

Skill Vault



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Problem Statement

In the current landscape of recruitment and hiring, there exists a need for a modern, efficient, and inclusive job interview platform that leverages artificial intelligence (AI) to streamline the hiring process for both candidates and companies. Traditional hiring processes are often time-consuming, lack flexibility, and may not effectively assess a candidate's skills and abilities.



Literature Survey



<i>Sl.no</i>	Title	Method Used	Advantage
1	An AI Mock-interview Platform for Interview Performance Analysis	<ul style="list-style-type: none">• Video Interview Platform Design• AI-Assisted Analysis• Overall Interview Performance Evaluation	<ul style="list-style-type: none">• Integrating visual, audio, and textual features provides a holistic understanding of the candidate's performance• AI-assisted analysis enables detailed feedback on various aspects
2	An Automated System for Employee Recruitment Management	<ul style="list-style-type: none">• Automated Recruitment Process• Skills Identification for Job Seekers• Automated Resume Generation	<ul style="list-style-type: none">• Integrating visual, audio, and textual features provides a holistic understanding of the candidate's performance AI-assisted analysis enables detailed feedback on various aspects• Machine learning algorithms enhance the accuracy of skill matching between job seekers and company requirements
3	Building trust in automatic video interviews using various AI interfaces: Tangibility, immediacy, and transparency	<ul style="list-style-type: none">• Asynchronous Video Interviews (AI-AVI)• Features of Tangibility, Immediacy, and Transparency• Field Study Design	<ul style="list-style-type: none">• Different forms of AI-based video interviews were employed for pre-employment screening• Conducting a field study with real job applicants enhances the external validity of the findings, making them more applicable to real-world scenarios.

Sl.no	Title	Method Used	Advantage
4	Can AI Powered Speech-to-Text and Text-to-Speech techniques limit the interviewer bias in sensory and consumer research?	<ul style="list-style-type: none">• Experimental Design• Statistical Analysis	<ul style="list-style-type: none">• The study allowed for a direct comparison between the traditional human interviewer condition and the StT & TtS condition, providing insights into the potential impact of technology on interviewer biases.
5	CareerBuilder: 74% of employers admit hiring the wrong candidate	<ul style="list-style-type: none">• Experimental Design• Open-Ended Questions	<ul style="list-style-type: none">• The study recognizes the potential cost benefits of utilizing computer-generated "human-like" interviewers, especially in scripted interview conditions• The findings highlight that the presence of a human face, whether virtual or real, can influence the level of disclosure. In this case, the faceless ACASI condition resulted in higher disclosure.
6	The True Cost of Hiring an Employee in 2023	<ul style="list-style-type: none">• Strategic Importance of Hiring• Investment in Employees	<ul style="list-style-type: none">• Includes expenses related to advertising job openings, recruitment platforms, and any external recruitment agencies..

Sl.no	Title	Method Used	Advantage
7	It Takes More Than a Good Camera: Which Factors Contribute to Differences Between Face-to-Face Interviews and Videoconference Interviews Regarding Performance Ratings and Interviewee Perceptions?	<ul style="list-style-type: none">• Real-Time Assessment• In-Depth Analysis	<ul style="list-style-type: none">• The use of numerical data (performance ratings, perception scores) allowed for a more objective analysis of the differences between the two interview formats.• The study not only focused on performance ratings but also investigated participants' perceptions, shedding light on the subjective aspects that may influence interview outcomes.
8	It Takes More Than a Good Camera: Which Factors Contribute to Differences Between Face-to-Face Interviews and Videoconference Interviews Regarding Performance Ratings and Interviewee Perceptions?	<ul style="list-style-type: none">• Quantitative Analysis• Real-Time and Recorded Ratings	<ul style="list-style-type: none">• he use of numerical data, including performance ratings and perceptions, allowed for a quantitative comparison• The combination of live ratings and recorded ratings provided a comprehensive view of interviewee performance, offering insights into both immediate impressions and more reflective evaluations.

Requirement Analysis



Requirement Analysis

- Audio and video analysis
- Adaptive Questioning
- Resume Analysis & setting in profile
- Collaboration for companies to hire
- Level Based on Progress

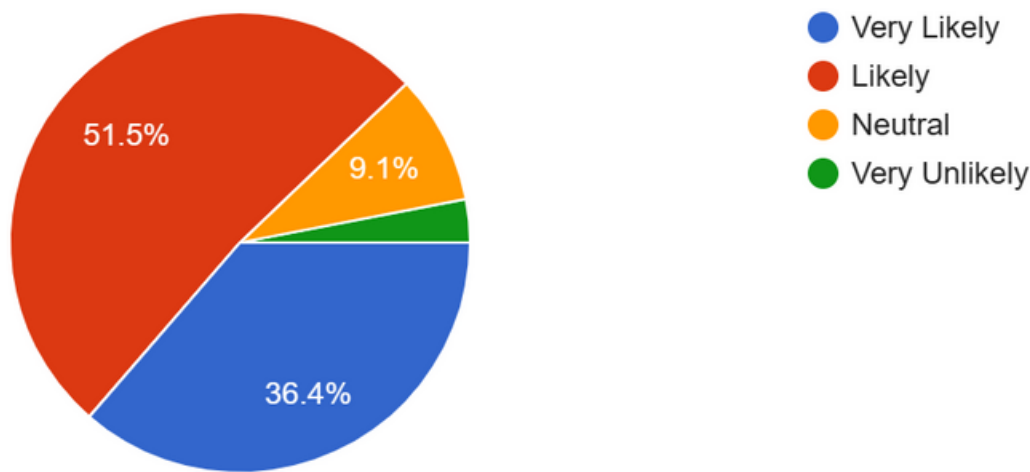
Requirement Analysis

- Profile management
- Jobseekers Toolkit
- Interest Group based Questioning
- Test Feature

