GenAI Graduate Hackathon

2024 – 2025

Title : CareerPathAI – An AI-Driven Adaptive Career Counselor.

Problem Statement : The job market is evolving rapidly, making it increasingly difficult for individuals to find personalized, relevant career guidance. Traditional career counseling methods often fail to scale, lack emotional engagement, and don't adapt to unique user profiles, leaving many individuals underserved.

Team : **DataPirates**

Members :

Tosif Ansari

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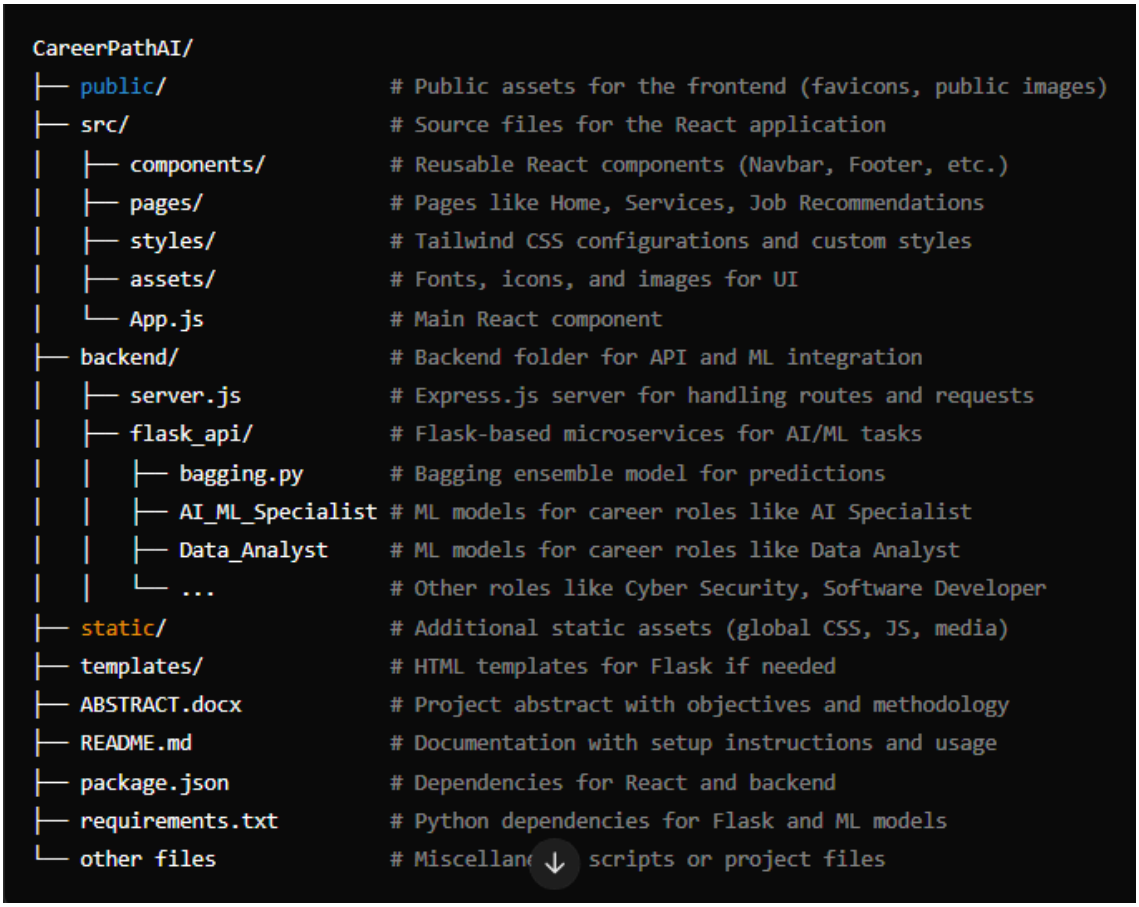
Objective :

The objective is to create a **AI-powered career counseling platform** that provides users with personalized career guidance, real-time job recommendations, resume optimization tools, and skill enhancement services. The platform leverages AI to offer mentorship through emotionally intelligent interactions, helping users navigate their career paths effectively. It also offers curated learning paths, market-driven insights, and continuous feedback mechanisms to adapt to users' evolving needs, making it a scalable and comprehensive solution for career development.

