AI Visulization

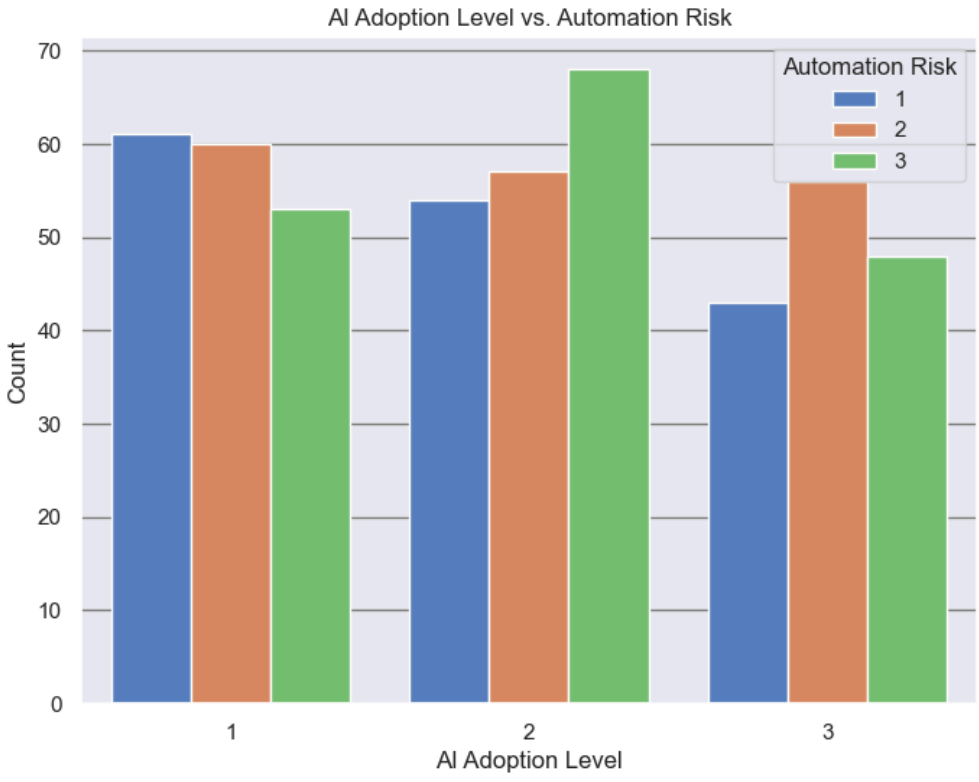
Zachery Davis

Introduction:

This project aims to analyze the relationship between AI adoption and the risk of job automation across various industries. As AI continues to revolutionize industries, it provides new opportunities but also the potential for job displacement as a result. The dataset I am looking at examines AI implementation in various fields with 500 entries and 10 features. The data covers useful information about the company such as size and location and information about the specific job. The goal is to answer how the level of AI adoption correlates with automation risk in different industries. Also, finding trends in salaries and growth projections in relation to AI adoption or automation risk? This dataset is complete but only has 500 entries. A larger dataset would allow for the emergence of smaller trends and better insight. However, there is still information that can be used in future consideration of career choices and expectations.

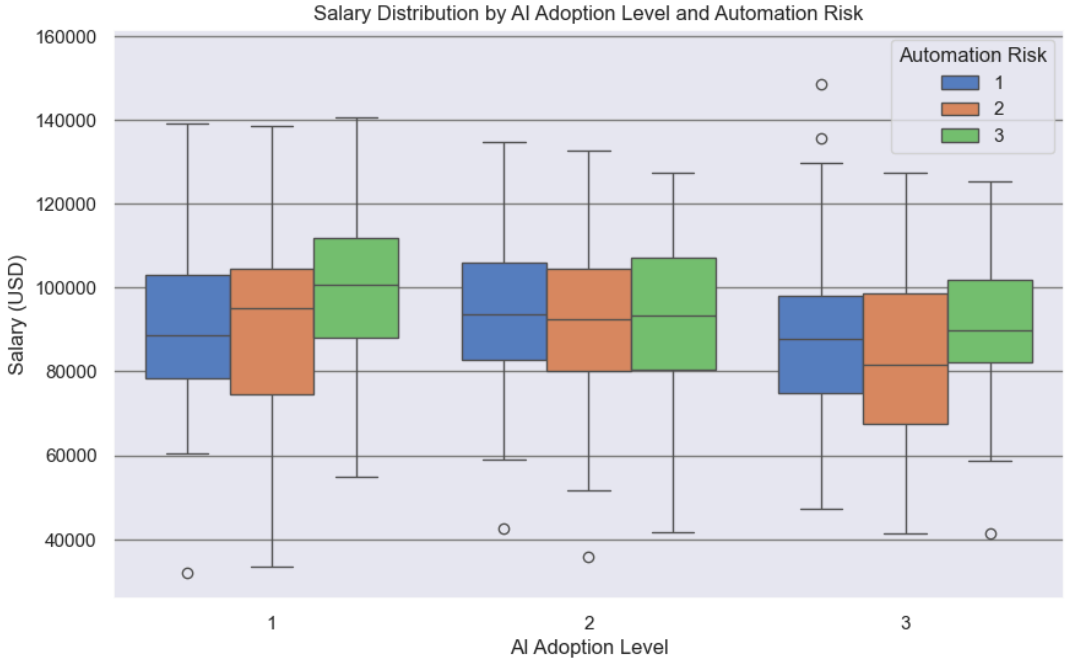
Pre-processing;

Before analysis, the data must be cleaned. Looking for null or mismatched values during pre-processing none were found. The dataset had already been cleaned. After importing the data as a pandas data frame, the features were standardized. “Yes” and “No” were converted to true/false boolean values. “Small/Low,” “Medium,” and “Large/High” were converted to int values of one, two, and three accordingly.

