Adapting to AI?

A Data Driven Investigation into the Impact of AI across various Markets and Industries

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Natural Language Processing

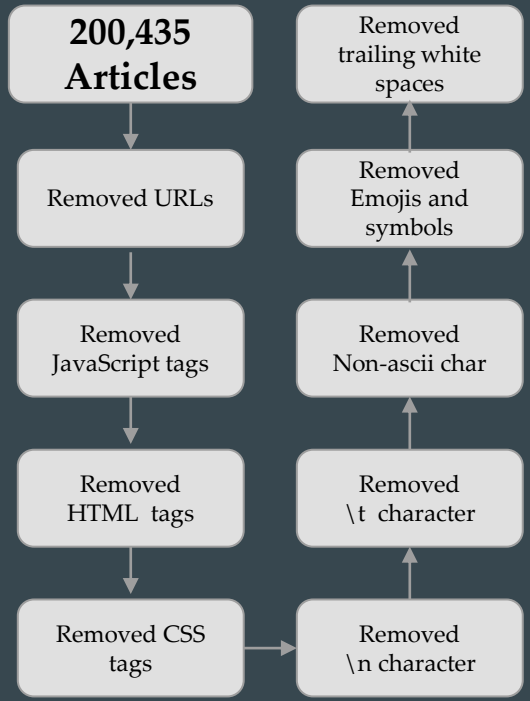
Executive Summary

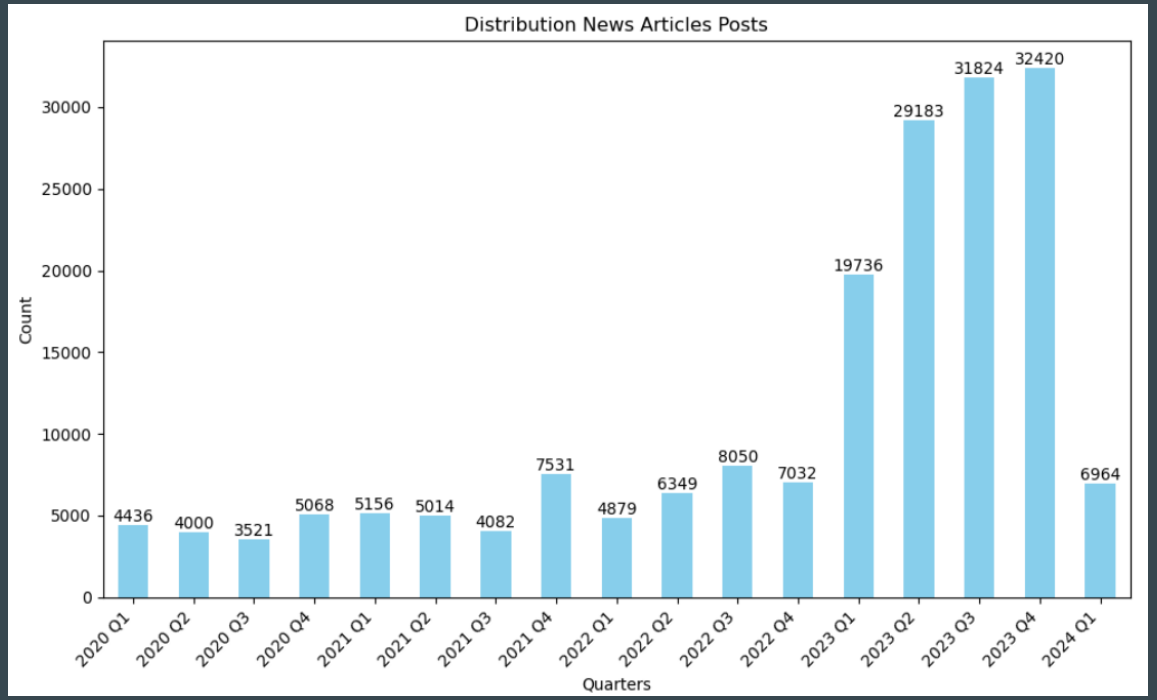
On performing a comprehensive analysis of an extensive dataset containing over 200,00 articles, we were able to extract the sentiments, entities, and popular themes associated with artificial intelligence in reports. This was done using a collection of natural language processing techniques such as sentiment analysis, named entity recognition, and topic modelling and leveraged to understand the multifaceted nature of AI's influence throughout various industries.

