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Report

Title: AI Career Readiness & Skill Gap Agent

Introduction:

Many students and early-career professionals face difficulty in assessing their employability despite having academic qualifications. The main challenge is understanding how their existing skills align with real job roles and identifying what additional skills are required. Existing career guidance platforms often provide generic recommendations or rely on black-box AI systems, which lack transparency and user trust.

The **AI Career Readiness & Skill Gap Agent** is designed to address this problem by providing a transparent and measurable evaluation of career readiness. The system analyzes resume text, identifies skill gaps for a selected job role, and generates a quantified readiness score along with a structured learning roadmap. This approach supports informed career planning and aligns with **SDG 8: Decent Work and Economic Growth**.

Problem Statement:

Students and early professionals struggle to understand why they are not job-ready for specific roles. Current career guidance tools rely on static keyword matching or opaque AI predictions, offering little explanation of results. This lack of clarity prevents users from identifying skill gaps and planning effective upskilling paths, leading to poor employability outcomes.

Objective:

- To assess employability readiness for a specific job role
- To identify existing and missing skills from resume text
- To calculate a Career Readiness Score
- To generate a personalized learning roadmap
- To provide explainable and transparent AI-driven insights

Proposed Solution:

The proposed system is an agentic AI-based application that evaluates career readiness using explainable logic. Users provide resume text and select a target job role. The system extracts and normalizes skills, compares them with job requirements, identifies gaps, and computes a readiness score. Based on the analysis, a structured learning roadmap is generated to help users improve role suitability.

Methodology / System Architecture:

The system follows a multi-agent architecture:

- **Resume Analyzer Agent** extracts and normalizes skills from free-text input
- **Skill Gap Agent** compares extracted skills with job requirements
- **Market Prioritization Agent** assigns priority to missing skills
- **Readiness Scoring Agent** calculates employability readiness
- **Roadmap Agent** generates a time-based learning plan

The backend is implemented using **FastAPI and LangGraph**, while the frontend uses **Streamlit**.

Key Features:

- Free-text skill understanding
- Skill normalization for real-world resume language
- Explainable job-role mapping
- Career Readiness Score (0–100)
- Clear visibility of skill gaps
- Personalized learning roadmap

Alignment with Sustainable Development Goals:

The project aligns with **SDG 8: Decent Work and Economic Growth** by helping individuals understand employability requirements and pursue targeted upskilling. By reducing skill mismatches and improving workforce readiness, the system contributes to inclusive and sustainable employment.

Expected Outcomes:

- Improved awareness of employability readiness
- Clear identification of skill gaps
- Structured upskilling guidance
- Increased trust through explainable AI outputs

Conclusion and Future Scope:

The AI Career Readiness & Skill Gap Agent provides a transparent and practical approach to employability assessment. By focusing on explainability and measurable outcomes, the system bridges the gap between education and employment. Future enhancements may include additional job roles, learning progress tracking, and institutional deployment for placement support.