Proposed Solution :

CareerPathAI is an AI-driven platform designed to provide personalized, real-time career guidance by analyzing individual skills, preferences, and market trends. It integrates emotional intelligence to simulate human-like interactions and ensures inclusivity by identifying and mitigating biases in career recommendations.

UI and Project Structure :



Frontend:

- Clean, responsive design using **React** and **Tailwind CSS**.
- Interactive pages for **Job Profile Recommendation, JD(Job Description) Match Analyzer, Chatbot, Career Counseling and** many more **.**

Backend:

- **Express.js** handles user requests, routing, and middleware for seamless integration.

- **Flask** manages AI/ML tasks like job recommendations, skill analysis, and career predictions using ensemble techniques.

Discover Your Perfect Career Path

Let our AI career counselor guide you through personalized recommendations based on your skills, interests, and market trends.

Start Assessment → Explore Careers

Skills Assessment

Rate your proficiency in Problem Solving

1 2 3 4 5

Featured Career Paths

AI/ML Specialist

High Demand

Specialize in artificial intelligence and machine learning technologies, developing intelligent systems and algorithms.

Python TensorFlow PyTorch Deep Learning

Software Developer

Most Popular

Design and build scalable software applications using modern technologies and best practices.

JavaScript React Node.js Python

Recommended Career Paths

Data Scientist

95% Match

Analyze complex data sets to help organizations make better decisions

Python Machine Learning Statistics

UX Designer

88% Match

Create intuitive and engaging digital experiences for users

UI Design User Research Prototyping

Product Manager

82% Match

Lead product development and strategy to drive business growth

Strategy Leadership Communication

Main Services :

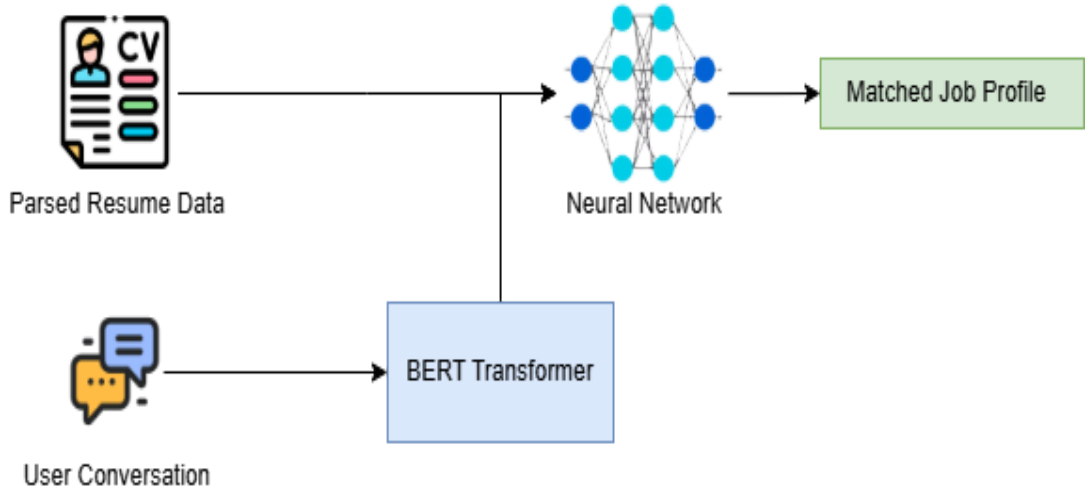
A. Chatbot integration :

