ENHANCING HR DECISION-MAKING THROUGH AI: A STREAMLIT-BASED SYSTEM FOR WORKFORCE PLANNING

ABSTRACT

This project presents an **AI-driven** web application designed to revolutionize workforce planning and talent management. Leveraging machine learning models built with **TensorFlow** and **PyTorch**, this tool offers two primary functionalities: employee **promotion prediction** and intelligent **role recommendation**. The promotion prediction model employs a **neural network**, trained on employee data, to forecast **promotion likelihood** based on features like department, performance ratings, training scores, and length of service. The **role recommendation** system utilizes **sentence transformers**, specifically the **all-MiniLM-L6-v2** model, to generate contextual embeddings of resumes and job descriptions, enabling accurate cosine similarity-based matching. This system then suggests roles, provides suitability scores, and integrates direct links to job postings on **LinkedIn** and **Naukri**. Further enhancing the job application process, the tool integrates Google's **Gemini LLM** to automatically generate tailored **cover letters**, saving users time and improving application quality. Accessible through a user-friendly **Streamlit interface**, this **AI Workforce Planning Tool** empowers organizations to make data-driven decisions, optimize talent allocation, and streamline the job application process. By automating key aspects of workforce management, this application improves efficiency, supports strategic planning, and promotes employee growth.