Survey Data

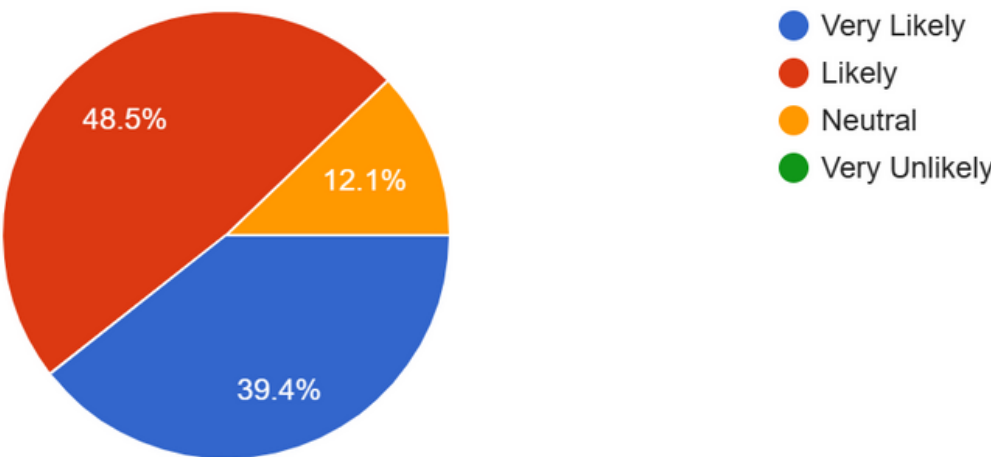
How likely are you to practice common interview questions before the actual interview?

33 responses



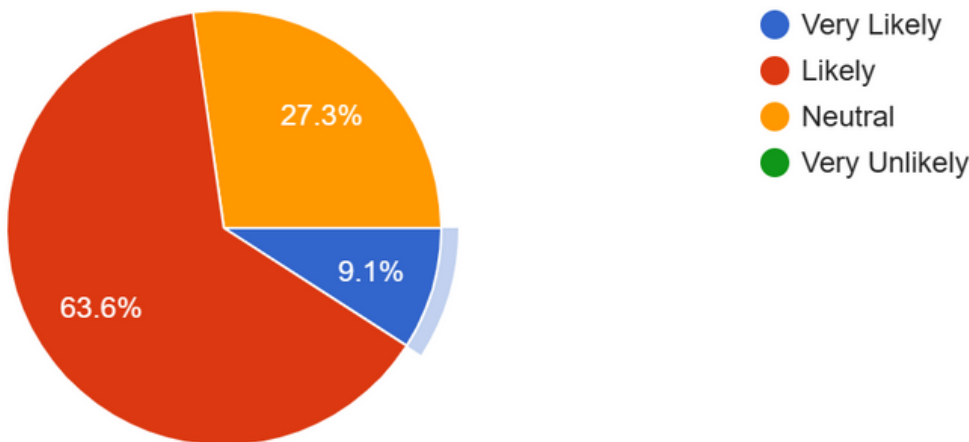
How likely are you to maintain eye contact and positive body language during an interview?

33 responses



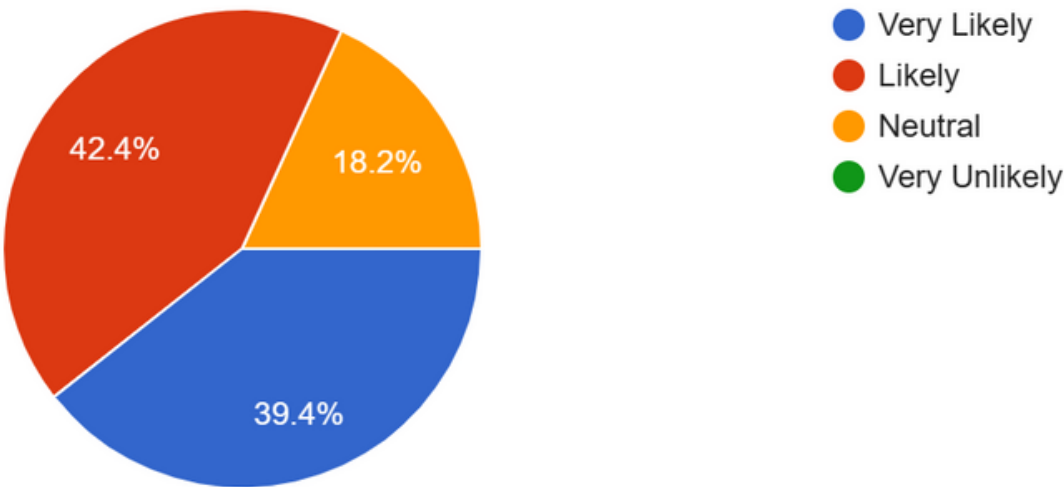
How likely are you to tailor your responses to match the job requirements during an interview?

33 responses



How likely are you to practice for an interview?