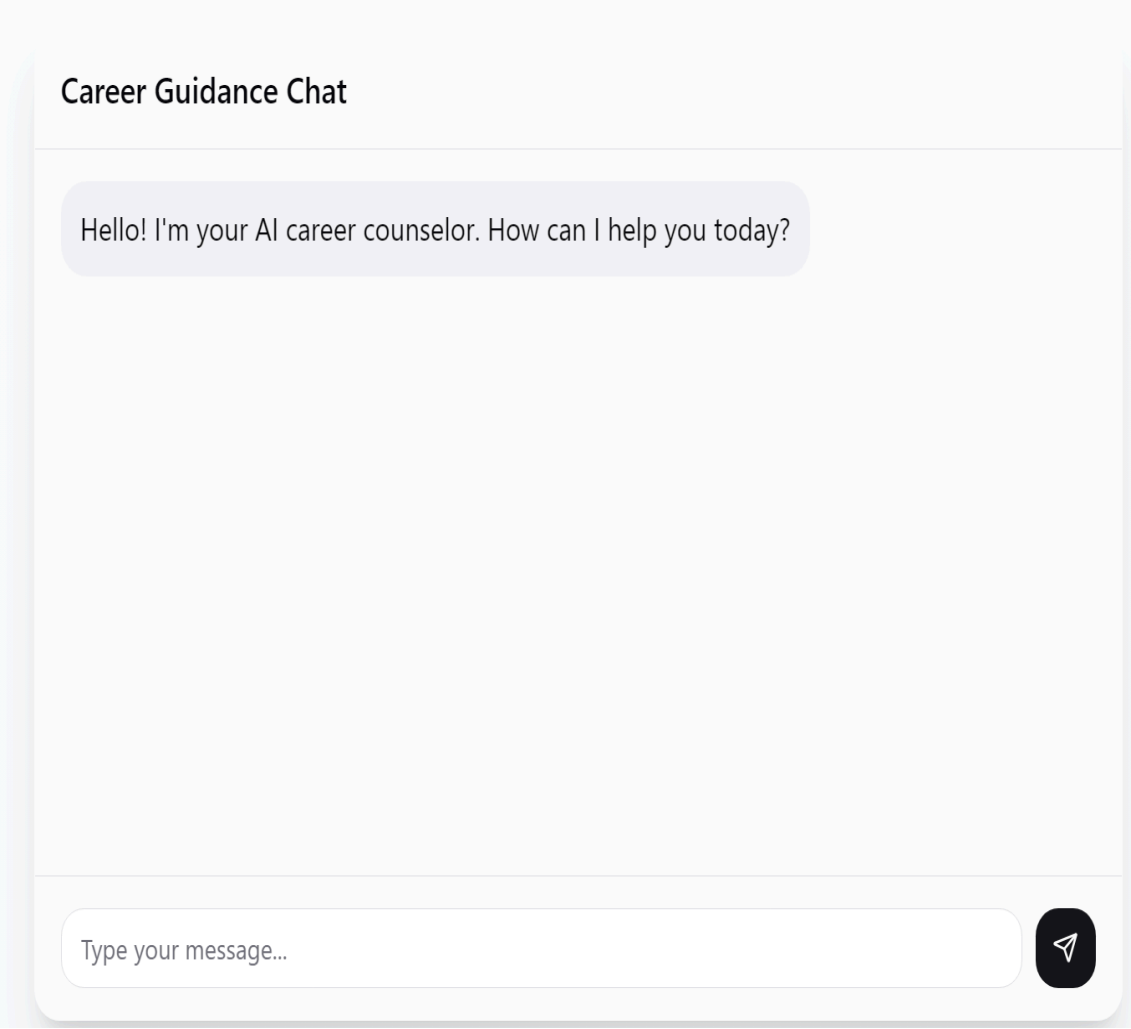
- Extracting Personality and Preferences
    - ❖ Chatbot engages the user to identify personality traits, mindset, character, and preferences.
    - ❖ Uses BERT to classify traits like extroversion, creativity, risk tolerance.
    - ❖ Converts extracted data into a feature vector representing the user's personality and preferences.
- Resume Parsing – Extracting Skills and Experience
    - ❖ User uploads resume, which is processed by an NLP method.
    - ❖ Extracts data such as skills, experience, and education.
    - ❖ Converts extracted resume data into a feature vector (numerical representation of skills and experience).

- Fusion of Feature Vectors
    - ❖ Combine the Conversational AI feature vector and Resume data feature vector using Concatenation

- Neural Network – Identifying the Job Role
    - ❖ The fused feature vector is passed into a Neural Network.
    - ❖ Network layers process the combined data to predict the most suitable job role.
    - ❖ Output layer uses softmax to generate probabilities for each job role.

- Job Role Recommendation
    - ❖ The neural network's output determines the best-fit job role.