Our findings include a deep dive into:

- ✓ AI's leading discussions, mentions, and themes found to be centered around the healthcare, finance, and technology sectors.
- ✓ The fluctuation of negative and positive sentiment with different AI technologies and relevant individuals, primarily pioneers such as Sam Altman, Elon Musk.
- ✓ A construction of actionable insights catered to the sentiment across industries.
- ✓ Understanding entrance of AI into the market with introduction of more technologies following the first [ChatGPT by OpenAI].

Cleaning Articles





The articles were posted and collected from the time 2020 Q1 to 2024 Q1. ChatGPT 3.5 was release in 2022 Q4 and ChatGPT 4 was released towards end of 2023 Q1 and hence the increase in the number of news articles is justified as all industries started analysis of its impact.

Filtering Articles

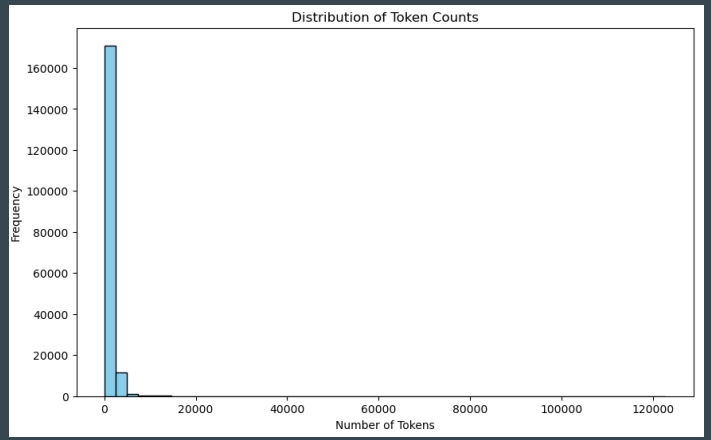
200,435 Articles → 185,245 Articles → 184,607 Articles → 181,456 Articles → 163,321 Articles

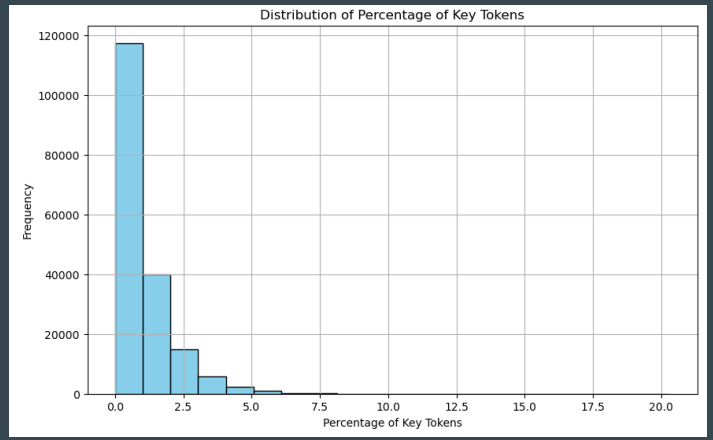
Filtered Articles based on keywords relevant to AI such as artificial intelligence, machine learning, analytics, openai, chatgpt, nlp, data, llm, Autoencoders, Predictive model.

