Intelligent Virtual Career Advisor

Guiding individuals through their career paths using an AI-driven system that combines skills assessment, job market analysis, personalized recommendations, and verifiable learning paths.

T3 CODERS

Intelligent Virtual Career Advisor

A comprehensive guide to career navigation

- **User Network Analysis**

  The system enables the user to create network and connect with other users of Elevance according to their Tech Stack

- **Skills Assessment**

  The system evaluates users' skills to tailor career advice effectively.

- **Job Market Analysis**

  Analyzes current job market trends to provide relevant recommendations.

- **Personalized Recommendations**

  Offers customized career advice based on individual profiles.

- **Verifiable Learning Paths**

  Creates concrete learning paths that users can follow to enhance their skills.

Comprehensive Technical Architecture

Detailed breakdown of the Technical Architecture

Skills Assessment Module Overview

This module assesses user skills through resume and user inputs

User Input Mechanisms

Users can upload resumes and provide their skills for analysis.

NLP Skill Extraction Process

Utilizes libraries like nltk and transformers to extract skills from resumes.

Cosine Similarity for Skills

Employs Cosine Similarity to represent skill relevance from resumes.

Quiz for Learning Prerequisites

A quiz divides users into skill levels, assessing their readiness to learn.

User Analytical Dashboard

Displays skill and resume analysis for user review and insights.

Clustering Skills by Tech Stacks

Applies K-Means to categorize skills based on technology stacks in resumes.

Job Recommendation System

Recommends jobs using K-Means and NLP techniques based on user skills.

Top Job Eligibility Display

Shows top 5 job matches based on skill clusters and analysis.

Job Market Analysis Engine Insights

- Data Sources
  - Utilizes Kaggle Tech Job datasets for data collection.
- Exploratory Data Analysis
  - Employs Plotly to extract trending skills and hidden insights in job markets.
- Personalized AI Assistant
  - RAG-based system provides job analytics insights for user queries using Sentence Transformer and Llama model using Groq api
- Output Capabilities
  - Delivers answers to technical job queries and clarifies tech stacks.

Intelligent Career Path Recommender

- **Hybrid Recommender Approach**

  Combines content-based and collaborative filtering for personalized recommendations.

- **Content-Based Filtering**

  Matches user skill vectors with job requirement vectors using cosine similarity.

- **Collaborative Filtering**

  Utilizes user data with nltk and TF-IDF to enhance recommendations based on user similarities.

- **Output Recommendations**

  Delivers top 5 recommended career roles tailored to user skills and interests.

Resume & Interview Tips Generator

- **Input Requirements for Resume**

  Users can input their resume or specific skills for analysis.

- **Utilizing Gemini LLM for ATS Score**

  The tool uses Gemini LLM to assess ATS scores and suggest enhancements.

- **Suggestions for Resume Improvement**

  It provides tailored suggestions to improve resumes based on input data.

- **Interview Preparation Strategies**

  Offers interview preparation tips tailored to the targeted role.

- **Output: Tailored Suggestions**

  Generates specific resume suggestions and interview strategies.

Skill-Based RAG Chatbot Overview

Leveraging AI for Technical Skill Inquiries

- **Purpose of the Chatbot**
  Enable real-time job queries using CSV/FAISS with Groq LLaMA.

- **FAISS Index**
  Utilizes FAISS for retrieving context from text chunks efficiently.

- **Sentence Transformer**
  Employs MiniLM for embedding, enhancing semantic understanding.

- **Groq LLaMA Integration**
  Groq LLaMA is used via RAG for generating contextually relevant responses.

- **Technical Skills Queries**
  Users can ask questions related to various technical skills and jobs.

Course Recommendation & Certification Verification

Streamlined process for verifying skills and courses

- Career Path Recommendation
  - The system suggests career paths based on user inputs and preferences.
- Course Dataset Sources
  - Utilizes platforms like Coursera, Udemy, edX, and Skillshare for course recommendations.
- Skills Matching Process
  - Matches user's desired skills with available courses to ensure relevant learning opportunities.
- Certificate Upload Feature
  - Users can upload certificates in image or PDF format for verification.

- Image Processing for Verification
  - Employs OCR with Tesseract for text recognition in uploaded documents.
- Logo and Seal Detection
  - Authenticates certificates by detecting logos or seals indicative of legitimacy.
- Template Matching Techniques
  - Uses template matching to verify the authenticity of certificates, if applicable.
- Final Output of Verification
  - Provides users with verified confirmation of skill acquisition and course completion.

