage	Firebase, MongoDB	Firebase only	Simplifies implementation and reduces complexity.
Frontend Framework	Flutter (Dart) / React Native	React Native only	React Native supports JavaScript, making it easier and faster to code.
User Input Method	General Questions	Questionnaire not reveling much personal info	Privacy guidelines are not yet integrated with the information.
Recommendations	No general recommendations	Includes General Job Categories	Enhances user value by offering broader career suggestions beyond personalization.

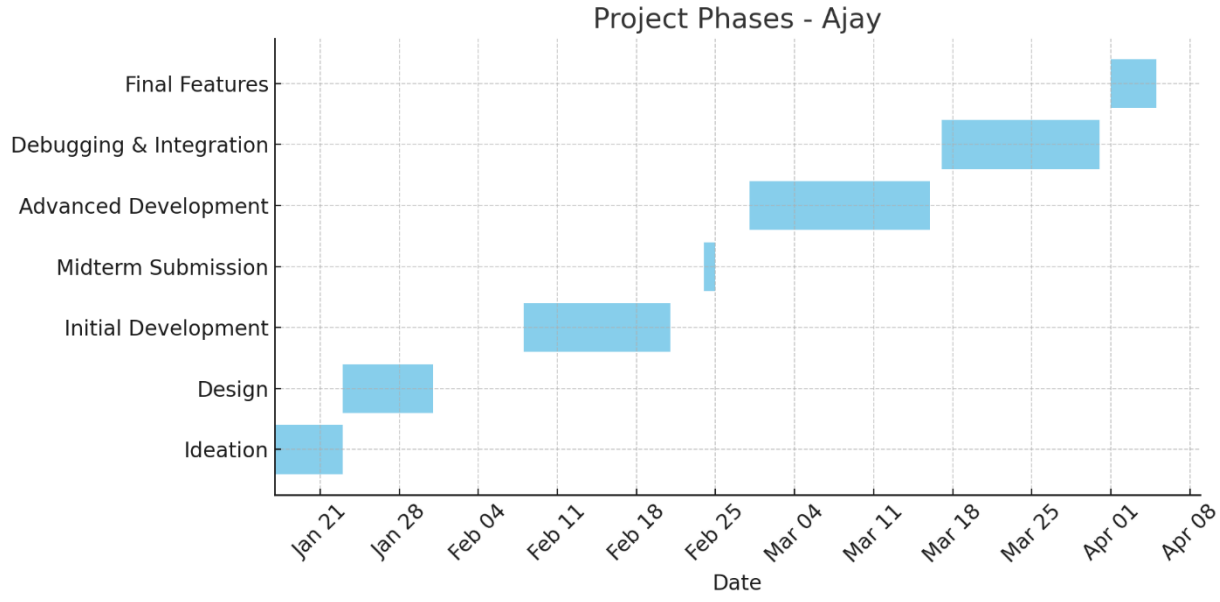
Timeline combined for Saruchi and Ajay

Phase	Dates	Activity Description	Assigned To
Planning & Ideation	Jan 15 – Feb 8, 2025	Idea brainstorming and finalization of PathSeeker Explored apps and tools (Figma, Canva, Lucidchart) Created GitHub repo and initial progress report	Saruchi & Ajay
Planning & Ideation	Jan 15, 17, 18, 20, 22	Ideation and planning structure	Saruchi
Planning & Ideation	Feb 8	Created GitHub repo and progress report	Saruchi
Planning & Ideation	Jan 15 – 22	Initial feature planning and discussion	Ajay
Learning & Setup	Feb 11 – Feb 13, 2025	Researched React Native and Expo Learnt from Gaurav Verma Explored YouTube tutorials	Saruchi
Learning & Setup	Feb 13	Took React training from former mentor	Saruchi

Learning & Setup	Feb 4 – Feb 11	Researched Flutter & Firebase options	Ajay
Development Phase 1	Feb 14 – Feb 28, 2025	Built Splash screen, login/signup pages in Android Studio Created components for reuse Midterm report and video creation and fixes	Saruchi
Development Phase 1	Feb 24, 28	Met at college, recorded video, fixed errors	Saruchi & Ajay
Development Phase 1	Feb 14 – 20	Started development on Flutter and UI integration	Ajay
Development Phase 2	Mar 1 – Mar 15, 2025	Scroll view, UI testing, profile updates Researched and implemented state management Firebase authentication attempts	Saruchi
Development Phase 2	Mar 5 – 13	Refined UI and collaborated on Firebase login	Saruchi & Ajay
Development Phase 2	Mar 1 – 15	Integrated and debugged Firestore-related features	Ajay
Development Phase 3	Mar 17 – Mar 30, 2025	Worked on Firestore profile page issues Added AI integration, fetched API key Created progress report and abstract	Saruchi
Development Phase 3	Mar 21 – 25	Debugged profile page, updated layout.tsx	Ajay
Finalization Phase	Apr 1 – Apr 6, 2025	Created utils folder for recommendations Built trending job recommendation feature Final commits, feedback survey, forgot password completion	Saruchi
Finalization Phase	Apr 2 – 4	Final layout adjustments and feedback system implementation	Ajay
Finalization Phase	Apr 5	Created feedback form	Saruchi
Apply Prompt	Apr 9	Made apply prompt for applying jobs	Ajay

Gantt Chart


Project Phases - Saruchi
Final Features
Debugging & Integration
Advanced Development
Midterm Submission
Initial Development
Design
Ideation
Jan 21
Jan 28
Feb 04
Feb 11
Feb 18
Feb 25
Mar 04
Mar 11
Mar 18
Mar 25
Apr 01
Apr 08
Date