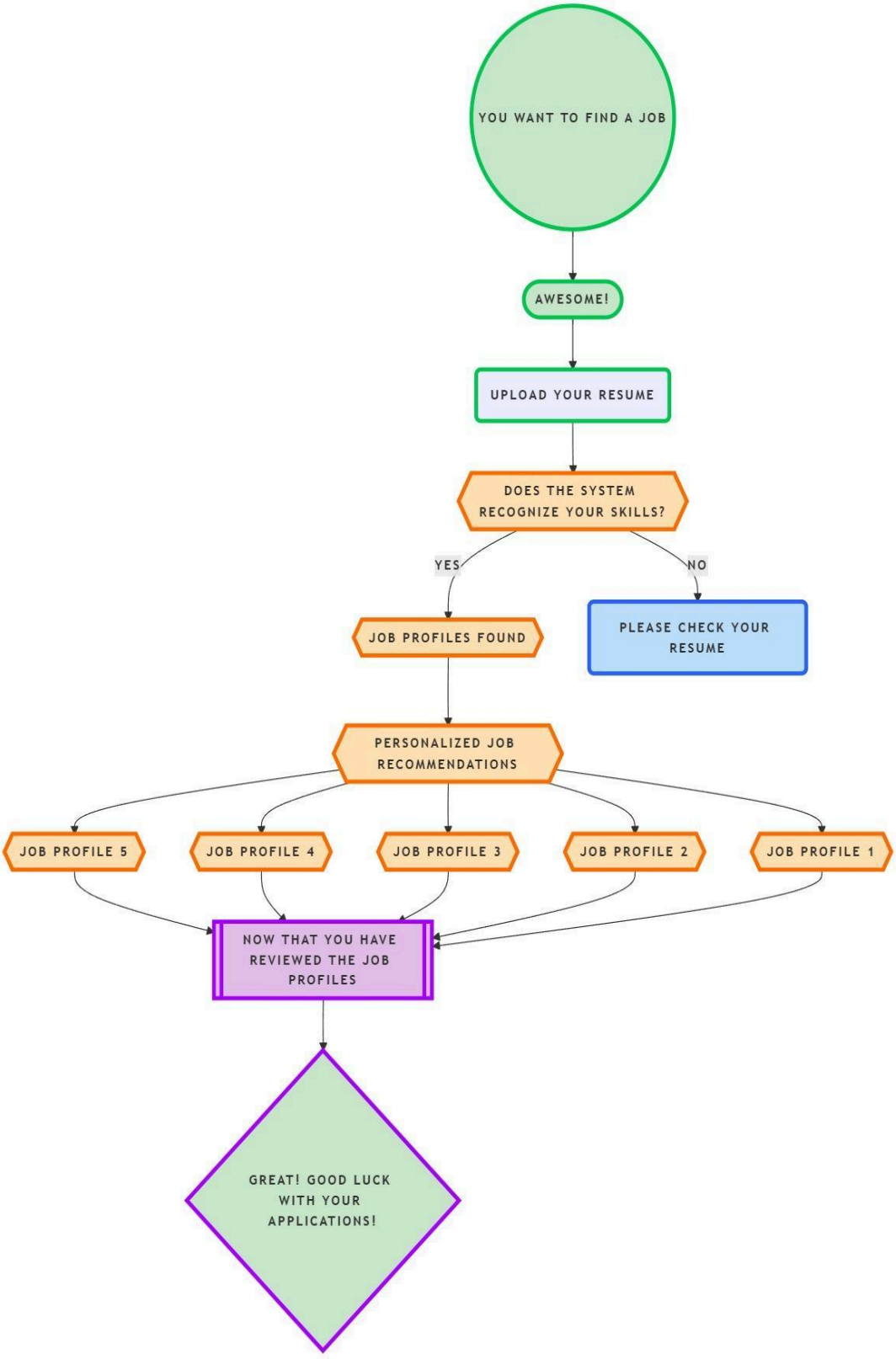


B. Job Profile Recommendation :

Our platform leverages AI to recommend tailored job profiles based on a user's unique skill set. Users can simply upload their resumes, and our intelligent system will parse the document to extract relevant skills. Using this extracted skill set, the platform matches users with suitable job profiles, providing personalized opportunities aligned with their expertise and experience.

Procedure :

1. Go to the Home Page.
2. Click on "**Services**" in the navigation bar.
3. Select "**Job Recommendation**" from the dropdown menu.
4. Upload your resume in the provided format(pdf).
5. The system analyzes your resume to recognize your skills.
6. If skills are not recognized, the system will prompt you to review and update your resume.
7. If skills are recognized, the system provides personalized job recommendations.
8. Review the recommended job profiles displayed by the platform.
9. Once done, a message appears: "**Great! Good luck with your applications!**"



Core Logic : Extract the necessary details to construct a well-structured prompt. Pass the prompt to the AI model to generate a response. Present the recommendations in an appropriate and user-friendly format.

