

Career Chatbot: Personalized Career Guidance

AI-Powered Career Recommendation System

Mavericks

Idea Forge

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Chitti Sangeetha dedheepya Bhagya Salini Srija Sadhvik

Idea & Our Solution

Problem:

- Job seekers struggle to find relevant career paths
- Difficulty matching skills to job requirements
- Overwhelming amount of career information

Our Solution:

- AI-powered career guidance chatbot
- Personalized job recommendations
- Skill-to-job matching using ML
- Interactive conversation interface

Tech Stack

Frontend:

- Streamlit (Python web framework)
- Interactive UI components
- Session state management

Data Processing:

- Pandas for data manipulation
- scikit-learn for ML algorithms
- TF-IDF Vectorization

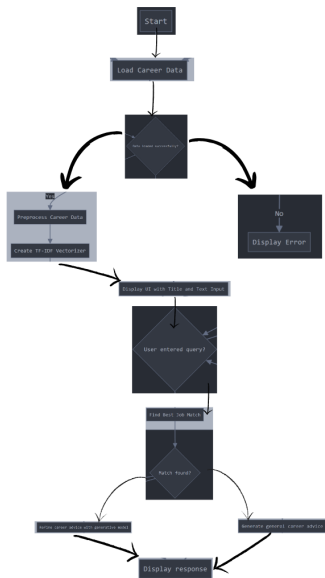
AI/ML:

- Google Generative AI (Gemini 1.5 Flash)
- Natural Language Processing
- Cosine similarity for matching

Deployment:

- Streamlit Cloud

System Flowchart



Implementation Process

1 Data Collection & Preparation

- Created comprehensive job dataset with skills, titles, descriptions
- Preprocessed text data for better matching

2 ML Pipeline Development

- Implemented TF-IDF vectorization for job matching
- Created similarity matching algorithm

3 AI Integration

- Connected to Google's Generative AI API
- Developed prompt engineering for better responses

4 UI Development & Testing

- Created interactive Streamlit interface
- Implemented conversation history

Main Idea Behind the Working

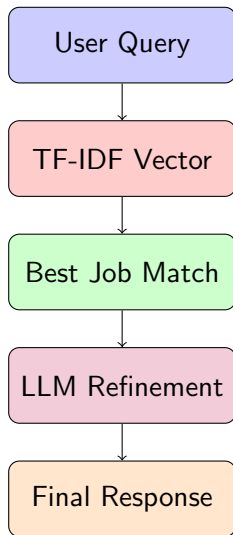
Two-Tiered Approach:

① Similarity Matching

- Convert user query to vector
- Match against job database
- Find best career match

② LLM Enhancement

- Use Gemini to refine matches
- Generate natural language advice
- Personalize recommendations



Challenges Faced

① Data Quality & Coverage

- Limited job dataset requiring enrichment
- Ensuring diverse career paths representation

② Query-to-Job Matching

- Improving similarity threshold for relevant matches
- Handling ambiguous career queries

③ AI Response Quality

- Prompt engineering for consistent advice
- Balancing general vs. specific career guidance

Future Implementations

Enhanced Features:

- Resume parsing and analysis
- Skill gap identification
- Learning resource recommendations
- Personalized career roadmaps

UI Improvements:

- Mobile-responsive design
- Dark/light mode toggle
- Save/export conversation

ML Enhancements:

- Fine-tuned embedding models
- Sentiment analysis of user queries
- User preference learning

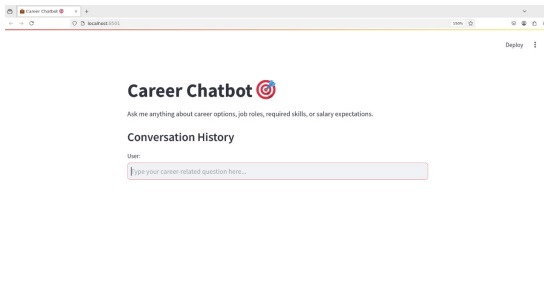
Data Expansion:

- Real-time job market data
- Industry-specific advice
- Salary trend analysis
- Geographic job market insights

Key Code Components

```
1 # Job Matching Function
2 def find_best_job(user_query, vectorizer, job_vectors, df):
3     query_vector = vectorizer.transform([user_query.lower()
4 ])
5     similarities = cosine_similarity(query_vector,
6 job_vectors).flatten()
7     best_match_index = similarities.argmax()
8     best_match_score = similarities[best_match_index]
9     if best_match_score > 0.3:
10         return df.iloc[best_match_index][['Job Title', '
11 Company', 'Salary Range', 'location', 'skills', 'Job
Description']]
12     else:
13         return None
```

Live Demo



Scan to Try the Demo:



Deployed Application

Career Chatbot is Live!

<https://career-chatbot-hx.streamlit.app/>

- Deployed on Streamlit Cloud
- Available 24/7
- No login required
- Free to use

Thank You!

Questions?