Project Phases - Ajay
Final Features
Debugging & Integration
Advanced Development
Midterm Submission
Initial Development
Design
Ideation
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Feb 04
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Mar 04
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Mar 18
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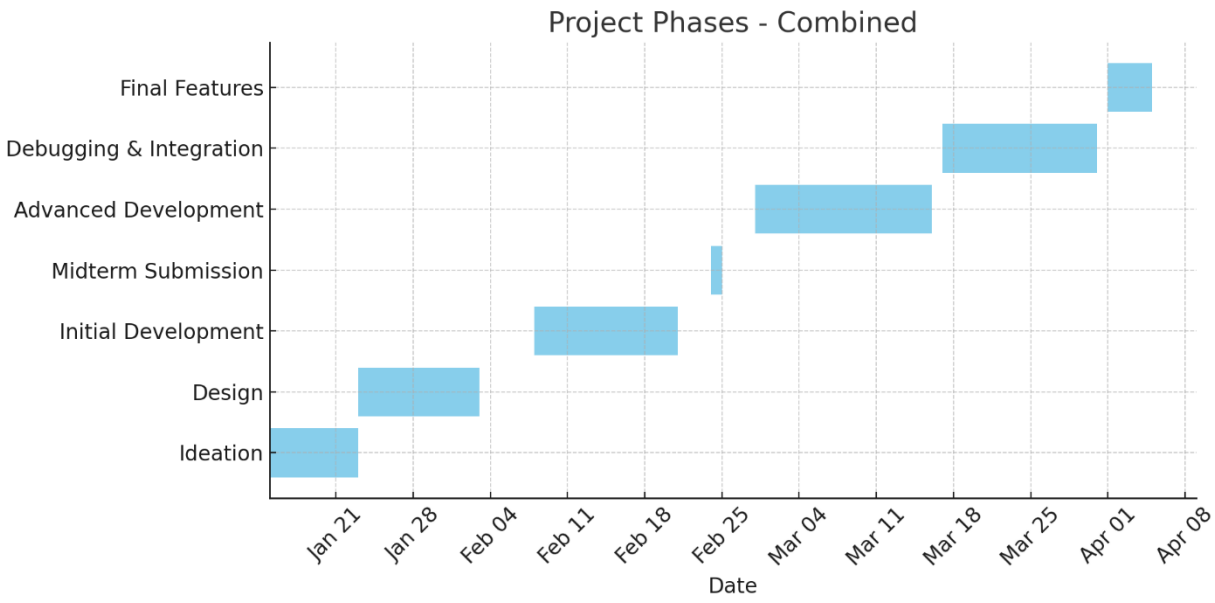
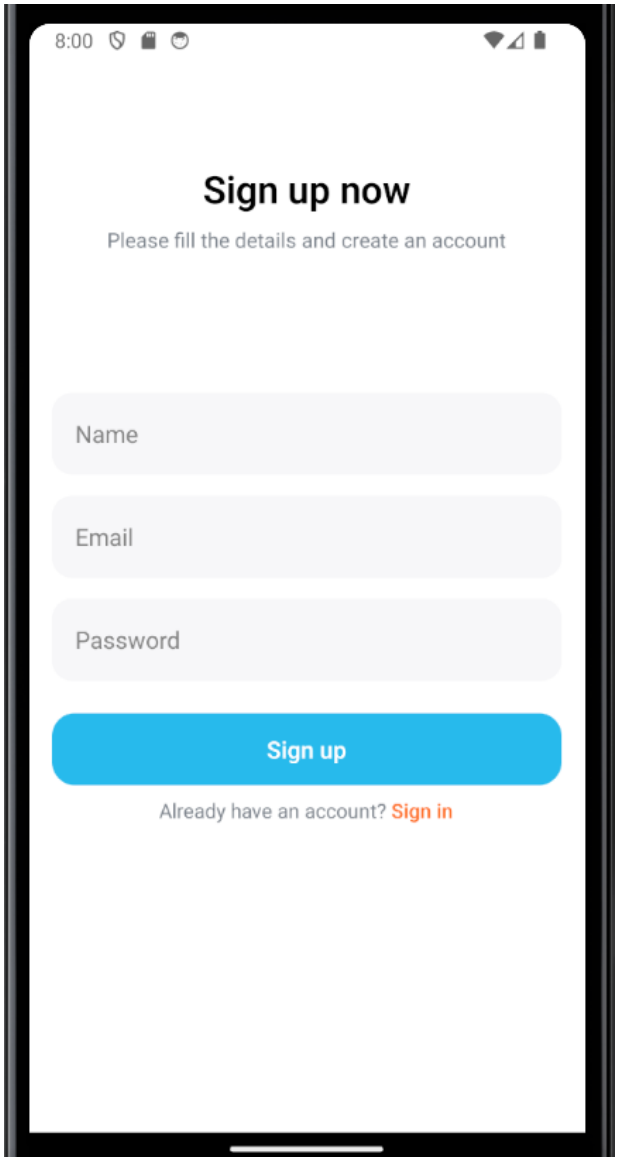
Apr 08
Date


Project Phases - Combined
Final Features
Debugging & Integration
Advanced Development
Midterm Submission
Initial Development
Design
Ideation
Jan 21
Jan 28
Feb 04
Feb 11
Feb 18
Feb 25
Mar 04
Mar 11
Mar 18
Mar 25
Apr 01
Apr 08
Date

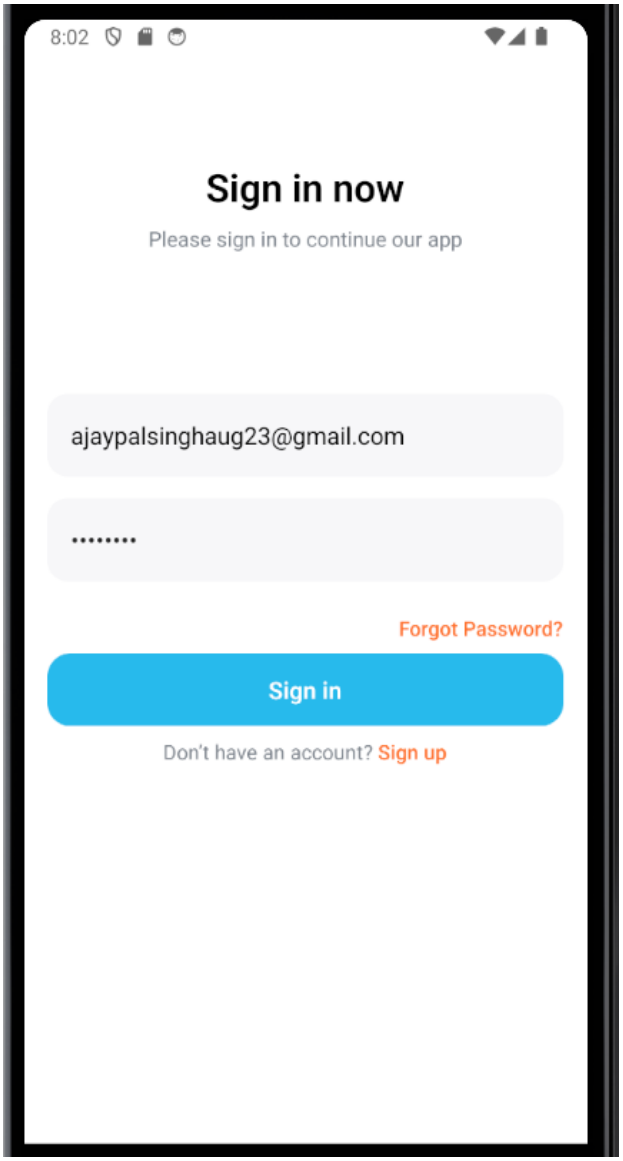
Implemented Feature:

Sign up Page



New users need to signup first to use the app and after making account it will directly go to sign in page.

Sign in Page



This will allow the users to login who have signed up and have accounts.

Forget Password in Sign in Page

This will send a link to the email to reset password

```
//Forgot Password Function
const handleForgotPassword = async () => {
    if (!email) {
      Alert.alert("Error", "Please enter your email to reset password");
      return;
    }

    setLoading(true);

    try {
      await auth().sendPasswordResetEmail(email);
      Alert.alert("Success", "Password reset email sent! Please check your inbox.");
    } catch (error: any) {
      console.log("Password reset error:", error);
      Alert.alert("Error", error.message);
    } finally {
      setLoading(false);
    }
  };


//Button

        <View style={{ alignItems: "flex-end" }}>
          <Text
            onPress={handleForgotPassword}
            style={{ color: "#FF7029", fontWeight: "500" }}
          >
            {"Forgot Password?"}
          </Text>
        </View>
```

Email Screenshot

Hello,

Follow this link to reset your pathseeker-80008 password for your ajaypalsinghaug23@gmail.com account.

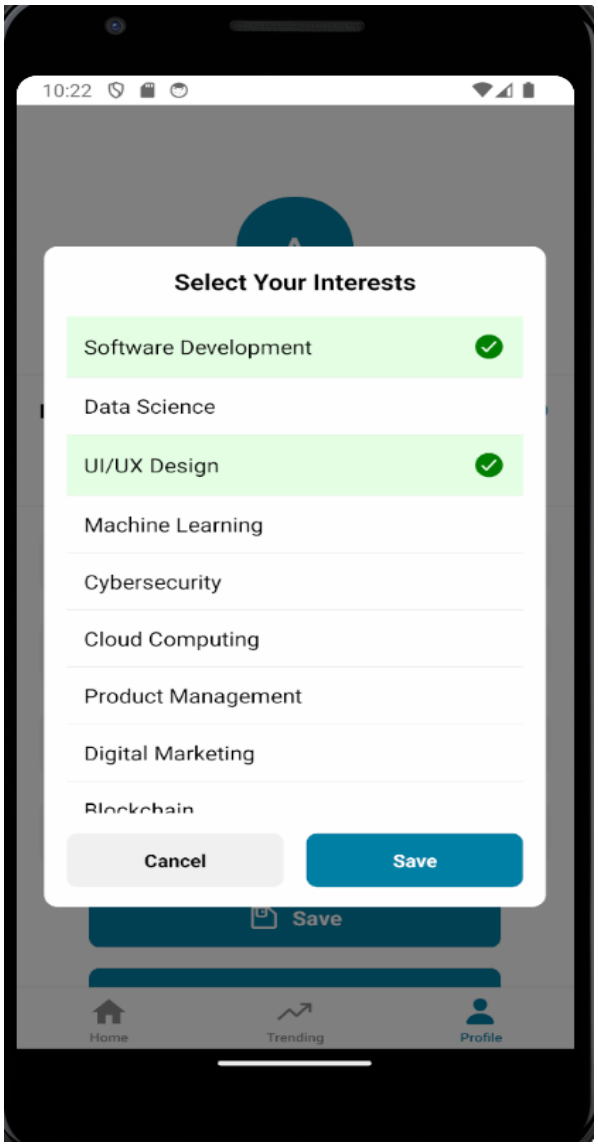
https://pathseeker-80008.firebaseapp.com/__/auth/action?mode=resetPassword&oobCode=eLzCG_FTBt7LomemTVRFzpfdq7Z1LmEnWcn3UCgyL-AAAAGV2kCTng&apiKey=AIzaSyBSo-VpjZDui9OlQy5cc0r_XIWZZVrjAMw&lang=en

If you didn't ask to reset your password, you can ignore this email.