Remove Duplicate Articles

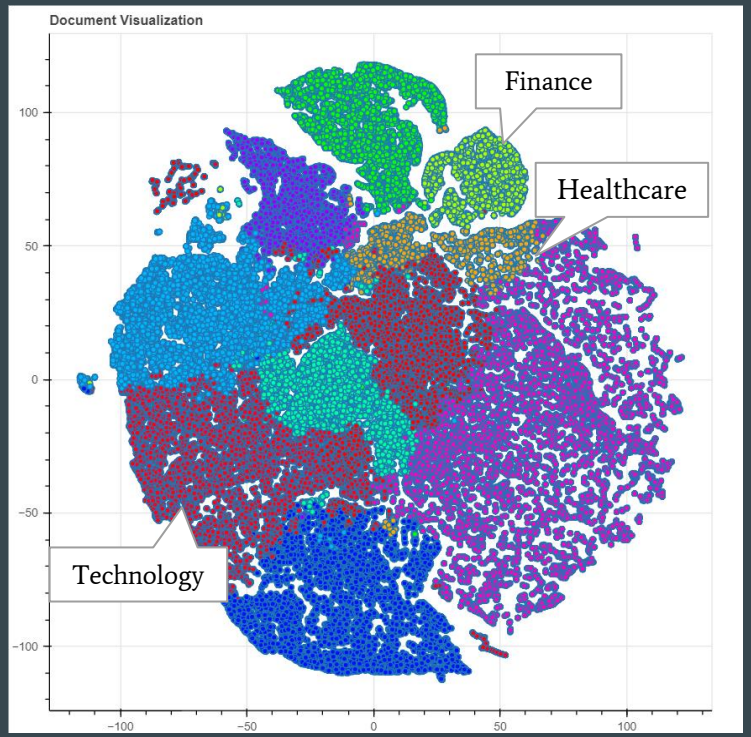
Filtered based token frequency distribution where articles with tokens greater than 7000 and less than 240 have been removed.

Filtered article by calculating the percentage of AI keywords present in the articles and removed the ones with less than 0.1% number of AI tokens present.



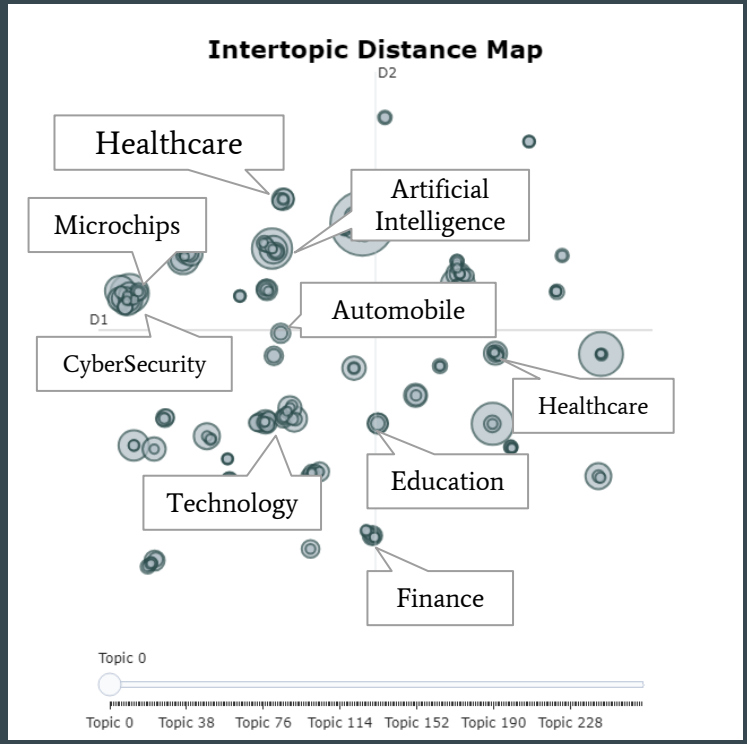


Topic Modelling - KTrain and BERT



After implementing BERT & KTrain for topic modelling on Filtered Dataset, multiple industries were prominently identified some of them being Healthcare, Finance, Artificial Intelligence and Technology.

