Project Report

Job Trend Analysis Using Web Scraping and Data Visualization

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Project Overview

This project focuses on analyzing job demand trends using web scraping and data analysis techniques. Job postings are collected from **Indeed.com** and processed to extract key insights such as top-demanded skills, job locations, and role-based skill requirements.

The project is divided into three main phases:

- **Web Scraping:** Collect job titles and locations from Indeed.
- **Data Analysis & Visualization:** Analyze and visualize skill demand trends.
- **Recommendations Generation:** Provide actionable insights regarding skills and locations in demand.

Tools & Technologies

Tool	Purpose
Python 3.x	Programming language
BeautifulSoup	Web scraping library
Requests	HTTP requests for scraping
Pandas	Data manipulation and analysis
Matplotlib	Data visualization
Seaborn	Advanced data visualization
OpenPyXL	Excel file generation

Methodology

3.1 Web Scraping

- The script scrapes **job titles** and **locations** from Indeed.com using requests and BeautifulSoup.
- Simple skills are extracted from job titles using keyword tokenization.
- Data is stored in a CSV file for further analysis.

3.2 Data Processing & Analysis

- Extracted skills are counted and visualized.
- Skills are related back to job roles via a **Skill vs Role Matrix**.
- Cleaned data and matrices are exported to Excel files for business analysis.

3.3 Visualization

- A **bar chart** shows the **Top 10 Most Demanded Skills**.
- A **Skill vs Role Matrix** represents role-wise skill requirements.
- Recommendations are automatically generated based on top trends.

Project Outputs

File	Description
raw_jobs.csv	Raw scraped data from Indeed
cleaned_jobs.xlsx	Cleaned job titles, locations, skills
skill_vs_role_matrix.xlsx	Matrix mapping skills to job roles
skill_demand_chart.png	Visual chart of top skills
job_recommendations.txt	Suggested skills & locations

Key Insights

- **Top 5 Skills In Demand:**
  e.g., Data, Analyst, SQL, Python, Business
- **Top Hiring Locations:**
  e.g., New York, San Francisco, Remote, Chicago, Boston

- **Recommendation:**
  Focus on upskilling in analytical tools (SQL, Excel, Python) and target high-demand locations for job opportunities.

Conclusion

This project successfully demonstrates how public job postings can be used to analyze skill demand trends using simple scraping and analysis techniques. The generated reports and visuals can help job seekers, career counselors, and HR professionals make data-driven decisions.

Future Improvements

- Use **Natural Language Processing (NLP)** for advanced skills extraction.
- Extend scraping to multiple pages and diverse job roles.
- Use **LinkedIn API** (with authorization) for official data scraping.
- Deploy results as a live dashboard using **Power BI** or **Tableau**.

Author Details

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