Thanks,

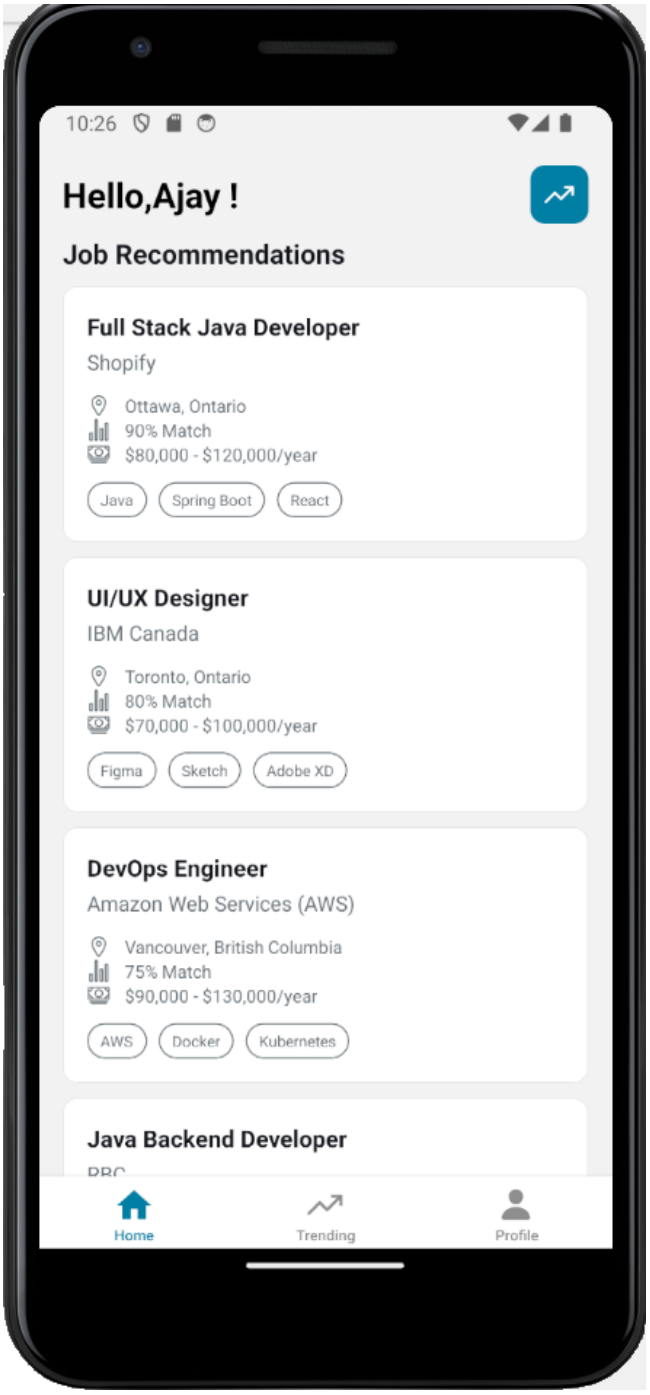
Your pathseeker-80008 team

Scroll View:



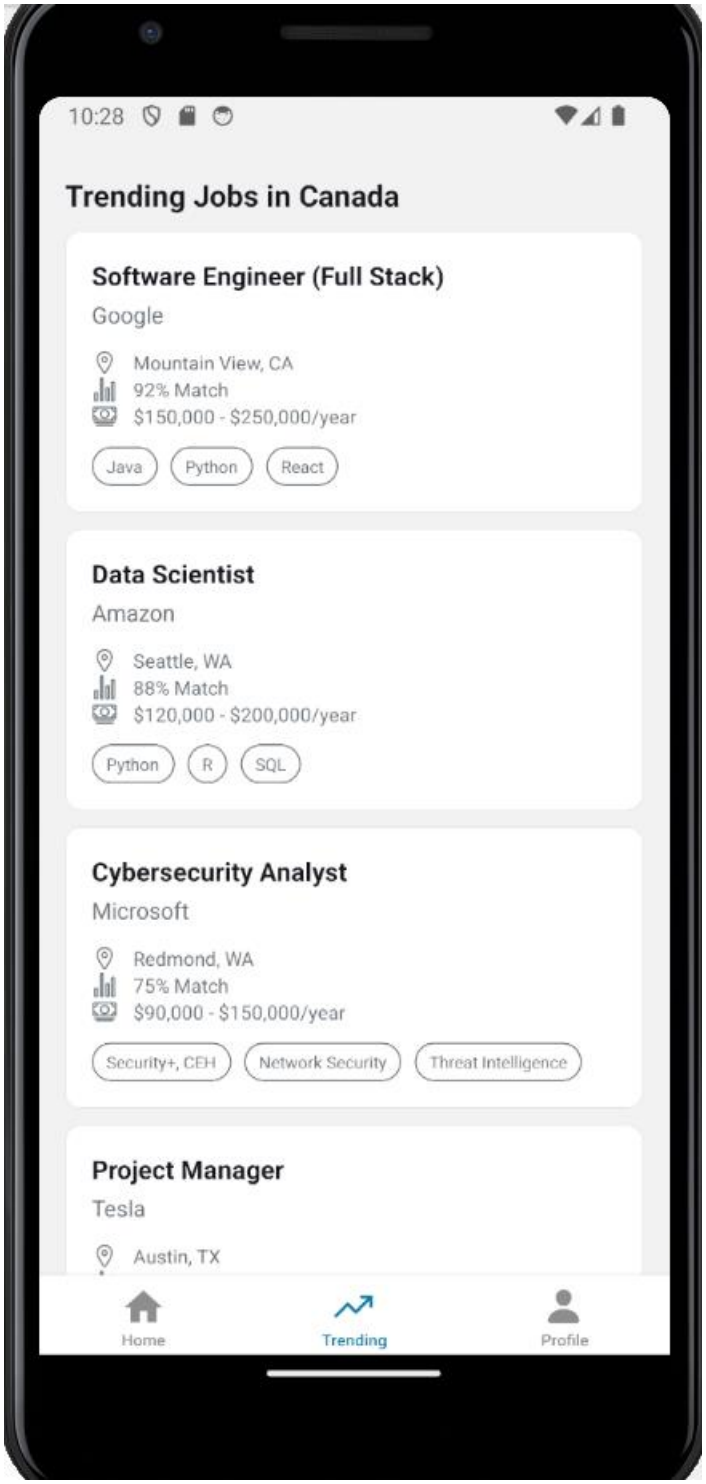
This scroll view has a list of interests which users can choose and see recommendations of jobs

Job Recommendations:



