

A white robotic hand is reaching out from the left side of the frame, its fingers slightly curled. On the right side, a human hand is reaching out, palm facing down, with fingers spread. The two hands are positioned as if they are about to shake or are in the process of shaking. The background is a plain, light color.

AI and the Job Market: Disruption, Evolution, and Insights

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Problem Statement

With AI growing, its impact on the workforce varies across industries and job roles. Understanding how AI impact jobs and workload distribution is crucial for company and employees to adapt effectively.

Motivation:

As AI continues to transform industries, our data enables us to:

1. **Analyze AI's impact on different industry** – identifying automation potential and shifts in responsibilities.
2. **Will our job be replaced by AI?** – identifying automation potential in different career.

Dataset



AI-Powered Job Market Insights

- Categorized by industry, company size, hiring trends, automation adoption, required skills, etc.
- <https://www.kaggle.com/datasets/uom190346a/ai-powered-job-market-insights/data>

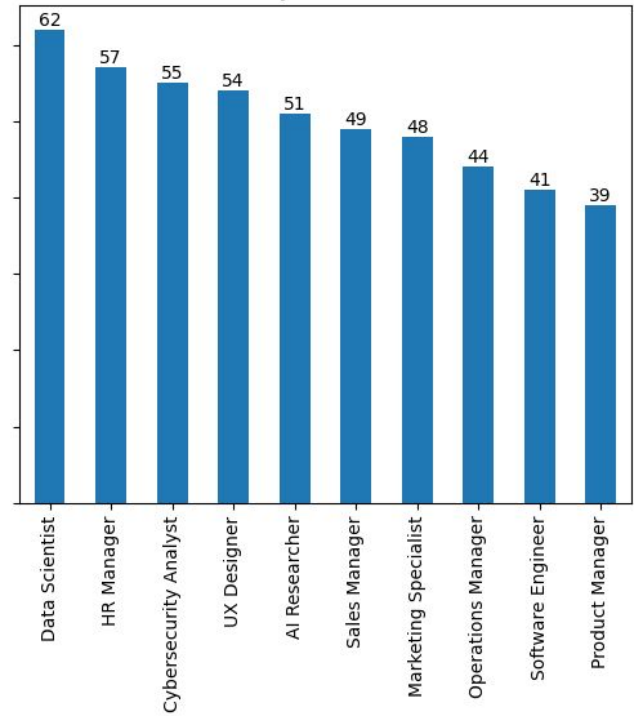
AI impact on Jobs

- Each entry categorizes job titles, AI's potential impact, the workload distribution between human tasks and AI models, and the domain to which each job belongs
- <https://www.kaggle.com/code/unclepablo/ai-impact-on-jobs/notebook>

