

OUR HISTORY THROUGH ERAS OF TRANSFORMATION



Human Capital Age

Value driven by physical effort and manual skill

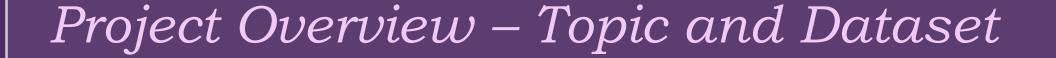
Industrialization

Value drive by efficiency, scale and automation

Digitalization

Data, Algorithms and Connectivity

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Topic

"Humans vs Machines: Is AI Taking Over?"

Why This Topic?

Increasing significance in today's rapidly evolving digital landscape
Ongoing global discussions about AI's impact on jobs and the future of human
employment

Original Dataset Sources

National employment matrixes and employment projections (2023 - 2033)

AI industry reports(OECD)

Reddit Social media sentiment on

Project Overview – Hypotheses & Process

- 1. H1: Public sentiment on AI is increasingly negative
- 2. H2: AI-adopting industries show productivity gains but shrinking workforce growth
- 3. H3: Automation risk correlates with higher unemployment
- 4. H4: Creative roles are less automatable

Challenges Faced with Datasets

Inconsistent Column Naming
Column names had mixed casing and spaces, causing issues in downstream
processing.

Missing Values Significant number of Null values across different columns, both in numerical and categorical data.

Textual Noise Text fields like (comment body) had inconsistent spacing and potentially irrelevant content.

Duplicate Entries Repetitive records led to inflated data volume and potential bias.

Irrelevant Columns
Columns like (post id and comment created) were not useful for analysis and needed
removal.

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Techniques Used to Resolve Challenges

1. Standardizing Column Names
Applied .str.lower() and .str.replace() to unify format and ease
column referencing.

2. Handling Missing Values
Used mode for categorical and mean for numerical imputation.
Fallbacks like filling with "unknown" or "anonymous" where appropriate.

3. Removing Duplicates
Applied .drop_duplicates() with index reset to ensure dataset
integrity.

4. Cleaning Text Data Replaced whitespace with underscores and prepared for NLP processing (e.g., spaCy).

5. Feature Reduction
Dropped unnecessary columns to streamline the dataset for analysis.

Exploratory Data Analysis – Methods



EDA Tools:

Pandas, Matplotlib, Seaborn, Spacy, Wordcloud



Techniques

NLP,Descriptive analyse, plot visualization, sentiment distribution plots



Goal

Detect patterns and validate hypotheses visually before statistical testing

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Exploratory Data Analysis

occupation_growth			
PK	occupation_code	VARCHAR(100)	
	occupation_title	VARCHAR(255)	
	employment_2023	FLOAT	
	employment_2033	FLOAT	
	employment_change_2023_2033	FLOAT	
	employment_percent_change_2023_2033	FLOAT	

- o 4 Core Tables
- Occupation growth: Stores based on occupations,
 employment prediction in 10 year
- Occupation wage: hourly and annually mean wages with sectors
- Country Ai adoption rates: countries, sector, observation rate of businesses adoption of ai
- Ai job sentiments: reddit comment over ai taking people job,
 has. sentiment labels and comments

country		
PK	country_id	INT
	country_name	VARCHAR(255)

sector		
PK	sector_id	INT
	sector_name	VARCHAR(255)
FK	occupation_code	VARCHAR(100)

occupation_wages		
pk	occ_code	Туре
	tot_emp	FLOAT
	a_mean	FLOAT
	h_mean	FLOAT
	sector	VARCHAR(255)
FK	occupation_code	VARCHAR(100)

ai_job_sentiment			
PK	comment_id	VARCHAR(255)	
	comment_body	VARCHAR(255)	
	comment_score	INT	
	post_title	VARCHAR(255)	
	sentiment_label	VARCHAR(255)	
FK	occupation_code	VARCHAR(100)	

country_ai_adoption		
PK	id	int
FK	country	VARCHAR(255)
FK	sector	VARCHAR(255)
	time_period	INT
	measure	VARCHAR(255)
	observation_value	FLOAT

ADVANCE ANALYSIS

Sentiments Analysis

Subjective by nature — Based on personal emotions, tone, or bias.

Context-dependent — A sarcastic or ironic comment may score incorrectly.