All of the industries have seen a fluctuation of sentiment towards the usage of AI over the years.

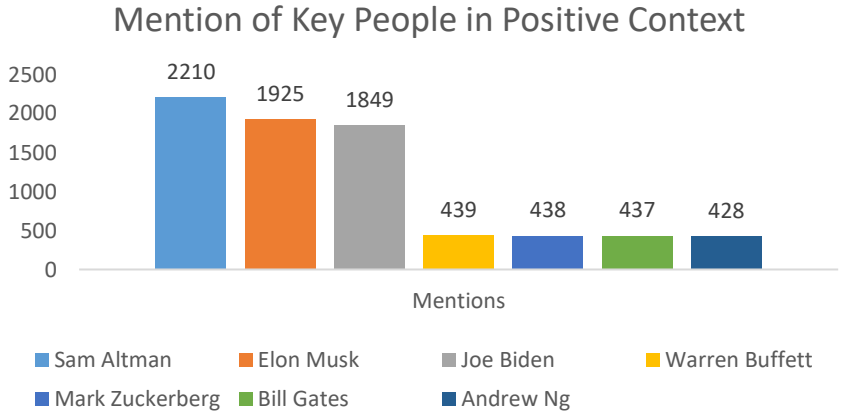


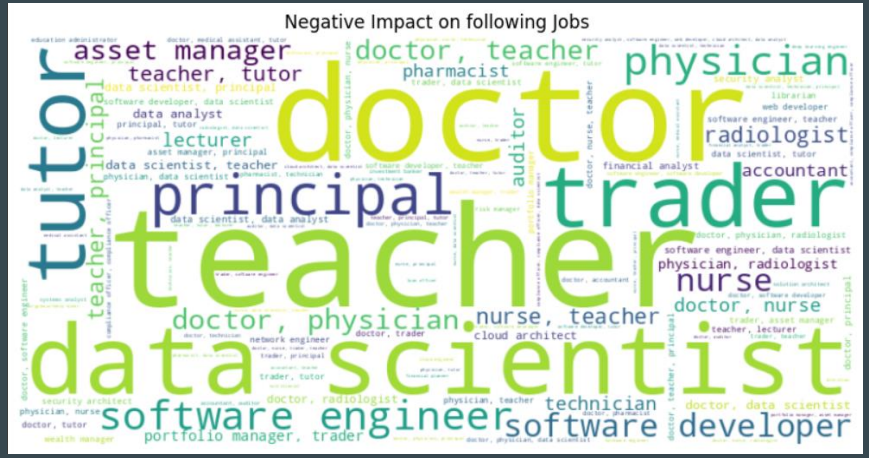
Using KTrain and BERT for analysis on news articles enables precise understanding of how various industries perceive AI's impact, facilitating informed decision-making and planning. This approach harnesses BERT's contextual understanding and KTrain's simplicity to analyze trends across diverse industry sectors.