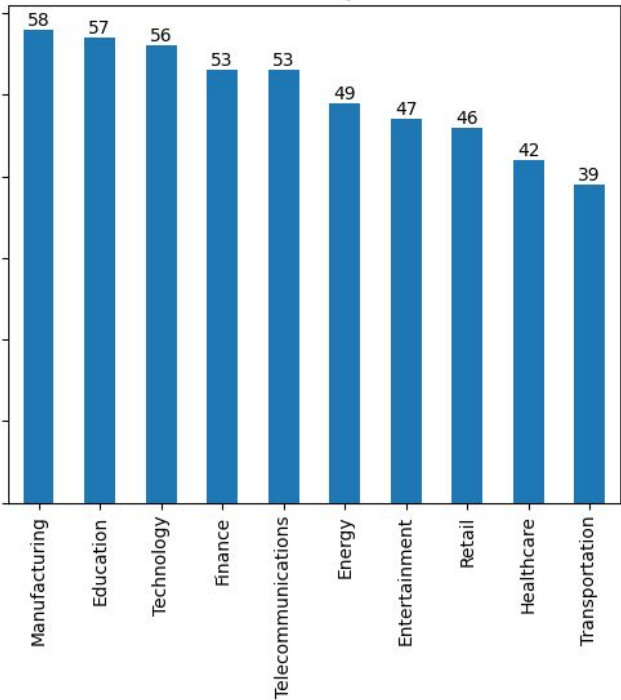
Methodology

Demographics

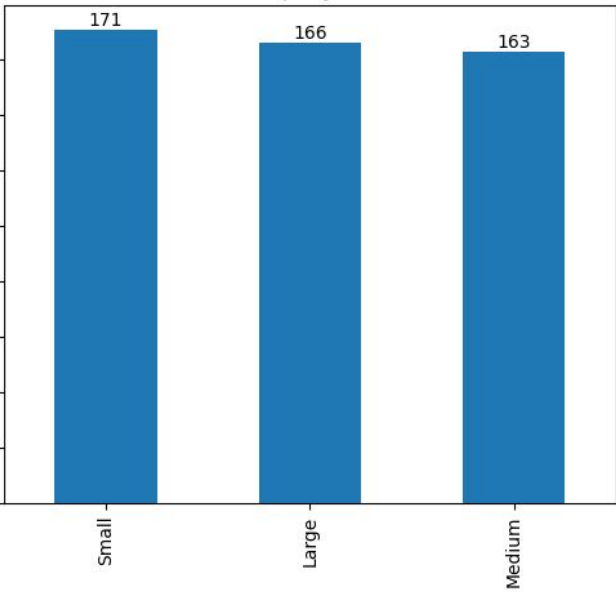
Job Title



Industry

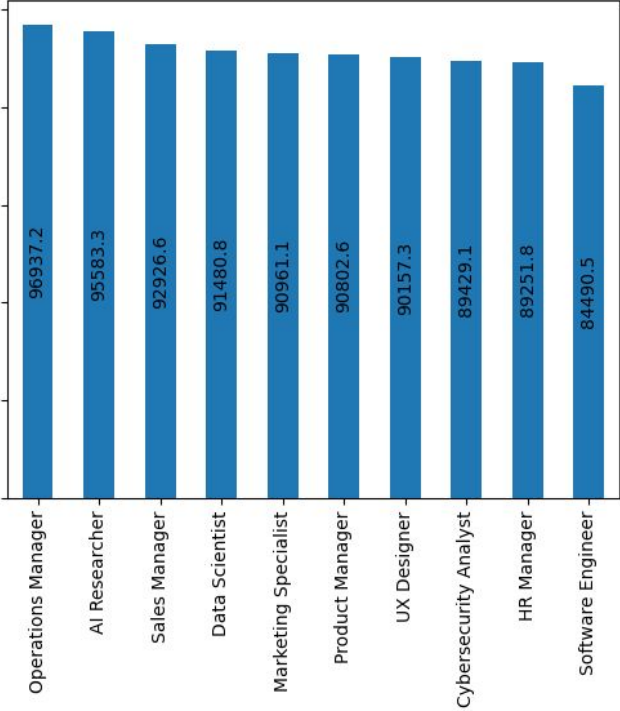


Company Size

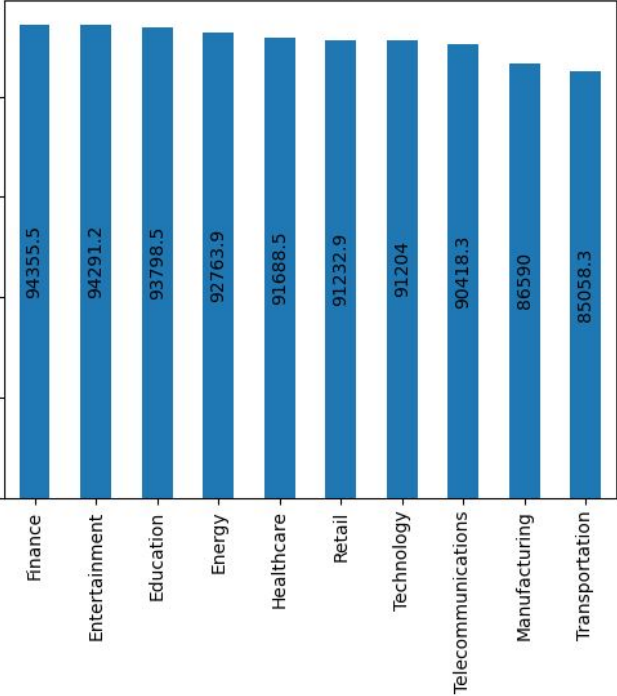