This feature has a list of JOB recommendations according to Profile page

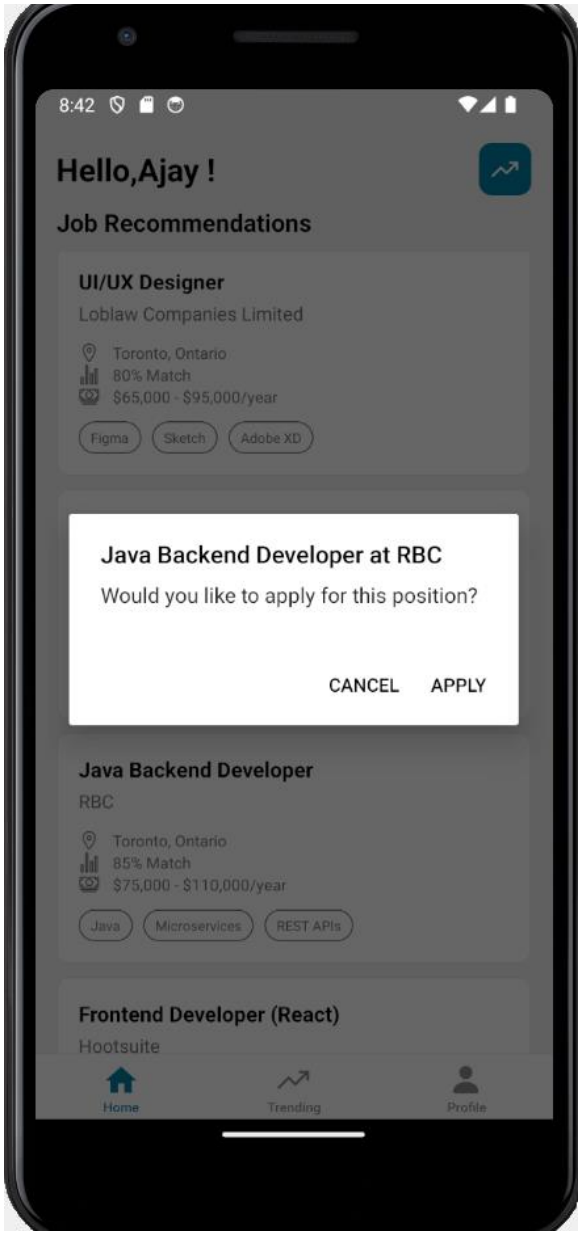
Trending Jobs:



This feature has a list of trending jobs in particular place as mentioned in Profile.

Apply Prompt:

If user click on any job, it will prompt an option to apply or cancel, if user click on apply it will open the URL of the job and user can directly apply the job on portal



Evaluation Technique/s:

As we progressed, we made many changes to the project as needed like adding forget password button and then logout button was not added.

And at the last after showing job recommendations, realized there should be direct link to apply the job which was added later.

We were not able to add radius feature in our app which was suggested by you.

Reflections/Discussions:

Challenges Faced

- Working with a new language is always a challenge
- Handling bugs and API failure
- How to use AI was the biggest challenge
- Ensuring accurate skill matching
- Creating an intuitive UI/UX
- Managing overall running of project

Lessons Learned

- Time Management is most important
- You should make check list while doing any project
- In coding, we learnt a new language i.e. React Native
- Practical use of AI in real-world apps

Most Satisfying Part

The most satisfying part was to see the result as it is better than our expectations. We both are new to this language still we worked hard to get this result and using AI was good experience.

Work Logs:

After Progress Report 5

Ajaypal's Worklog

Date	Number of Hours	Description of Work Done
April 9 ,2025	3	Added Apply Prompt to apply jobs
April 10 ,2025	1	Fixed error in fetching jobs.
April 13,2025	3	Worked on Report and Presentation and
		Github.

Saruchi's Worklog

Date	**Number of Hours**	**Description of Work Done**
April 10, 2025	2	Tried to make Radius feature but could not get it and get errors
April 11, 2025	1.5	Resolved errors in Profile page
April 13, 2025	3	Spent time on Report and Presentation with Ajay

Concluding Remarks:

- PathSeeker uses AI and real-time job data to offer smart, personalized career guidance.
- It connects user's skills and goals with real market needs.
- This project taught us how tech can drive better career decisions and support lifelong growth.

References:

https://youtu.be/TQnThietOgk?si=pCPK6S4yFwO5FWJi

https://reactnative.dev/docs/environment-setup

https://www.figma.com/design/8apTpS3UaiLxjgFl42fKTQ/Travenor---Travelling-App-(Community)?node-id=2002-342&t=VSqGvC0IAEUqMwyP-1

https://rnfirebase.io/

https://www.geeksforgeeks.org/react-native/

Used ChatGPT AI to resolve errors sometimes and it worked for us.

Appendix A: Installation Guide

Although the README file is uploaded in Github repository, but manual installation is as follows:

VS Code, Android Emulator and Expo is needed for this Project.

Also, you need to jdk, java downloaded in system.

After opening project in vscode

Run the following command:

npm i

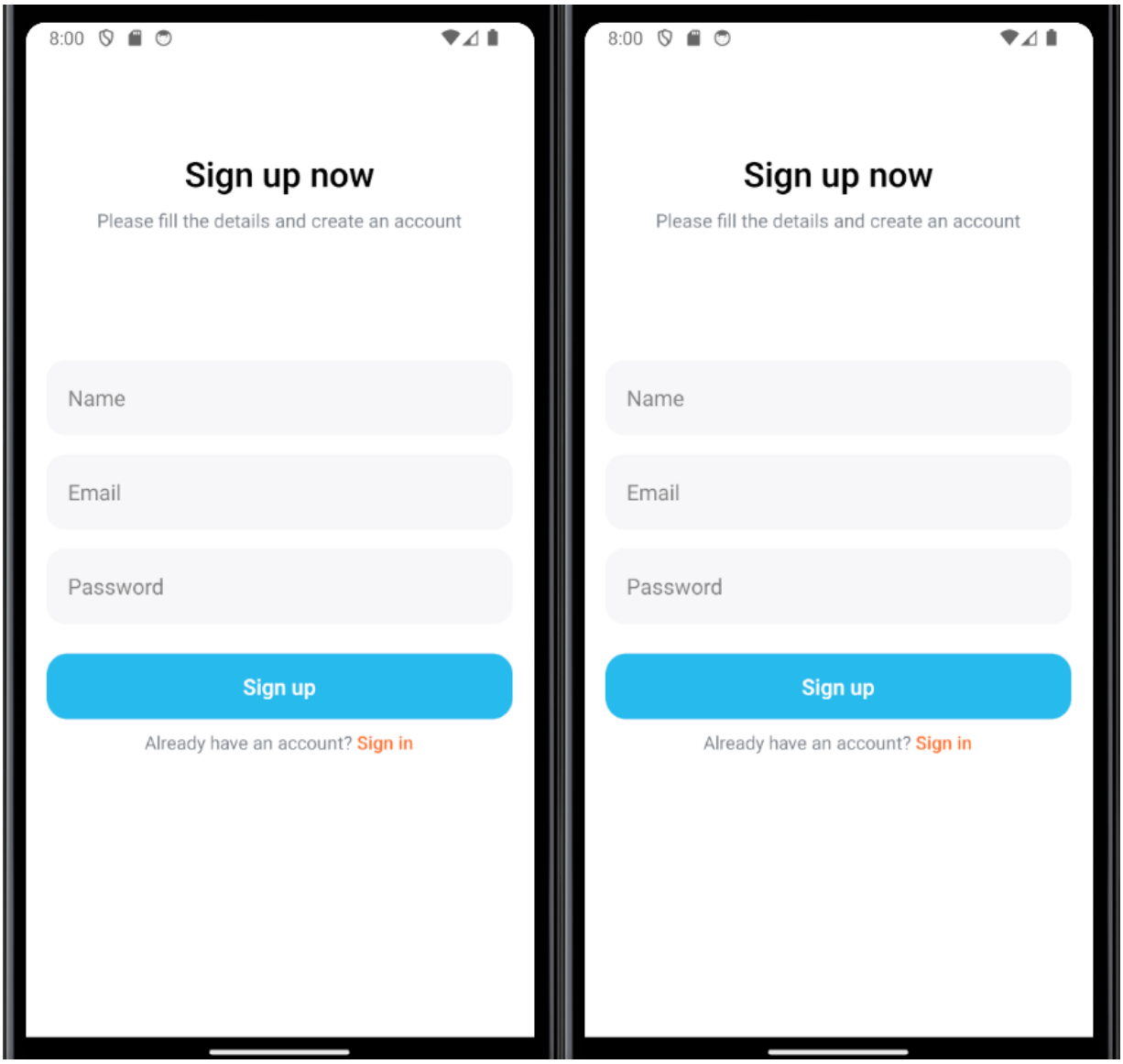
After this, Run:

npm run android

This is preferred by us but npx expo run:android can also be used

Appendix B: User Guide

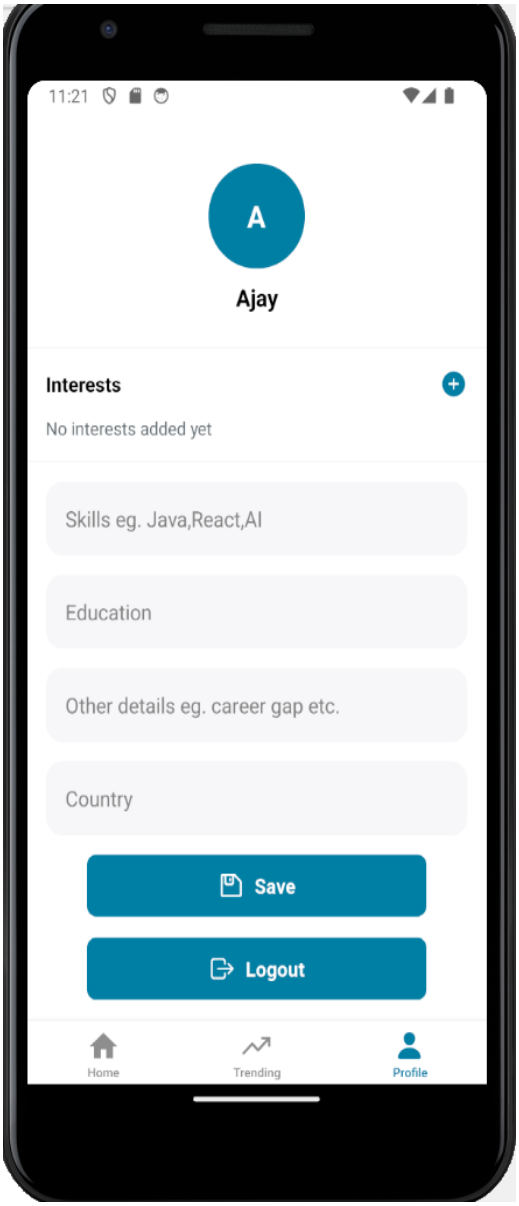
After starting the app, user needs to sign up and after signing up, it will re direct to sign in.