33 responses



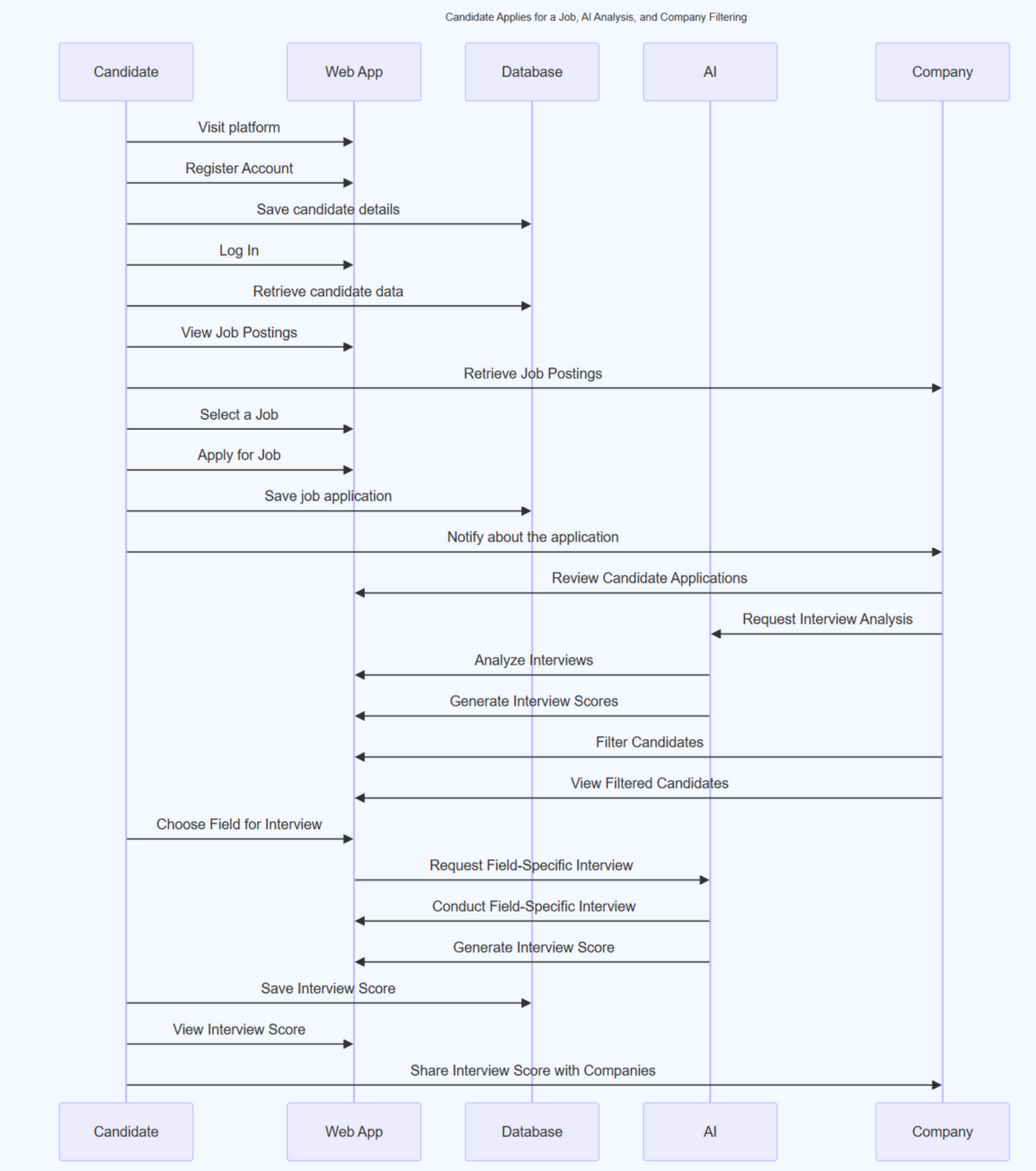
Objectives

- Efficient Candidate Assessment
- Flexible Interview Scheduling
- Streamlined Recruitment Process
- Efficient Candidate-Company Matching
- Enhanced User Experience