Average Salary

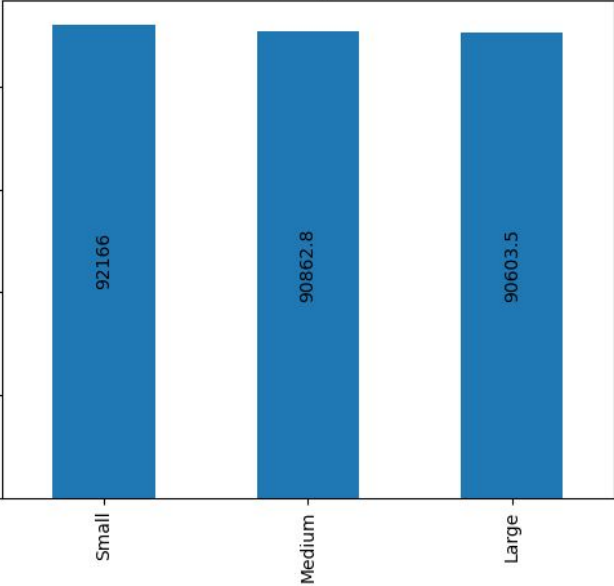
Job Title



Industry

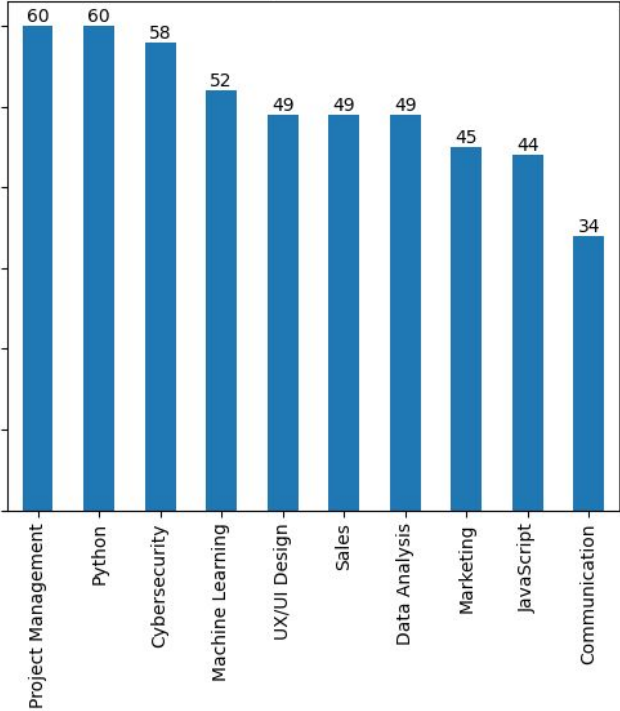


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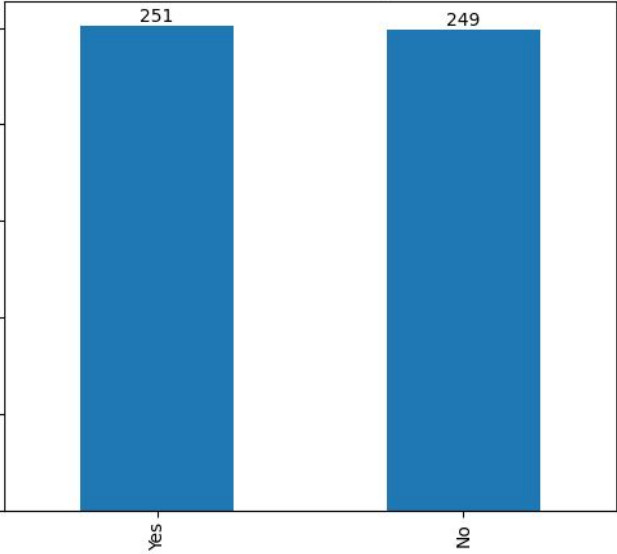