Sentiment - Positive

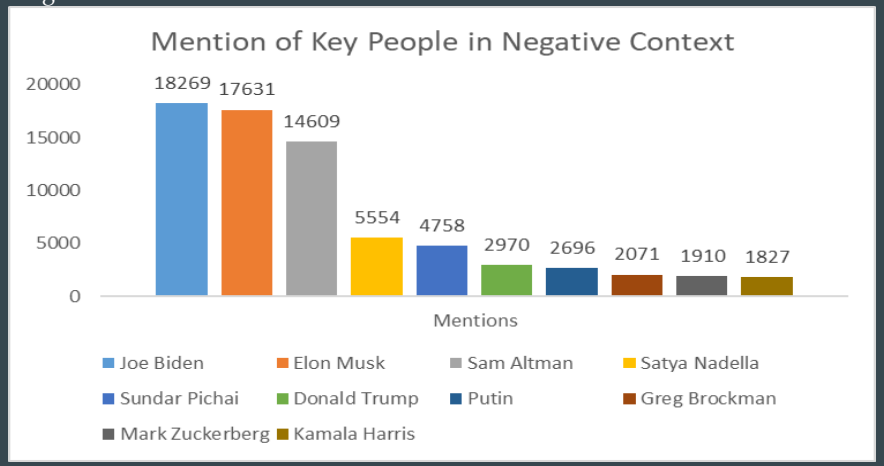
- The most frequently mentioned name adjacent to AI are Sam Altman, Elon Musk, Mark Zuckerberg and Bill Gates as they are at forefront of AI, building and integrating AI products within their companies.
- Billionaire CEO of Berkshire Hathaway, Warren Buffet has constantly been in the news regarding his investments in AI and has been in conversation with Bill Gates about **ChatGPT** and its impact.
- Berkshire Hathaway is one of the top shareholders of Apple as its expected to come up with its own AI products.* [48% of the company's portfolio is Apple]
- **Andrew Ng** is synonymous with AI and Machine Learning, the founder of Deeplearning.AI believes AI is a general-purpose technology that is reaching into every industry and discipline.

- Google, Microsoft, IBM, Amazon, NVIDIA are at top and on the frontline of AI development.
- Education, healthcare, technology and finance has shown positive impact of AI for approximate ~30.08% of the industries combined.
- IBM launched **WatsonX.ai** in May 2023 which offers enterprises an AI platform driven by security and data privacy.





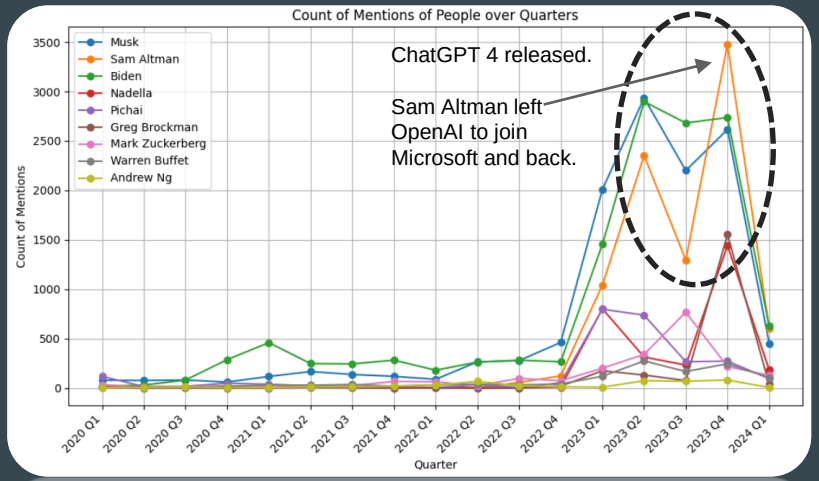
Sam Altman, Mark Zuckerberg, Satya Nadella, Greg Brockman, and Elon Musk have played significant roles in the development of AI products. However, the impact of these products on industries has been predominantly negative.