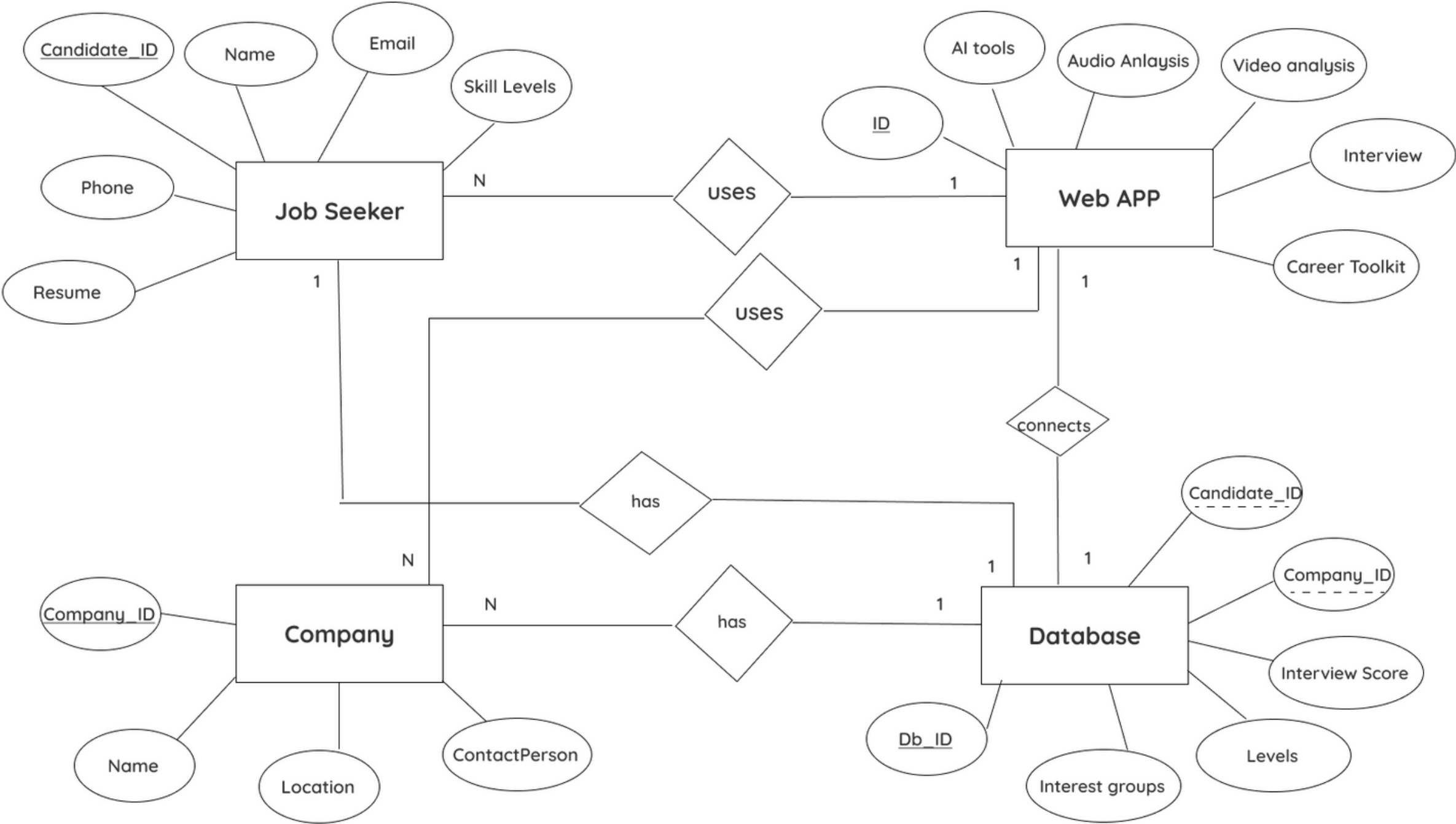
Design Diagrams



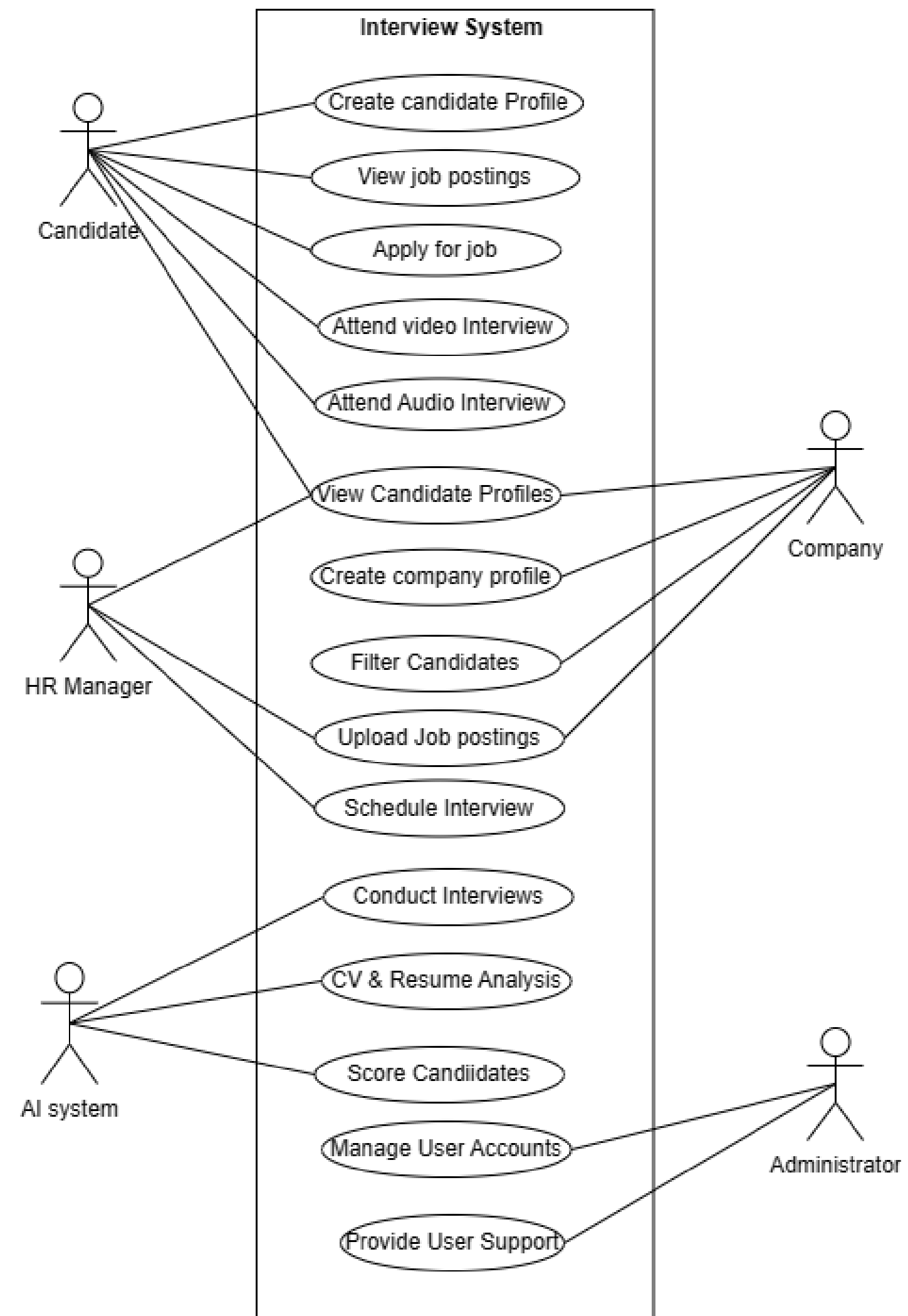
Sequence Diagram



ER Diagram