Demographics

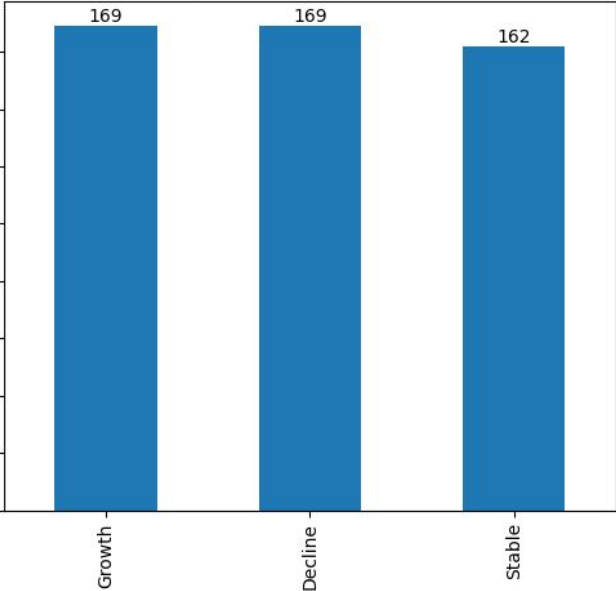
Required Skills



Remote Friendly

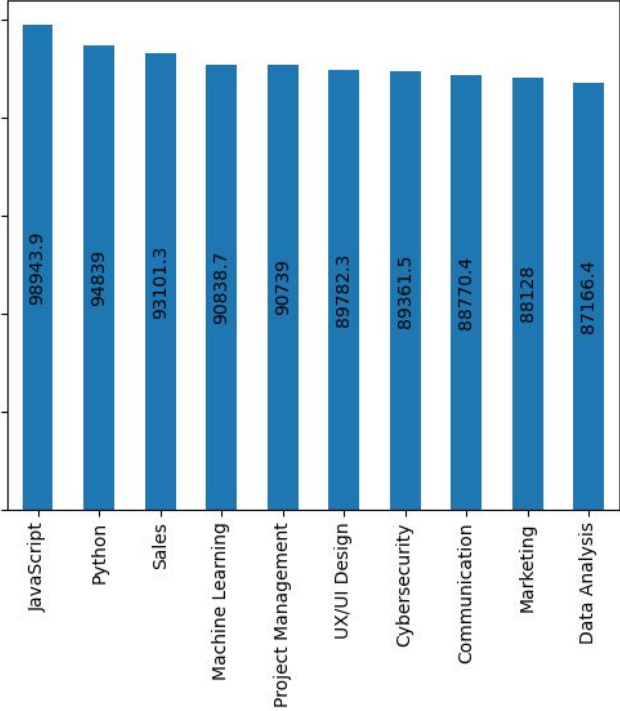


Job Growth Projection

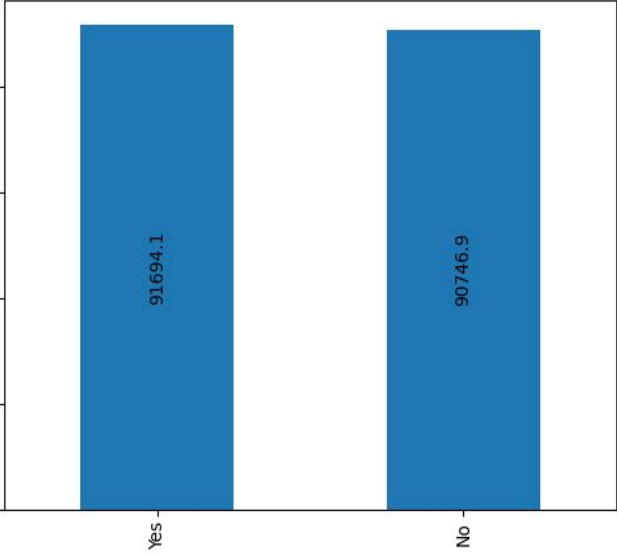


Average Salary

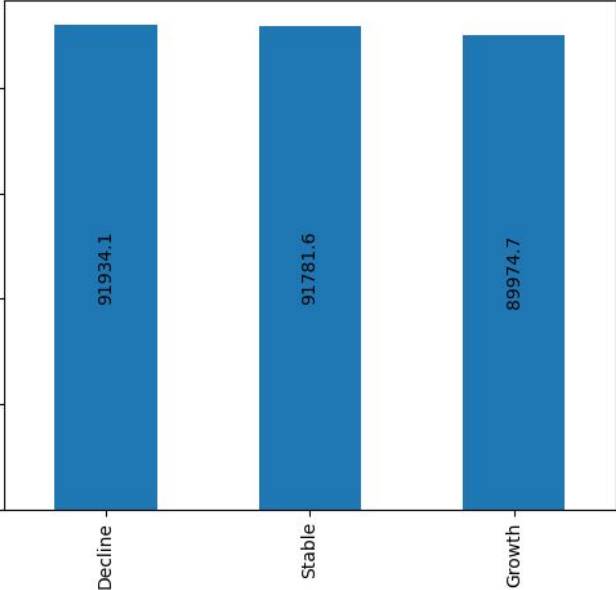
Required Skills