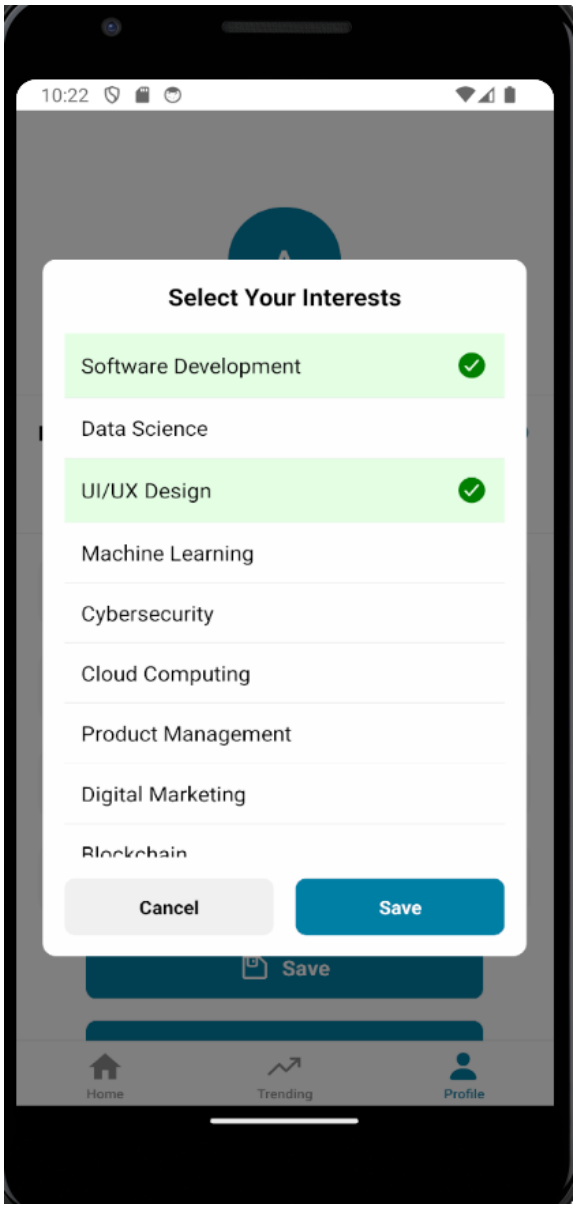


After Signing in, user can go to Profile Page

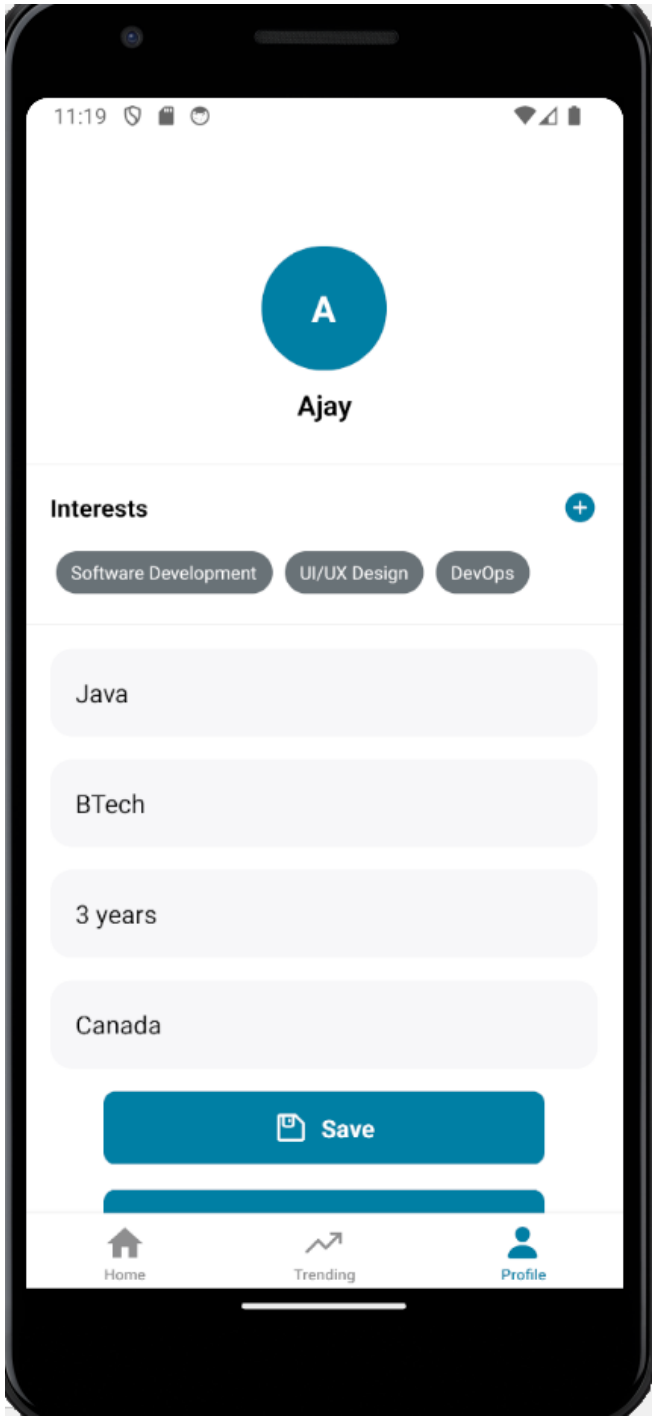
This is how it will look a new user Profile page