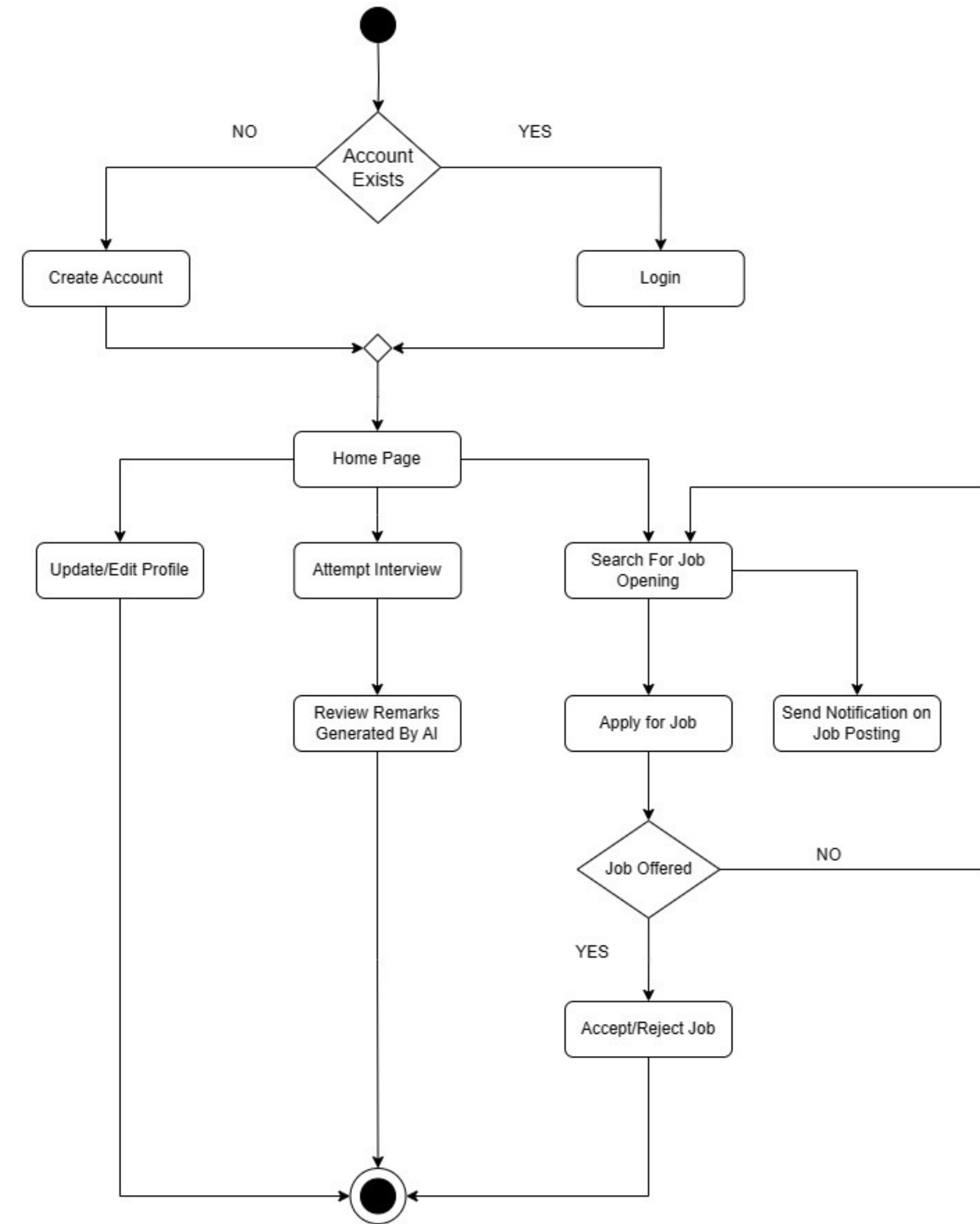


Usecase Diagram



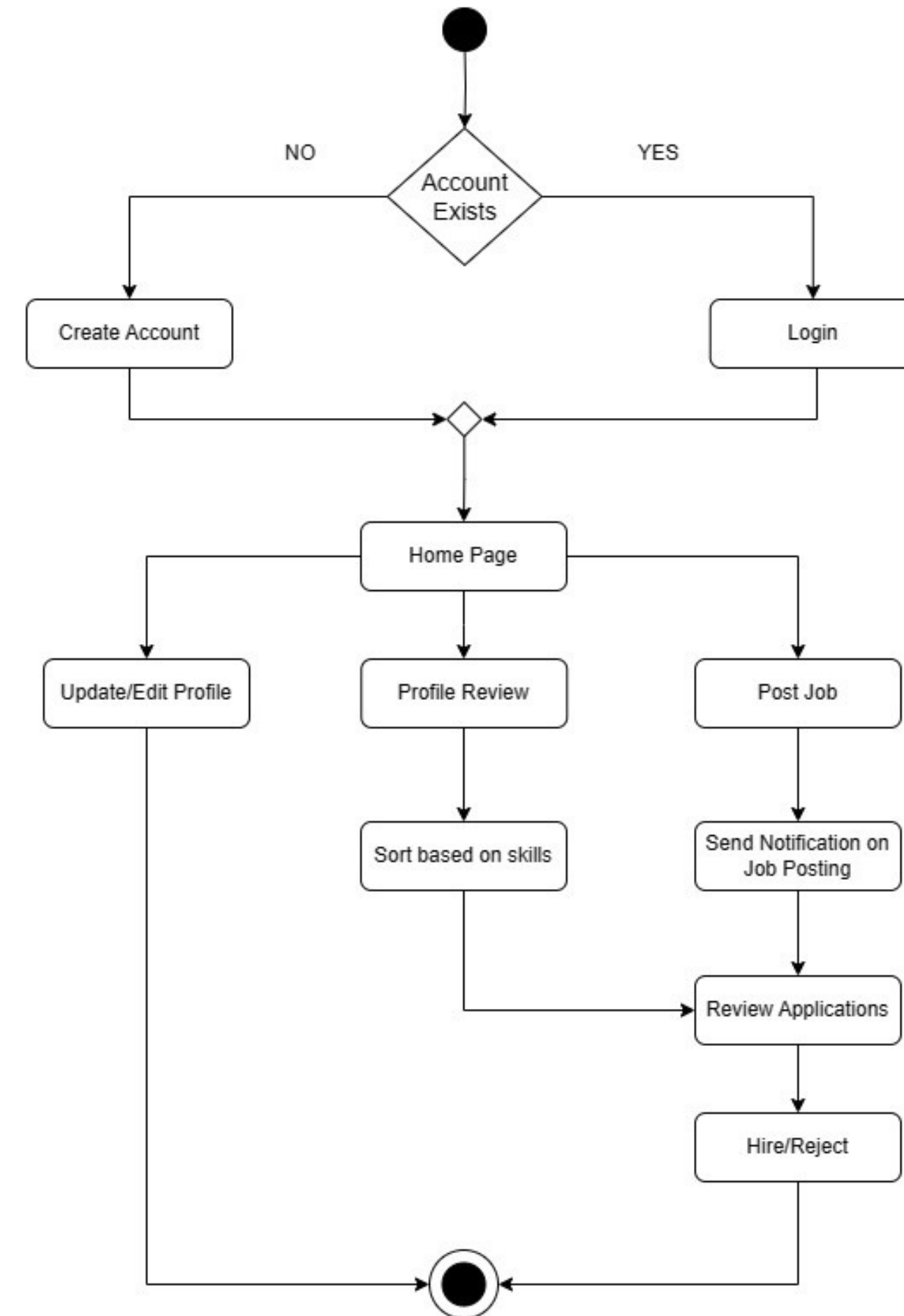
Activity Diagram (Candidate)

