AI vs Non-AI: Cracking the Job Market Code in 2024

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2025-01-01

Introduction

Artificial Intelligence (AI) is transforming industries—but is it taking all the jobs? In this report, we explore the 2024 U.S. job market to answer three questions: 1. Who's hiring? 2. What skills matter most? 3. How can we stay competitive in a rapidly changing economy?

We compare AI vs Non-AI roles using a real-world dataset of 100,000+ job postings and leverage big data tools like PySpark, AWS EC2, and Natural Language Processing (NLP).

Dataset Overview

- **Source**: Lightcast 2024 U.S. job postings (Jan–Mar)
- **Size**: 100,000+ postings
- **Features**: Job title, skills, salary, description
- **Preprocessing**: Manual AI/Non-AI tagging, TF-IDF vectorization
- **Tools**: PySpark, Jupyter Notebooks, AWS EC2

Exploratory Data Analysis

AI Jobs: - Top roles: Machine Learning Engineer, Data Scientist - Average salary: ~$118K - Common keywords: *"pipeline"*, *"GPU"*, *"TensorFlow"*

Non-AI Jobs: - Top roles: Project Manager, HR Coordinator - Average salary: ~$72K - Common keywords: *"calendar management"*, *"CRM"*

Insight: While AI roles offer higher pay, non-AI roles are still in demand and easier to enter.

Skill Gap Analysis

We analyzed missing skills based on job descriptions.

Track	Missing Skills
AI Track	Deployment (AWS, APIs), MLOps
Non-AI Track	BI tools (Power BI, Tableau), AI literacy

Finding: Many candidates lack production-level experience in both tracks. Prompt engineering and dashboarding are key upskilling areas.

Modeling the Market

We trained a **Random Forest Classifier** to predict whether a job is AI or Non-AI based on the text.

- **Accuracy**: 89%
- **Key AI indicators**: *TensorFlow, inference, pipeline*
- **Key Non-AI indicators**: *calendars, CRM, reporting*

Hybrid Role Discovery

A growing category: roles that combine business and AI skills.

- Examples: *AI Strategy Lead, Data Product Manager*
- These roles are **high demand + low competition**
- Employers seek cross-functional skillsets (communication + ML)

Career Recommendations

Track	Advice
AI	Focus on real-world projects, deployment pipelines
Non-AI	Master BI tools, use AI tools to automate tasks
Hybrid	Combine soft skills + technical skills, especially in storytelling and analytics

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Tools Used

- **Languages**: Python, Spark
- **Environment**: AWS EC2
- **Libraries**: TF-IDF, scikit-learn, Pandas, Matplotlib
- **Version Control**: GitHub

Challenges & Lessons

- Cleaning messy job titles was highly manual
- AWS EC2 setup required patience and restarts
- Merge conflicts taught us version control discipline
- Real takeaway: Data science is 20% modeling, 80% debugging and documentation

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Team Contributions

Team Member	Contributions
Vidhi Sharma	Built ML model, AWS setup, report writing, strategic analysis
Nhan Huynh	Data preprocessing, skill gap analysis, EDA
Soham Deshkhaire	Visualizations, GitHub documentation, presentation polish

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Conclusion

AI is changing the job market—but not in a zero-sum way.
With the right mindset and skill mix, there's room for everyone.

"AI won't replace you. But someone using AI smarter than you might."

References

- Lightcast.io Job Market Data (2024)
- Hurwitz, J. et al. *Big Data for Dummies.* Wiley, 2013.
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