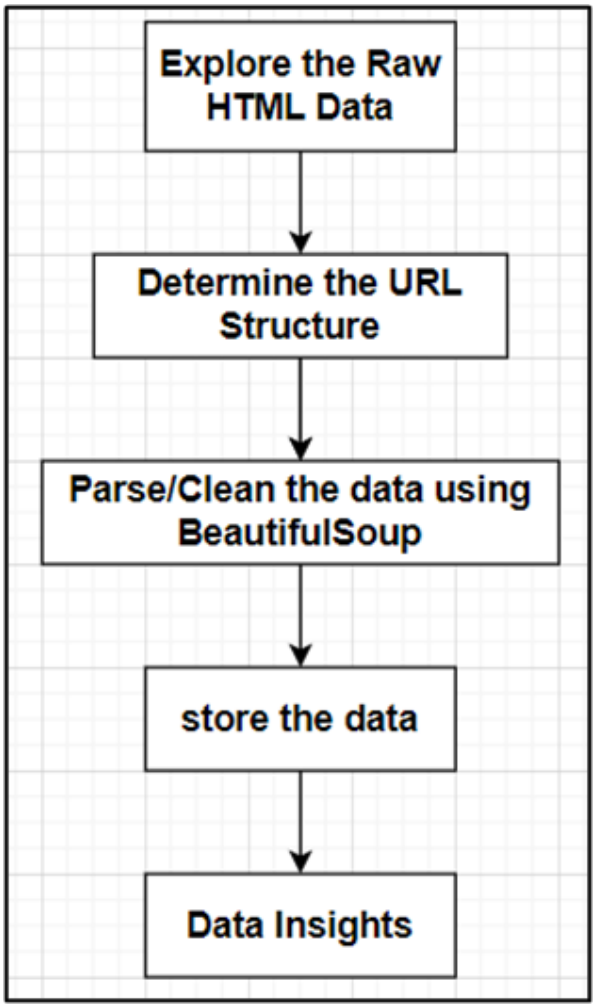
C. JD(Job Description) Match Analyzer :

How does it works?

1. **Job Description Analysis:**
   - Users provide the URL of a job posting.
   - The system scrapes the webpage to get the job description.
   - It analyzes the job posting to find important details like required skills, qualifications, and responsibilities.
   - The data is cleaned and prepared for analysis.

2. **Skill Extraction**
   - The system uses the ChatGPT API to find the key skills and qualifications from the job description.
   - The skills are shown to the user, highlighting what is important for the job.

3. **Resume Matching**
   - User uploads their resume in supported formats (e.g., PDF, DOCX).
   - The resume-matcher tool compares the resume content with the job description.
   - The system shows differences and gives suggestions to improve:
     - Add missing keywords.
     - Change sections to better match the job posting.
   - The user gets an ATS compatibility score and detailed improvement tips.



Target Audience :

- Students and Graduates: Seeking guidance on career choices and skill development.
- Professionals in Transition: Looking for personalized advice to switch industries or roles.
- Institutions and Organizations: Colleges, universities, and companies offering career support

Impact and Benefits :

- Personalization: Offers tailored career paths based on individual profiles.
- Emotional Engagement: Human-like AI interaction increases user trust and engagement.
- Scalability: Can support a large number of users simultaneously.
- Inclusivity: Ensures fairness in recommendations, eliminating biases.
- Market Adaptability: Adapts to changing job market trends, helping users stay relevant.

Feasibility and Tools :

Tech Stack:

- **AI Models**: OpenAI GPT-4 (or alternatives) for NLP.
- **Skill Assessment**: TensorFlow for predictive scoring.
- **Data Sources**: Job APIs (LinkedIn, Glassdoor), education platforms, and AI-generated datasets.
- **Frontend**: React for a user-friendly interface.
- **Scalability**: AWS or Firebase for performance.
- **Backend**: Flask & ExpressJS.
- **Libraries**: BeautifulSoup (web scraping), Resume Matcher (parsing) etc.

Implementation Steps:

1. **MVP Development**: Core AI features (resume-JD analysis, skill scoring, recommendations).
2. **Testing**: Gather user feedback for improvement.
3. **Scaling**: Integrate diverse datasets and enhance feedback loops.

Conclusion :

CareerPathAI will revolutionize career counseling by offering an accessible, adaptive, and inclusive platform powered by AI. By integrating emotional intelligence and addressing biases, it ensures users from all backgrounds receive fair and personalized career guidance, aligning with the hackathon’s vision of making career counseling more accessible, engaging, and impactful.