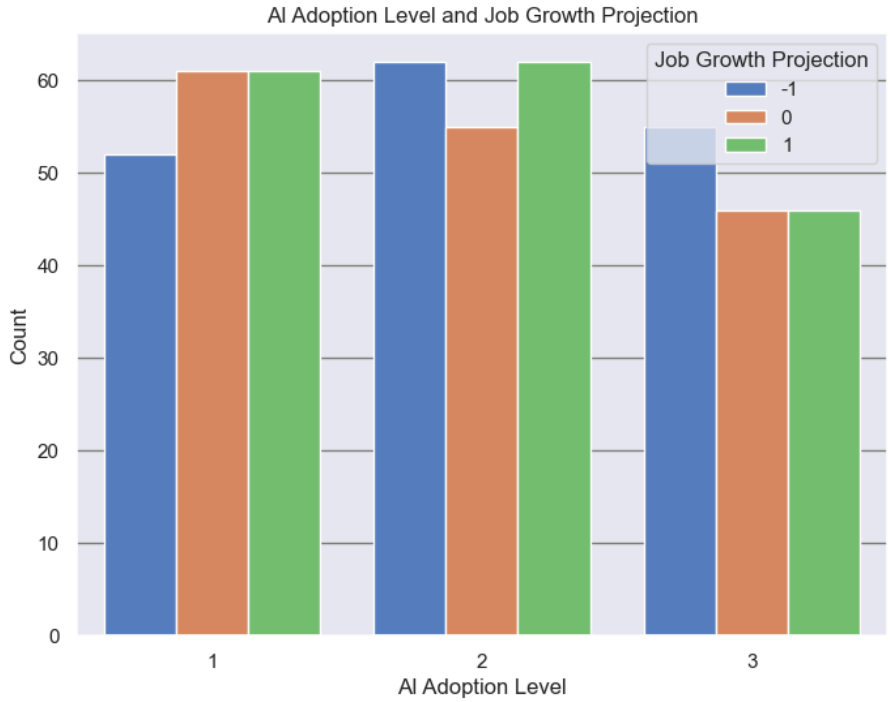


Visualization:

Comparing the number of entries with levels of AI adoption vs the risk of automation a pattern emerges. Notable with adoption level (1) there is a downward trend for automation risk. In adoption level (2) it's an upward trend.



The median salaries tend to stay about the same however the range of values overall tends to decrease with higher AI adoption and automation risk. It should also be noted that there are some outliers in all three levels of adoption.



There is a very noticeable pattern that emerges from this graph. As the AI adoption level increases there is a higher trend towards a negative growth projection. Each being positive, neutral (negative and positive variance), and negative trend of growth.

Story Telling:

The analysis reveals that higher levels of AI adoption correlate with higher automation risk in several industries. This indicates that as companies implement AI into their workflows, the likelihood of job automation increases. However, industries with low AI adoption also have a lower risk of automation, which is reassuring for the future of those fields. Jobs with high AI adoption and low automation risk tend to offer higher salaries. This suggests that skills relevant to AI, such as UX/UI design or AI research, are valuable in reducing automation risk and producing higher wages. Alternatively, jobs with high automation risk and lower AI adoption often offer lower salaries, potentially showing the risk of automation. Interestingly, jobs with higher AI adoption levels are more likely to experience growth. This indicates that while certain roles might face automation, new roles and opportunities are being created, especially for workers who have the skills to work alongside AI. These visualizations suggest that AI adoption has a mixed impact on job security: some roles may be automated, while others are projected to grow. Certain skills such as AI experience can reduce automation risk and are important for higher-salary careers.

Impact:

This project highlights the increasing possibility that AI adoption could lead to reduced jobs in certain fields. In industries with constant development in automation, workers must adapt. The data primarily focuses on industries and locations that are already integrating AI. It lacks representation of smaller economies and industries where AI adoption is still developing. Additionally, the advancement of automation will have negative impacts on those without access to retraining or educational resources. The insights from this project should guide policymakers, educators, and businesses to focus on AI-related skills training programs to prepare workers for the future job market. This analysis provides an understanding of basic trends, however, larger data analysis is required to make more refined conclusions. Keeping these potential impacts in mind, AI does offer exciting opportunities, but the implementation must be controlled to mitigate harm.

References:

Code: https://github.com/Zachery-Davis/Data-Mining-Project-1
Dataset: https://www.kaggle.com/datasets/uom190346a/ai-powered-job-market-insights