Activity Diagram (Candidate)



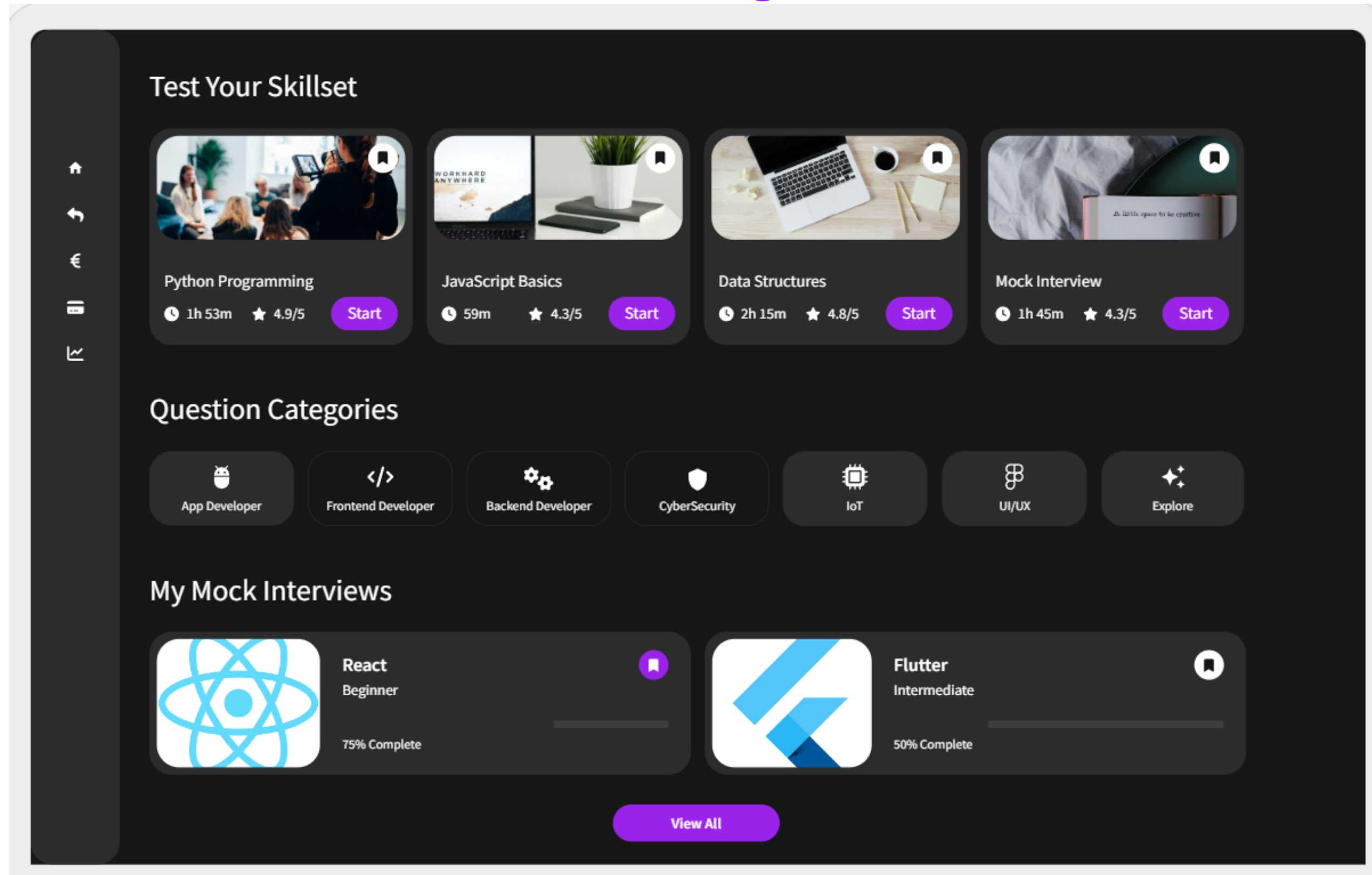
Activity Diagram (Company)

Activity Diagram (Company)