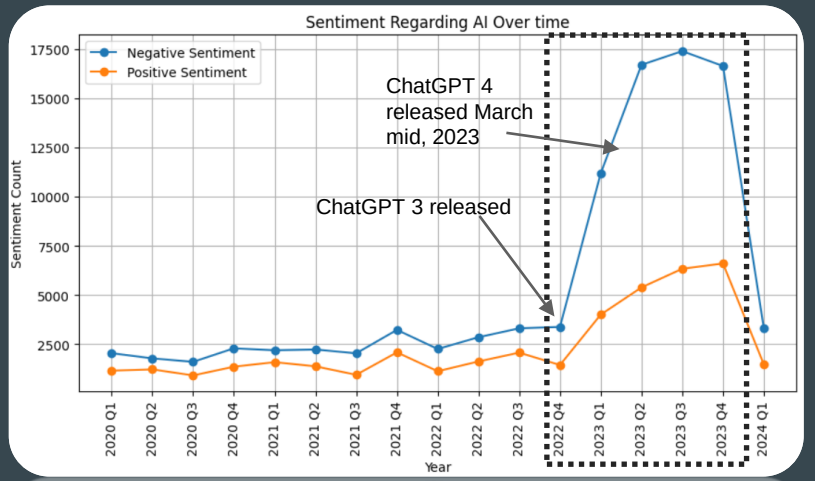


Sentiment - Negative

- A lot of the companies such as Twitter, Google, Microsoft, C3.ai, Coinbase as well as AI products such as Llama 2, GPT-4, Google Cloud, ChatGPT 3.5 and the phrase "The Power of AI Models" as can be seen below have been mentioned significantly in the negative context.
- Reason behind the negative sentiment towards AI is as its reducing the work of humans to the point where few jobs have become automated with the usage of AI. Employees, especially early career jobs are getting laid off and the new job market has become more competitive.
- 69.92% articles are showcasing a negative impact of the AI revolution.
- Education sector has stirred up as a result of negative impact of ChatGPT is able to generate Essays and being able to complete significant amount of school work for students leading to cases of plagiarism and unauthentic work.

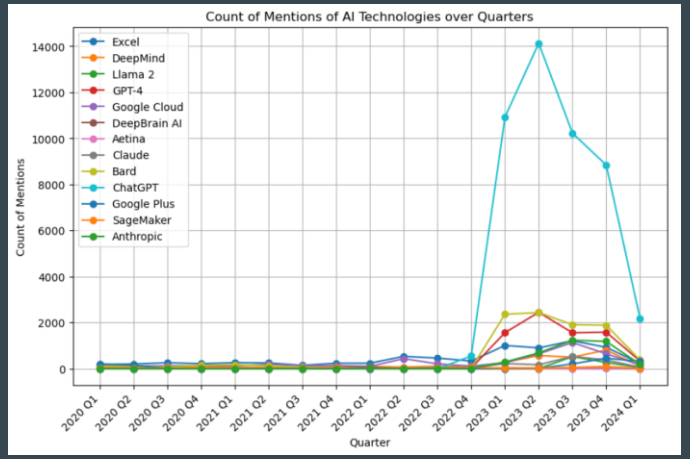
Sentiment Analysis Overtime



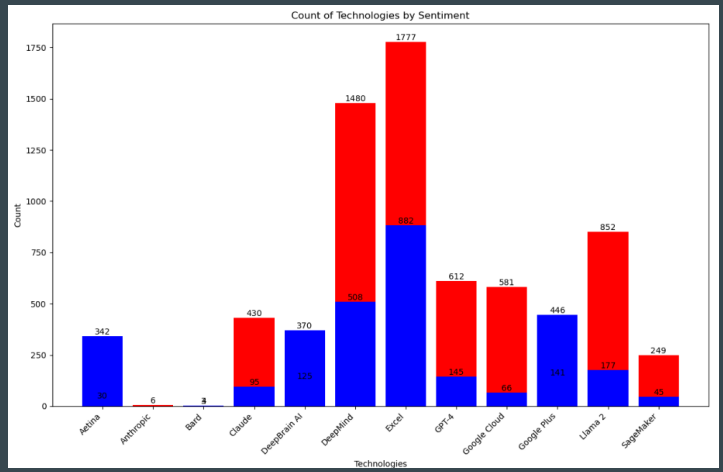


- ChatGPT 3 was release in 2022 Q4 by Open AI with Sam Altman at the forefront of the launch, and have observed a significant jump in the mentions in news articles as can be observed above. Further when ChatGPT 4 was release another spike was observed and Sam Altman again was in the news.
- Satya Nadella and Sam Altman both are seen to have increasingly be mentioned with AI as Sam Altman left OpenAI to start a new Advanced AI research team at Microsoft and went back to OpenAI.
- Following the release of ChatGPT by OpenAI, Google, Microsoft and Meta released Bard, Co-Pilot and Llama 2 models with a different take on Generative AI.
- Major Industries being affected by the advent of AI include but not limited to Healthcare, Finance, Education, Cybersecurity, Microchip/Microprocessors, Automobile and many more.