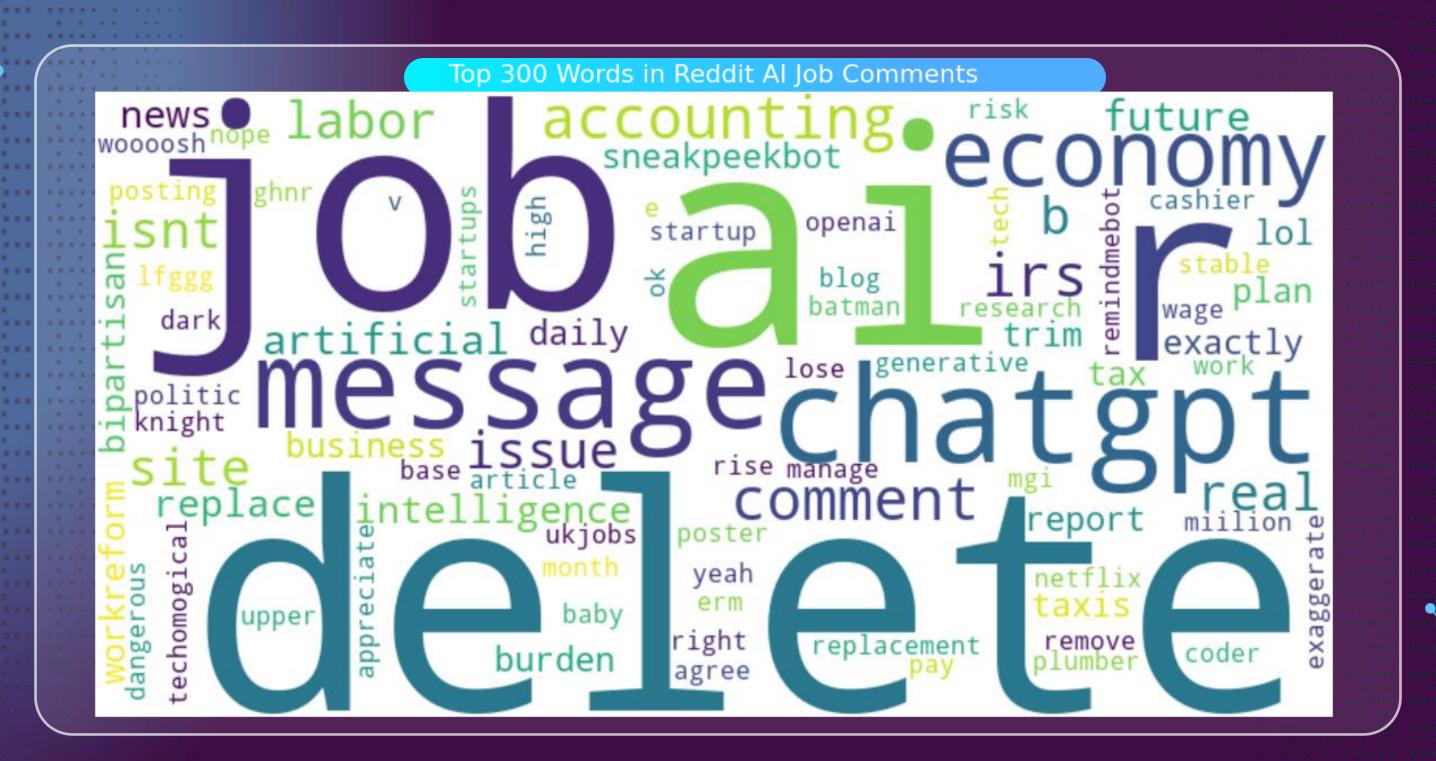
Non-factual — A high sentiment score doesn't validate accuracy or truth.

Prone to distortion — Influenced by current events, groupthink, or platform dynamics.

" Sentiments reflects perceptions, not trends"

"Feelings aren't facts—data tells the story."

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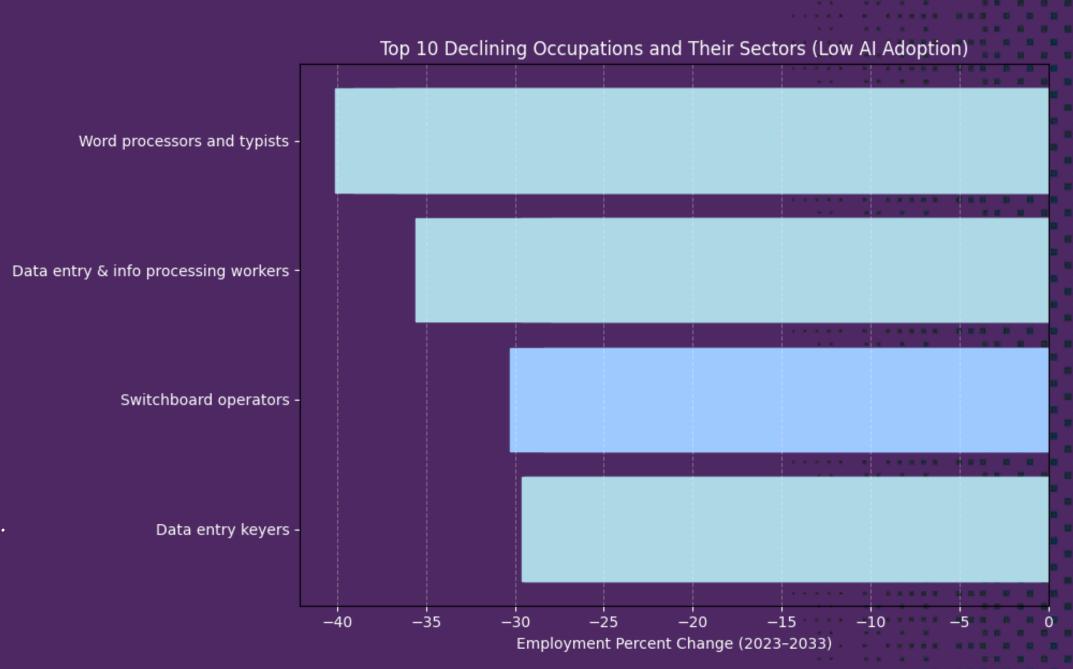
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Automation Risk vs Employment Decline