NFT Badges and Blockchain Integration

Understanding NFT Badge Generation and Storage

- **Verified Course Completion**

  Ensures that only those who have completed a course can receive a badge.

- **Digital Badge NFT Generation**

  Creation of a unique NFT representing course completion as a digital badge.

- **Smart Contracts for Minting**

  Utilizes smart contracts written in Solidity to automate NFT minting.

- **Blockchain Storage Solutions**

  Stores badges on reliable blockchain platforms like Polygon or Ethereum testnet.

- **IPFS for File Storage**

  Employs IPFS to securely store files related to the digital badge.

- **Web3 Technologies Utilization**

  Incorporates Solidity, Web3.py, Ethereum, sepoliam, remix ide, IPFS, Pinata.ui and NFT

- **Immutable Badge Ownership**

  User's badge is immutable and verifiable, ensuring authenticity and ownership.

Overall Tech Stack

01 NLP & ML

spaCy
HuggingFace Transformers
sklearn
K-Means Clustering
NLTK
Sentence Transformer

02 Data Processing

Pandas
NumPy
Plotly
LabelEncoder
Standard Scalar

03 Model Serving & Backend

FastAPI
MongoDB
Clerk
Node.js

04 Web Technology

Next.js
Tailwind CSS
three.js
Spline
Cloudinary

05 Image Processing

CV2
PaddleOCR
PIL

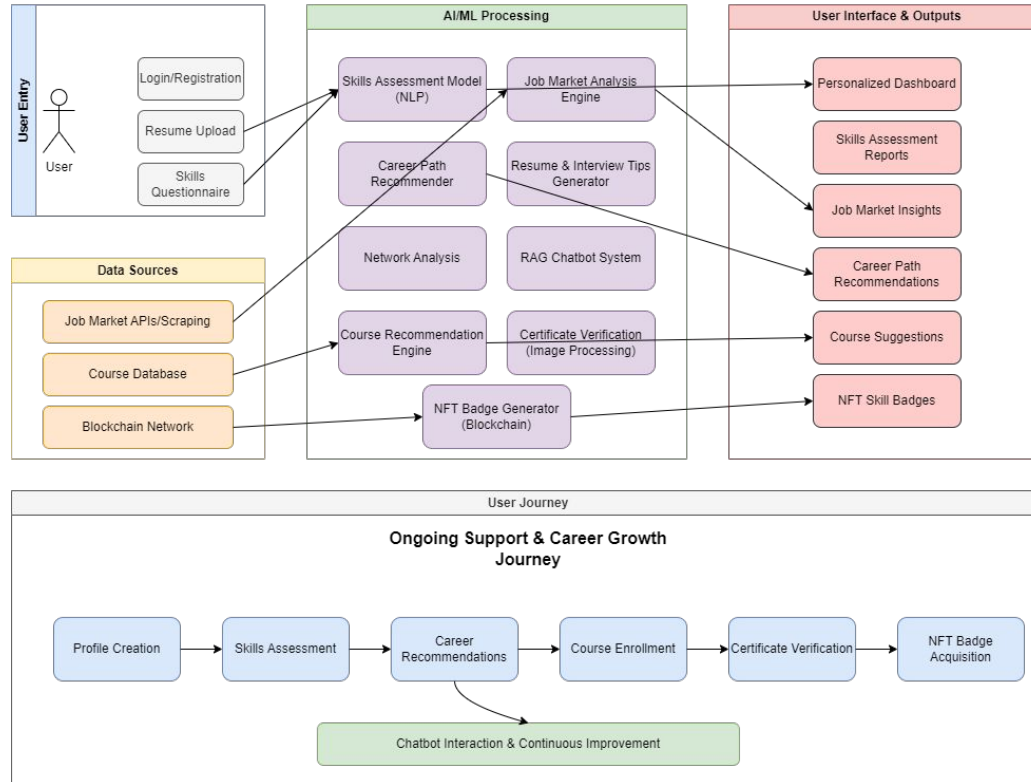**06 LLM Integration**

Groq API with
LLaMA + RAG
Gemini
Mistral

07 Blockchain

Solidity
Ethereum
sepolia, remix ide, IPFS, Pinata.ui and NFT

Innovative Future Goals in Career Management

Exploring innovative strategies for career growth

- **Real-time Job Analytics**

  Leverage LinkedIn data for instant job market insights, improving career guidance.

- **OCR for Resume Improvements**

  Utilize Optical Character Recognition to enhance and streamline resume formats.

- **Alternative Recommender System**

  Develop a unique recommender system that does not rely on Hugging Face Transformers.