User can choose interests from Scroll View



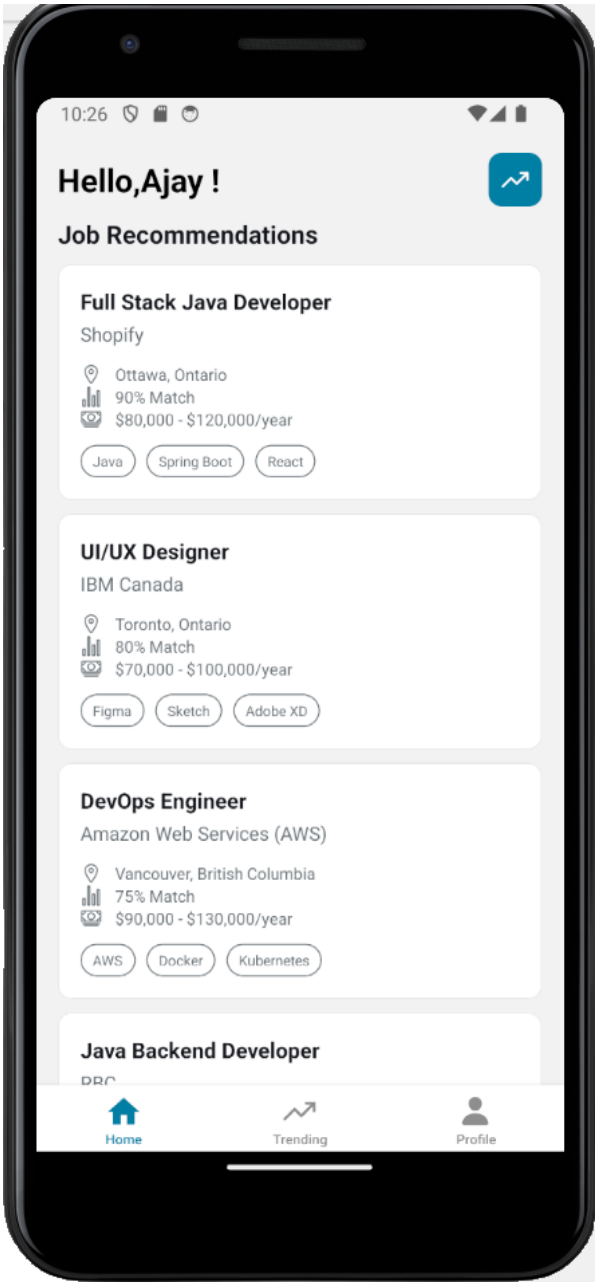


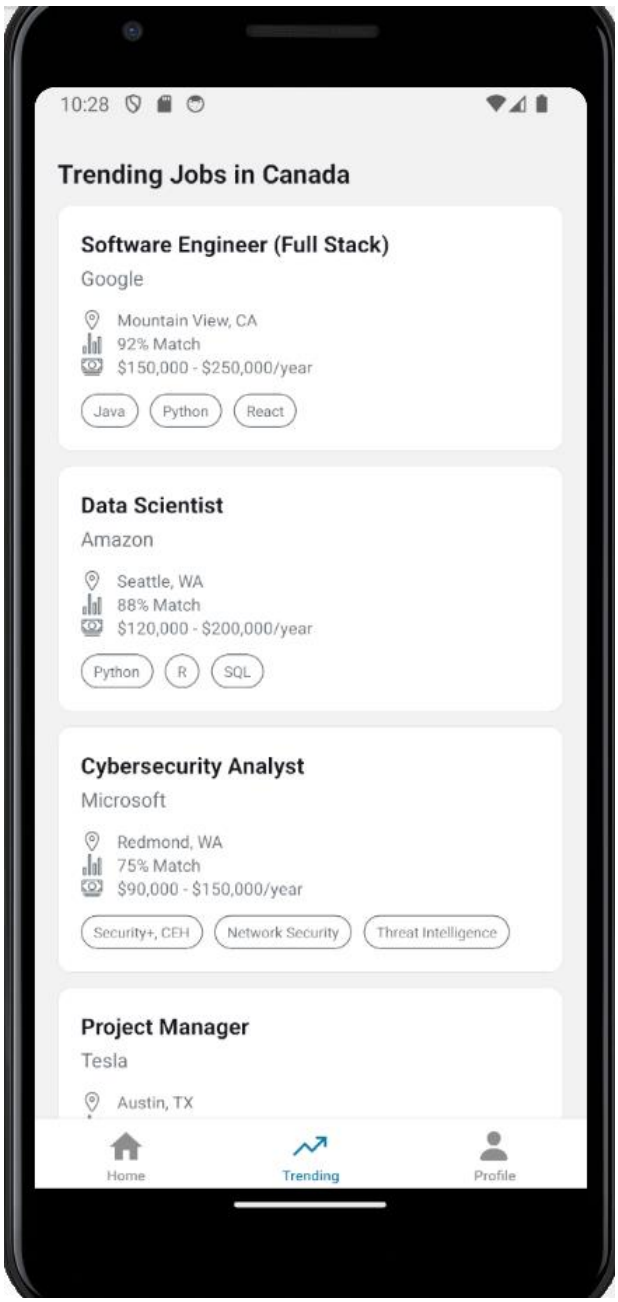
Then User can fill rest of the details in Profile and can redirect to Home Page



Home Page/Job Recommendations and Trending Jobs:

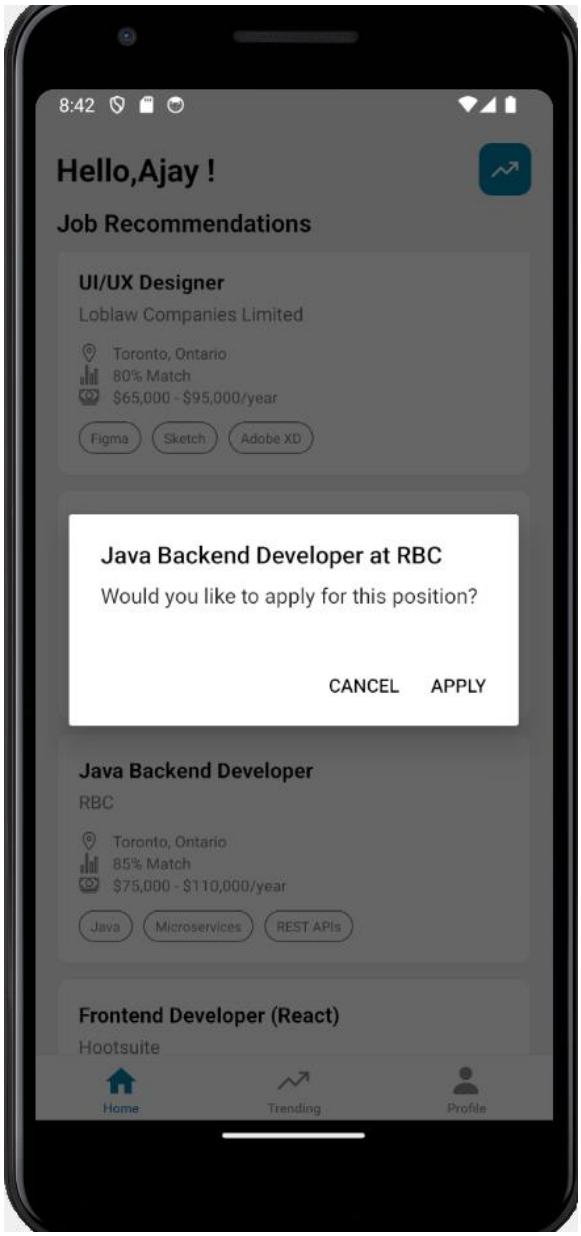
These pages show the job recommendations as per interests.





Prompt to apply jobs:

Users can click on any job they liked, and it will show a prompt to apply the job. After clicking on Apply, user will be directed to link of applying Job



Feedback Form replies:

Timestamp	Overall Experience. How would you rate your overall experience with the project?	How easy was it to navigate or use the project?	appealing did you find the design of the project?	Were the features provided in the project helpful to you?	How clear was the purpose of the project to you?	Did you encounter any technical issues while using the project?	How would you rate the speed and performance of the project?	improvements would you suggest for the project?	Would you recommend this project to others?
2025/04/1	Excellent	5 (Very easy)	Very appealing	Yes, very helpful	Very clear	Yes	5 (Very fast)	N/a	Yes, definitely
2025/04/1	Excellent	5 (Very easy)	Very appealing	Yes, very helpful	Very clear	No	5 (Very fast)	None so far	Yes, definitely
2025/04/1	Good	5 (Very easy)	Very appealing	Yes, very helpful	Very clear	No	5 (Very fast)	A little more UI impr	Yes, definitely
2025/04/1	Excellent	5 (Very easy)	Somewhat appealing	Yes, very helpful	Very clear	No	4	It would be better if	Yes, definitely
2025/04/1	Excellent	5 (Very easy)	Very appealing	Yes, very helpful	Very clear	No	5 (Very fast)	None. Excellent pro	Yes, definitely