Are AI adoption levels in Retail, Food Services, or Manufacturing low — while their related occupations are shrinking?

Jobs with low AI adoption are still at high risk—showing that automation isn't the only factor behind decline, but vulnerable jobs are declining sharply regardless.

Key Point: Word processors and typists, switchboard operators, and data entry roles are shrinking by up to 40%.

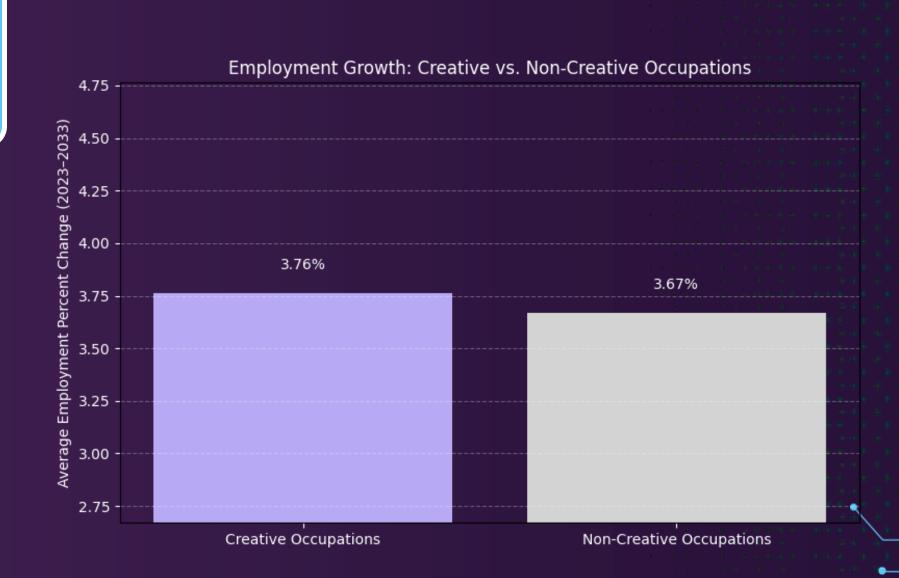


Creative occupations survives?

AI ADOPTION IMPACT ON SECTORS

By looking at the 10 year projection in creative industry, there is higher growth rate than non-creative sector.

This supports the hypothesis:
Creative jobs are not declining — they show slightly stronger growth than non-creative ones, despite rapid tech and AI evolution.



Major Obstacle

Biggest Challenge

Cleaning and classifying public sentiment data

Lesson Learned

Importance of using pre-trained sentiment models

Mistake:

Initially used a simple word-count method → results were skewed

Would Do Differently

Integrate advanced NLP from the start

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Implications:

Policymakers need to prepare for reskilling needs

AI will reshape—not eliminate—many jobs

Unanswered:

How fast will new jobs emerge to replace lost ones?

Are creative jobs truly future-proof or just slower to automate?

Conclusion – Hypotheses & Learnings

H1: Automation risk correlates with higher unemployment Confirmed, but nuanced. Occupations with high automation risk show steep decline—even in low AI adoption sectors, routine work is fading fast.

H2: AI-adopting industries show productivity gains but shrinking workforce growth

Partially true. While some AI-heavy sectors do show slowed workforce growth, others—especially creative ones—are seeing employment increases, suggesting AI may enhance rather than eliminate certain roles.

H3: Public sentiment on AI is increasingly negative Supported. Language from Reddit and news articles shows a clear narrative of fear, with dominant words like "delete," "away," "likely," "burden."

H4: Creative roles are less automatable Confirmed. Creative occupations have lower automation risk and higher employment growth, indicating that human originality remains a key advantage.

Learnings:

AI impacts are industry-specific

Public perception is rapidly shifting

Data enrichment adds powerful context to quantitative trends

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