AI Products in the Market



Technologies	Company
ChatGPT 3.5 & ChatGPT 4	OpenAI
Llama 2	Meta
Bard, DeepMind	Google
SageMaker	Amazon
Excel CoPilot	Microsoft
Claude	Anthropic
Aetina.ai	Aetina Corporation

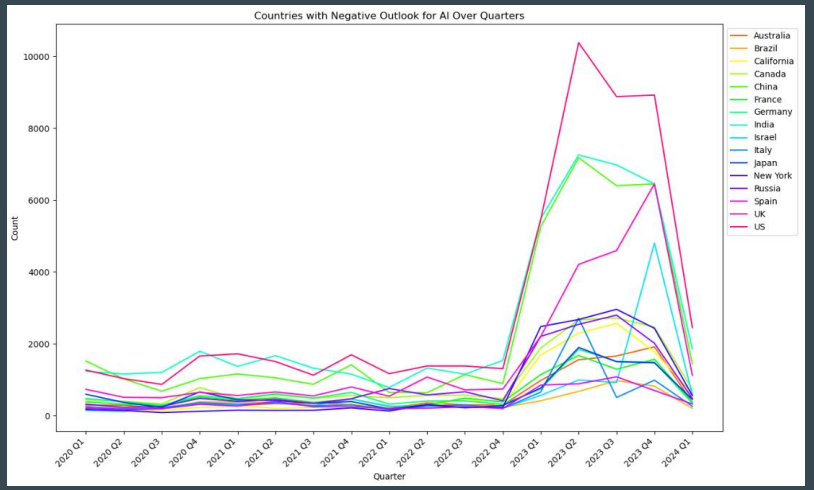


- By using Spacy for NER to find the products in the market over the past few years, we were able to find few key AI technologies such as ChatGPT 3.5 and ChatGPT 4, Bard, Claude AI, Deepbrain AI and Llama 4. With the plot above it describes the growth and introduction of different AI products with time. (Red – Negative; Blue – Positive)
- With varied sentiments across the different technologies, the AI products predominatly have a negative sentiment associated with it. The graph provides a visual representation of public sentiment towards different technologies.
- The impact of these technologies is skewed towards negative indicating how it might take over or automates few of the entry level jobs such as Web Developer and Business Analyst.

Impact of AI on Industries, People, Jobs and Companies

- Industries are finding a balance in the degree of usage of AI into daily tasks.
- AI algorithms can analyze medical images, such as X-rays and MRI scans, to identify patterns and anomalies that a human provider might miss. While that's a positive impact of AI, healthcare companies are more worried about Data Privacy issues and are yet hesitant in adopting to the usage.
- AI algorithms may inadvertently perpetuate biases present in historical financial data, leading to unfair lending practices or investment decisions.
- AI in Education has led to more cases of plagiarism and common answers across multiple students for the same assignment task. Where as for the teachers and professors its an aid for grading marks, making content to be taught more personalized and specific.
- It can be seen from the graph, that US and India closely followed by China are mentioned the most in a negative context with AI.

- Jobs of Software Engineers, Data Analysts and UI/UX developers can 90% be done by use of AI which is leading to more lay offs in technology sector because of products such as AI integration into Excel, Co-pilot, ChatGPT, Dalle-3.
- Sora, the latest text-to-video generating software by OpenAI has video editors and graphic designers worried about their jobs.