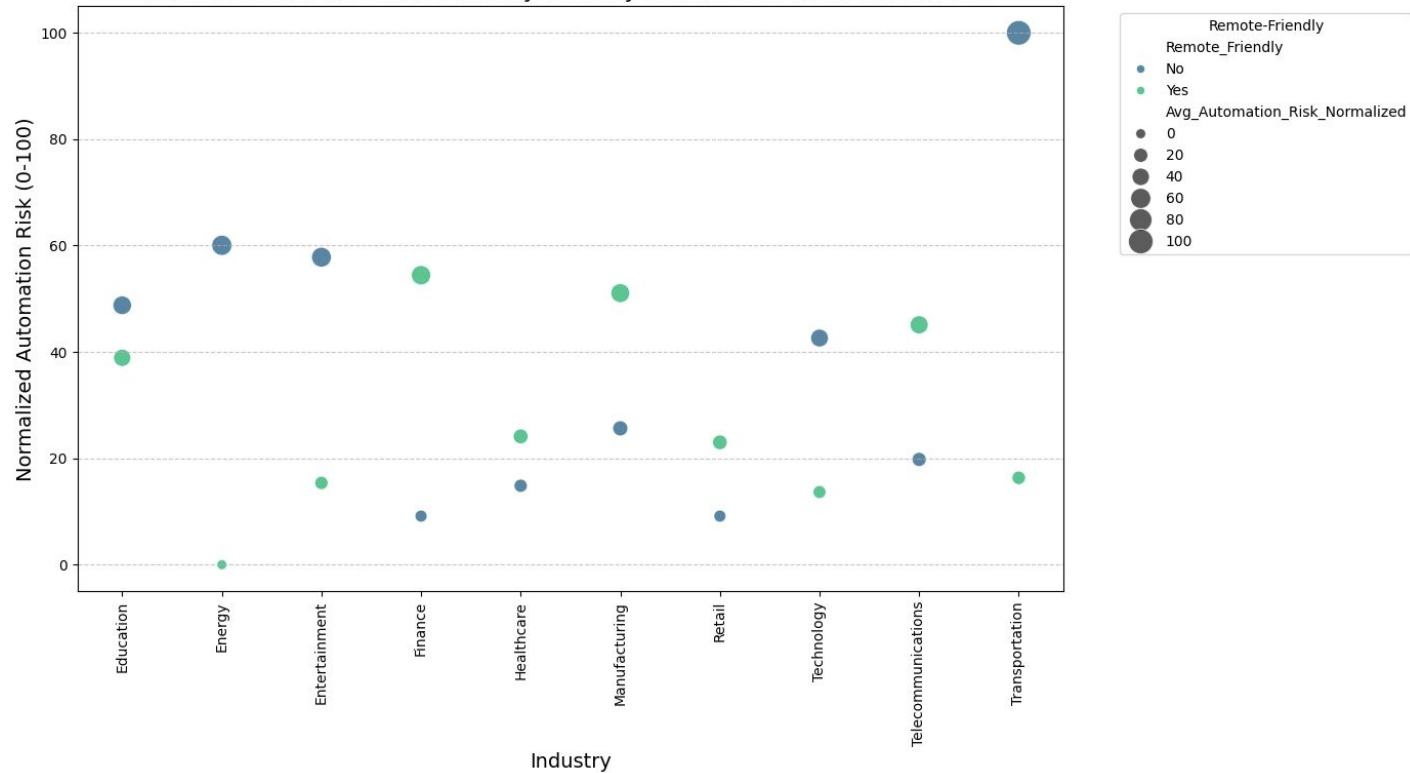
Remote Friendly



Job Growth Projection



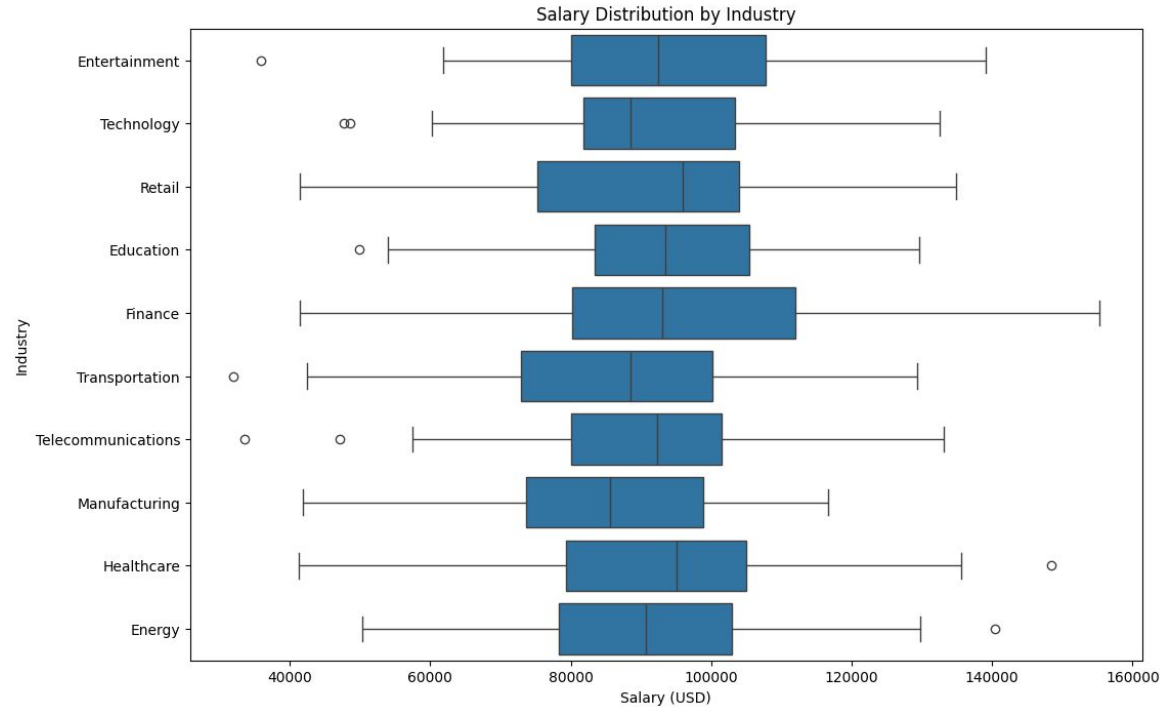
Bubble Chart: Automation Risk by Industry and Remote Work Friendliness



Salary Distribution

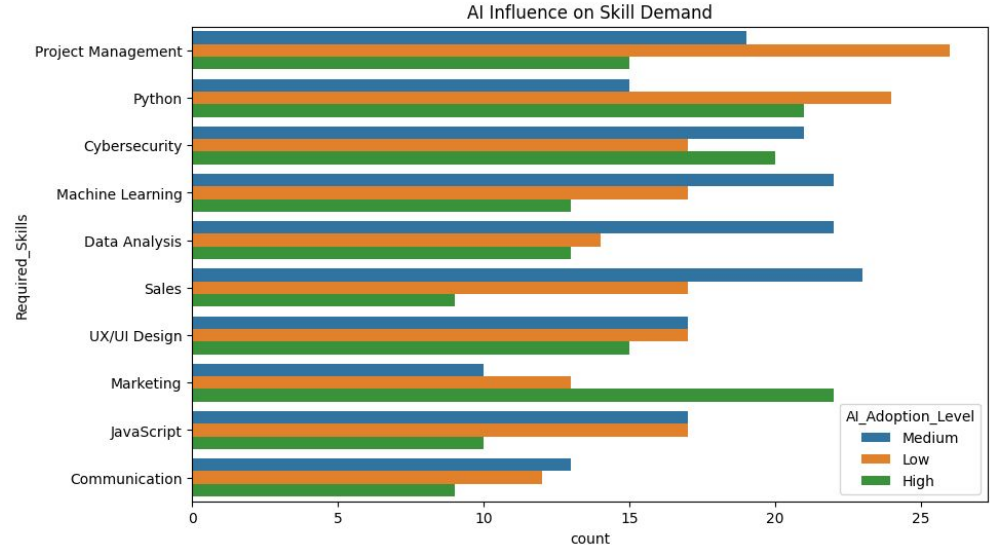
The salary distribution across various industries reveals that the **Financial** and **Entertainment** sectors offer the highest salaries, while **Manufacturing** and **Transportation** are among the lower-paying industries.

Individuals working in **Education**, **Technology** and **Healthcare** fall within the middle-income range.

