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MSDS69 Data Science Practicum II Project Proposal

**Title**:

AI and the Workforce: Trends, Impacts, and Future Projections

**High Level Description and Key Questions:**

In this project, I want to examine how artificial intelligence (AI) is changing the workforce by analyzing AI adoption in businesses, job market trends, and public sentiment on AI in employment. Key questions include:

* How has AI impacted job demand across industries?
* What industries are most and least affected by AI-driven automation?
* How do people feel about AI’s impact on the job market?
* What jobs are likely to grow or decline due to AI in the next 5-10 years?

Using real-world data, I want to provide insights and predictive analytics on the future of work in the AI era.

**Data Science Tasks:**

This project involves multiple data science techniques:

* Data Visualization – I will create visualizations to show activit and trends in AI adoption and job impacts.
* Time Series Forecasting – I want to predict job growth/decline due to AI.
* Natural Language Processing (NLP) – I wish to analyze public sentiment on AI in work-related discussions.
* Clustering/Classification – I would like to group industries by AI adoption levels.

**Data:**

The data for this project will include publicly available reports on AI adoption in businesses, workforce employment trends, and job forecasts. Additionally, real-world datasets on AI-related job postings and public sentiment toward AI in the workforce will be collected. These sources will include:

* Industry Reports: AI adoption and job impact data from research organizations and government agencies.
* Employment Trends: Job market data from labor statistics and workforce studies.
* Public Sentiment Data: Online discussions and search trends related to AI in the workforce (LinkedIn, Glassdoor, Reddit, etc)

I expect the volume to vary by source and the collection time to be done over one to two weeks.

**Data Analysis:**

Data visualization will be created using Python libraries such as Matplotlib and Seaborn, as well as Power BI to present key insights in an interactive and meaningful way.

The data will be analyzed using a combination of machine learning techniques, text analysis, and data visualization. Methods may include time series forecasting, sentiment analysis, and clustering to identify trends in AI adoption and its impact on the workforce.

**Anticipated Challenges & Solutions:**

One of the challenges I expect in this project will be finding data that is recent enough to reflect current AI trends. AI is evolving so quickly that reports and datasets from just a couple of years ago may already be outdated. To address this, I will focus on the most up-to-date sources, such as real-time job postings, social media discussions, and recent industry reports (although I may need some historical data to see changes). Another challenge will be distinguishing between job changes caused by AI versus other factors like economic shifts or post-pandemic recovery. Careful analysis will be needed to separate these effects. Finally, making the insights clear and actionable through data visualizations and forecasting models will be important so that the results tell a meaningful story.

**Timeline:**

Below is a brief timeline with week-by-week deliverables:

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| **Week** | **Deliverables** |
| Week 1 | Project proposal. |
| Week 2 | Data collection: begin web scaping and find relevant data sources. |
| Week 3 | Data cleansing, processing, and data analysis (EDA). |
| Week 4 | Continue EDA; start machine learning analysis. |
| Week 5 | Machine learning analysis. |
| Week 6 | Data analysis and visualizations. |
| Week 7 | Finalize analysis and visualizations; start project summary and presentation. |
| Week 8 | Final review, polish visualizations, record video presentation, and submit project. |

**GitHub Repository:**

<https://github.com/charityasmith/MSDS696_Practicum2_Project>