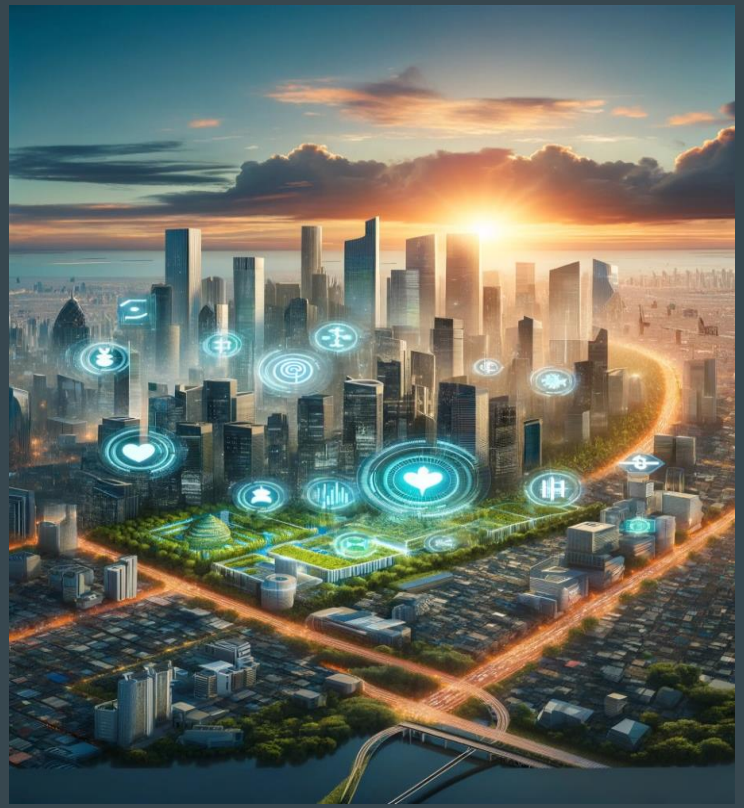


Actionable Insights

- Maintain open communication channels with employees regarding the integration of AI technologies and its impact on job roles. Provide clarity on future job prospects, reassignment opportunities, and avenues for career growth within the organization.
- Develop comprehensive AI governance policies that outline ethical guidelines, data privacy standards, and compliance requirements for AI implementation. Ensure alignment with regulatory frameworks such as GDPR, HIPAA, and industry-specific regulations.
- Provide specialized training and awareness programs for employees to understand their roles and responsibilities in upholding AI governance policies. Foster a culture of compliance through education, reinforcement of ethical norms, and accountability mechanisms.
- Utilize proctored examinations and assessments to deter cheating and unauthorized use of AI technologies during testing. Employ remote proctoring solutions or in-person invigilation to monitor student behavior and ensure exam integrity.
- Prioritize patient data security with robust cybersecurity measures and privacy protocols. Ensure compliance with regulations like HIPAA to maintain patient trust amid AI-driven healthcare innovations.
- Prioritize customer experience and satisfaction by personalizing products, services, and marketing strategies based on AI-driven insights. Anticipate customer needs, address pain points, and foster long-term relationships to enhance brand loyalty and drive revenue growth.
- Implement honor codes or academic integrity policies that explicitly prohibit the use of AI-generated content or solutions without proper citation and attribution. Encourage students to uphold academic honesty and integrity in all aspects of their work.
- Conduct regular audits and assessments to evaluate adherence to AI governance policies and identify areas for improvement. Implement mechanisms for monitoring and reporting compliance violations, with corrective actions to address non-compliance issues promptly.

Conclusion

- After thoroughly analyzing the sentiment of people, industries across countries we have seen a mixture of emotions, with more weighting towards the negative end.
- AI can be beneficial towards enhancing a line of work and increasing efficiency with reduced time and effort.
- There are several areas and processes which AI still can't perform as well result as a human can such as areas of genuine creativity which requires human experience and emotions.
- AI is as good as the prompt given to it.
- Healthcare, technology and finance sectors are at the forefront of experiencing significant AI transformations.
- Making policy changes to incorporate AI into work culture at the same prioritizing employee before the technology is essential.



Thank You!

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