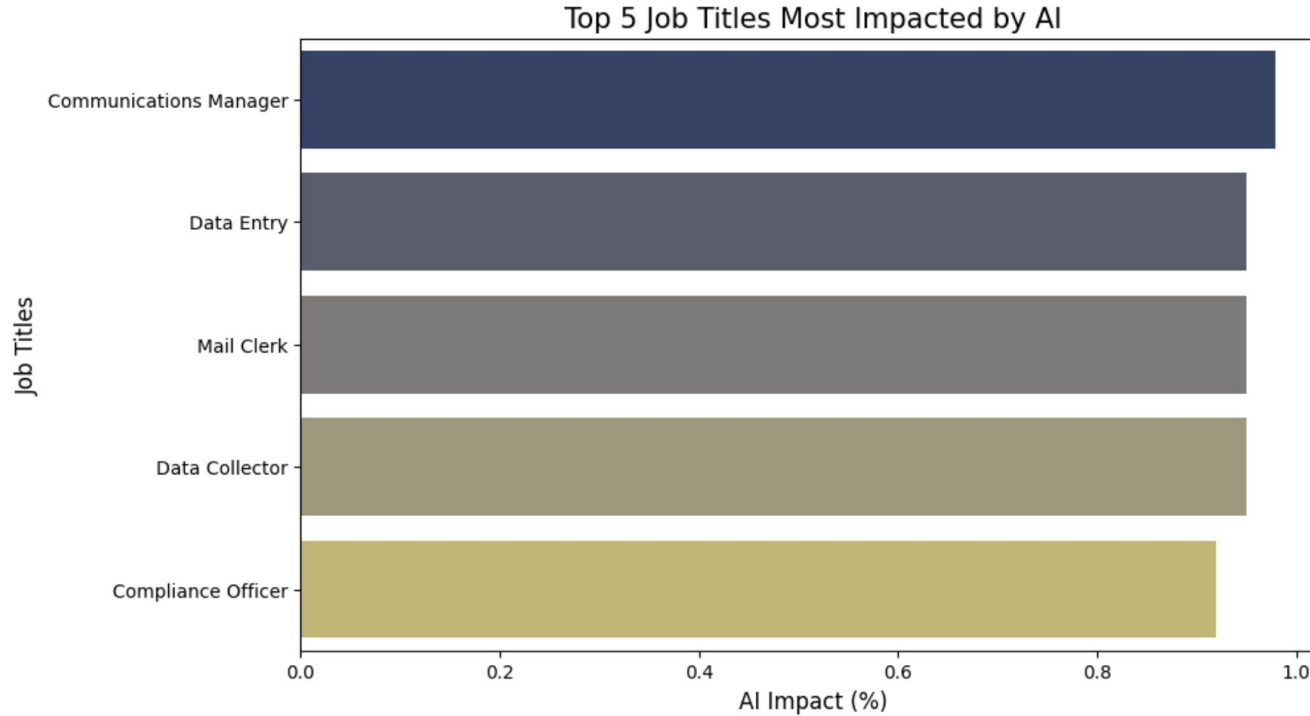


Skill Requirements According to AI Influence

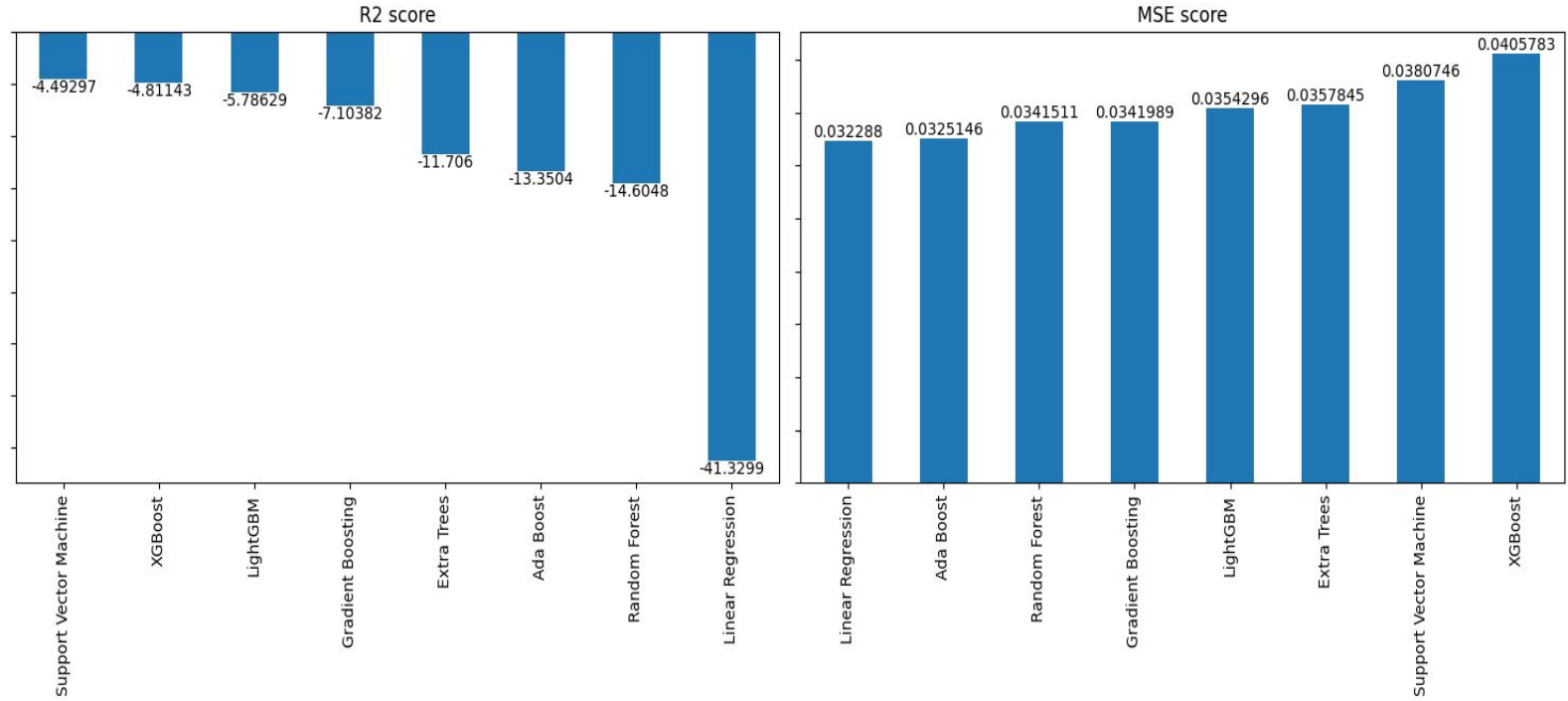
- **Python** show high demand across all AI adoption levels, particularly in environments with **High AI adoption**.
- **Machine Learning, Data Analysis, and Cybersecurity** are also in high demand, which aligns with the increasing role of AI in data-driven decision-making and security.
- **Sales, UX/UI Design, and Marketing** have relatively varied demand, with **Sales showing strong demand under Medium AI adoption**.
- **Communication and JavaScript skills** show moderate demand.



Top 5 Impacted Jobs



Salary Prediction



Salary Prediction

The left chart (R^2 score) shows that all models perform poorly, as the R^2 scores are negative. The worst model is Linear Regression (-41.32), while Support Vector Machine (-4.49) performs the best among bad models.

The right chart (MSE score) ranks models based on error. Linear Regression has the lowest MSE (0.0322), but since its R^2 score is terrible, it still doesn't generalize well.

Insights

- None of the models seem to be predicting well, as negative R^2 indicates poor fit.
- More feature engineering or better model selection (e.g., deep learning) might improve results.

Predicting the Risk of AI Automation

- **Precision** (how many predicted positives are actually correct)
- **Recall** (how many actual positives were correctly predicted)
- **F1-score** (harmonic mean of precision and recall)
- **Support** (number of actual instances per category)

Automation Risk Prediction Accuracy: 0.4514285714285714

	precision	recall	f1-score	support
High	0.38	0.44	0.41	57
Low	0.47	0.32	0.38	59
Medium	0.50	0.59	0.54	59
accuracy			0.45	175

Reasons for Lower Performance

- **Low Accuracy:** The features may not have enough predictive power
- **Inadequate Data:** We do not have enough data for training the mode (Only 500 data points)

Thank you - Prof & TA's

Q&A

References

[1] Cuervo, A. (2023, December 12). *AI impact on jobs*. Kaggle.

<https://www.kaggle.com/code/unclepablo/ai-impact-on-jobs>

[2] Tharmalingam, L. (2024). *AI-powered job market insights*. Kaggle.

<https://www.kaggle.com/code/laksika/ai-powered-job-market-insights>