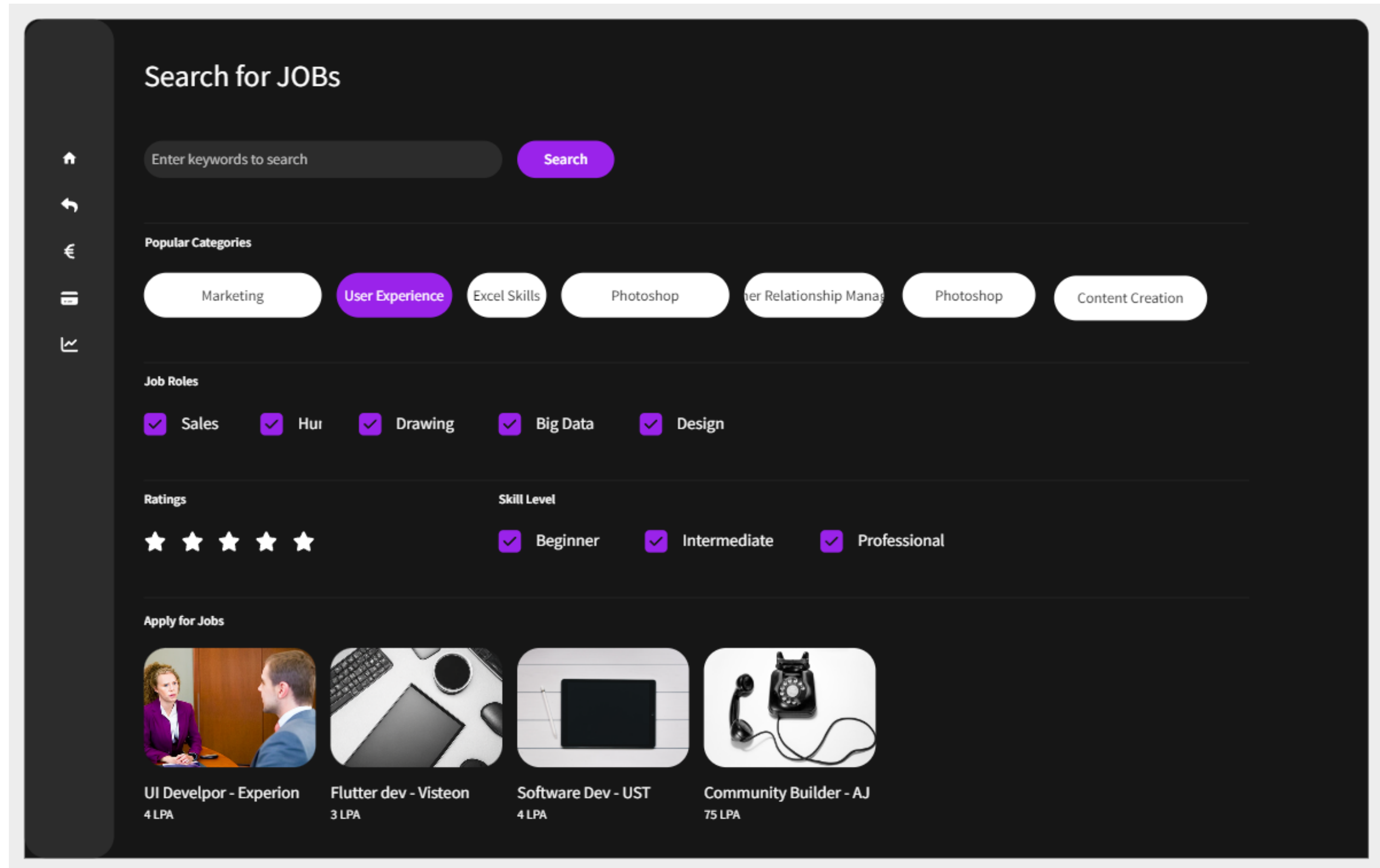
UI Design

Home Page



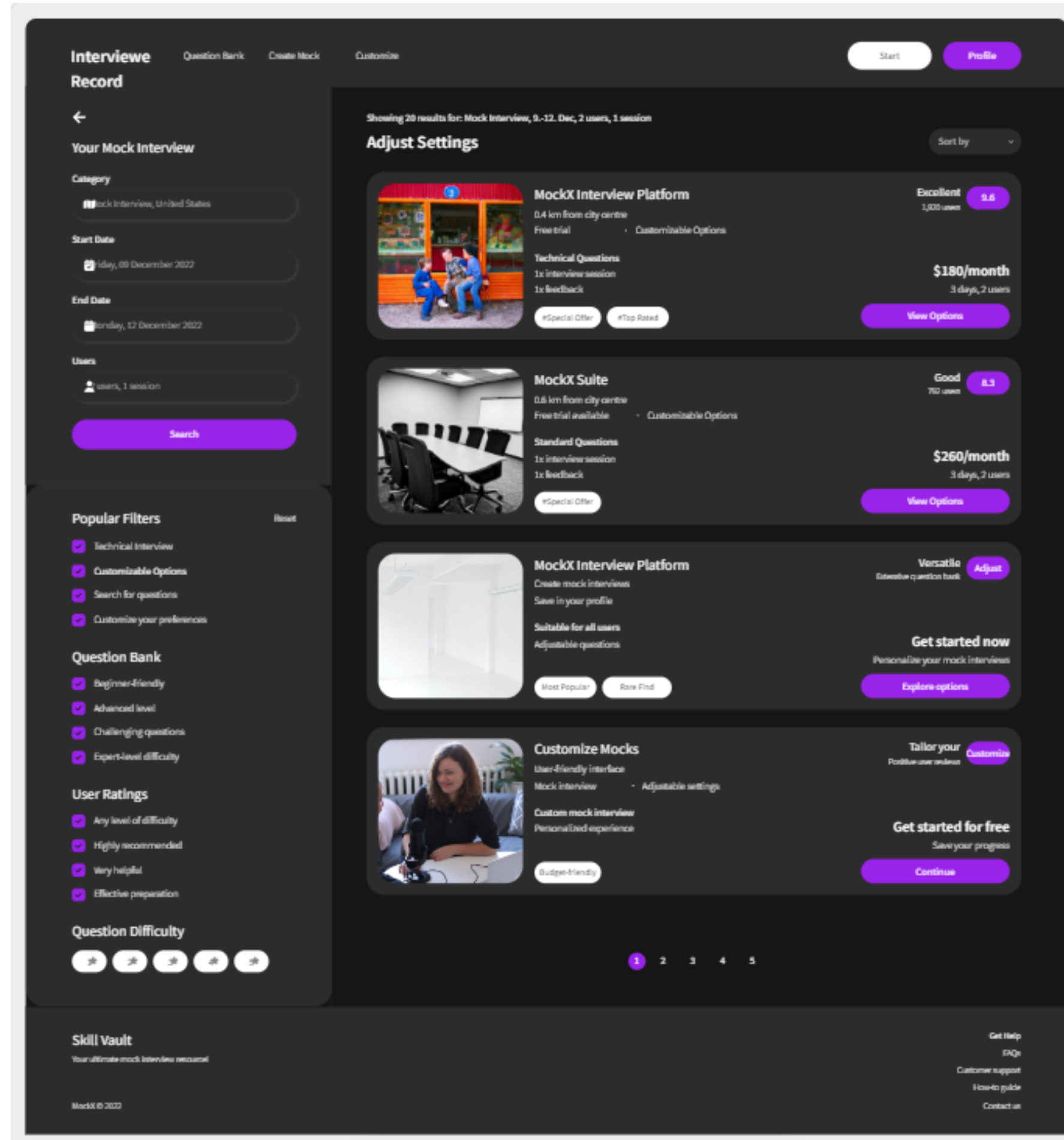
UI Design

Job Listing Page



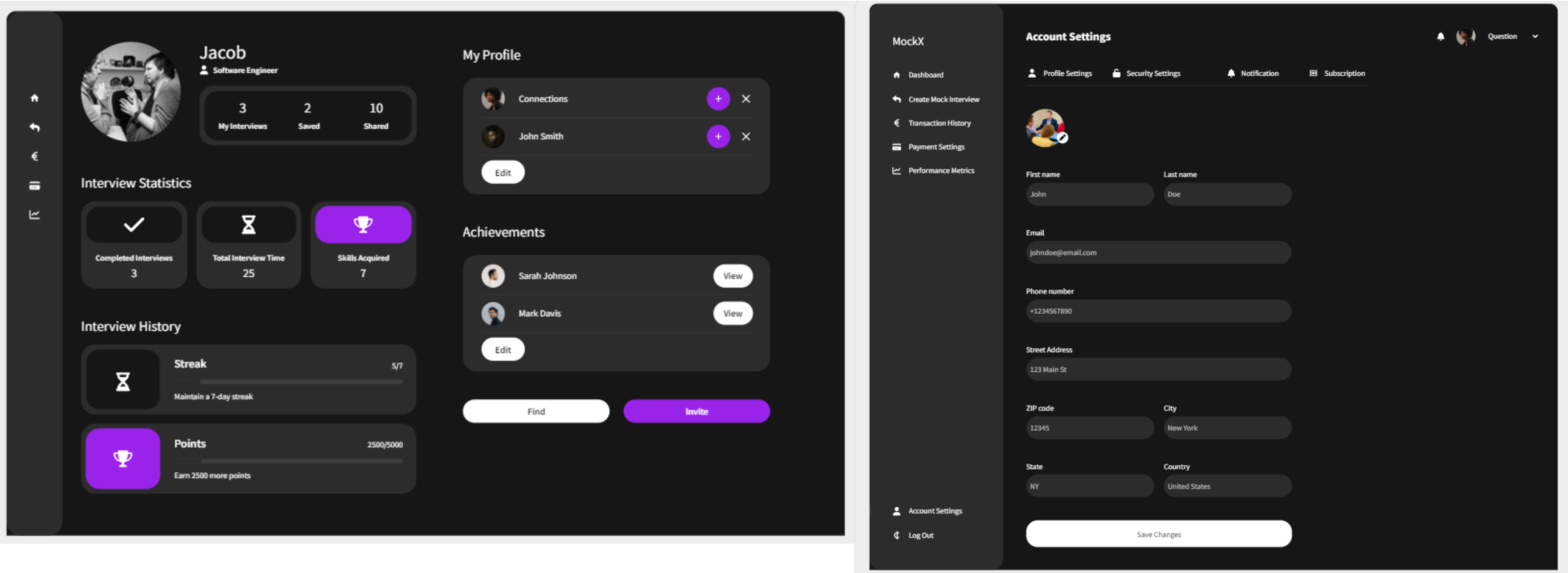
UI Design

Interview Record



UI Design

Profile Page



Proposed System



User Interface

- Develop a user-friendly web application for both candidates and companies.
- Include features for candidate registration, job browsing, interview scheduling, and profile management
- Implement responsive design for mobile accessibility.

Authentication

- Implement a secure authentication system to protect user accounts.
- Establish role-based authorization to control access levels for candidates, companies, and administrators.

Database Management

- Set up a robust database to store candidate profiles, job details, interview records, and AI-generated scores.
- Ensure proper indexing and normalization for efficient data retrieval.

Video/Audio Analysis

- Integrate video analysis tools to analyze candidate body language, facial expressions, and engagement during interviews.
- Implement audio analysis to assess speech patterns, tone, and communication skills.
- Utilize machine learning models for sentiment analysis to gauge candidate enthusiasm and confidence.

Adaptive Questioning Engine

- Develop an adaptive questioning engine that tailors interview questions based on candidate responses.
- Utilize natural language processing (NLP) to understand and analyze candidate answers.
- Implement a difficulty rating system for questions, adjusting difficulty based on candidate performance.

AI Interview Scoring

- Implement AI algorithms to analyze interview performance and generate standardized scores.
- Consider factors such as the quality of answers, non-verbal cues, and adaptability to determine overall scores.
- Utilize machine learning models for continuous improvement in scoring accuracy.

Technology Stack

- Frontend: HTML, CSS, JavaScript, React.js
- Backend: Node.js, Express.js, Python
- Database: MongoDB
- Video Analysis: OpenCV, TensorFlow
- Audio Analysis: Python Speech Recognition library, deep learning models for voice analysis(e.g. Convolutional Neural Network (1D CNN))
- AI Interview Scoring: Machine learning frameworks (e.g., scikit-learn, TensorFlow, PyTorch)
- Security: HTTPS, JWT (JSON Web Tokens)
- GITHUB

Gantt Chart



Conclusion

SkillVault is a flexible mock interview platform for everyone. It adapts to different interests and features a wide range of questions. What makes it special is its ability to adjust questions based on your answers. It uses multiple-choice questions and even checks how you speak and your body language through audio and video analysis. After each mock interview, you get detailed feedback and scores to help you improve. SkillVault aims to be your go-to tool, whether you're job hunting or just want to get better at interviews, providing a simple and effective way to practice and enhance your interview skills.

References

- [1] J. Smith, "Thomas Edison conducted the first job interview in 1921 -here's how they've evolved since", Business Insider, [online] Available: <https://www.businessinsider.com/evolution-of-the-job-interview-2015-5>.

- [2]Y.-C. Chou, "An AI Mock-interview Platform for Interview Performance Analysis," IEEE Xplore, 2021. [Online]. Available: <https://ieeexplore.ieee.org/document/9778999> .

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- [4] H.-Y. Suen, "Building trust in automatic video interviews using various AI interfaces: Tangibility, immediacy, and transparency," ScienceDirect, [Online]. Available:<https://www.sciencedirect.com/science/article/abs/pii/S074756322300064X>

Thank You

