AI Trends:
Analyzing AI's Impact on Industries and Job Lines

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AGENDA

- *Background*
- *Executive Summary*
- *Data Cleaning*
- *Topic Modeling*
- *Sentiment Analysis*
- *Recommendations*

Background

25%

Of jobs are impacted by GenAI

Goldman Sachs reported in 2023 that emerging technology like GenAI can replace tasks or made more productive.

Example Tasks that can be automated by AI in US and Europe:

Office and Administrative Support

46%

Legal

44%

Architecture and Engineering, Life, Physical and Social Sciences

37%

Business and Financial Operations

35%

13 of 39 work activities are expose to AI automation.

With the assumption that AI is capable of completing tasks up to a difficulty of 4 out of 7.

GenAI can substitute, complement, or leave jobs unaffected.

Currently difficult to anticipate impact of AI/ML on scientific discovery and technological innovation.

Executive Summary

Overview

The analysis conducted on a corpus of approximately 200,000 news articles focused on artificial intelligence (AI) and its impact on various industries and job roles. The primary goal was to identify which sectors and occupations are most likely to be influenced by AI technologies in the coming years. This summary highlights the key findings and actionable recommendations based on the insights derived from the text corpus.

Key Findings

1. **High Impact on Jobs**: AI, particularly Generative AI (GenAI), is projected to significantly impact around 25% of jobs, with the highest influence in office and administrative support, legal, architecture and engineering, life sciences, and business and financial operations.
2. **Positive Sentiment in Healthcare**: Surprisingly, the healthcare industry displayed a high proportion of positive sentiments. Articles discussed AI and machine learning (ML) tools promising improvements patient care.
3. **Negative Sentiment Towards Organizations**: Despite positive sentiments in the healthcare domain, entities like Google and ChatGPT received substantial negative sentiment. Issues included inaccuracies and potential dangers in providing healthcare information, highlighting the need for improved reliability and accuracy.
4. **Sentiment Analysis Trends**: General AI and technology news generated the most neutral and negative sentiments, whereas media releases and technology platforms garnered the highest positive sentiments. The period from Q4 2022 to Q4 2023 saw an overall increase in sentiment-related articles, reflecting growing interest and impact of AI.

Recommendations

Recommendations made aim to guide organizations in leveraging AI to automate tasks, enhance productivity, and ensure successful AI adoption across various sectors, particularly in healthcare where the potential benefits and risks are significant.

Dataset

~200K news articles collected via web crawl

url	date	language	title	text
http://auckland.scoop.co.nz/2020/01/aut-boosts...	2020-01-28	en	auckland.scoop.co.nz » AUT boosts AI expertise...	\n\nauckland.scoop.co.nz » AUT boosts AI exper...
http://spaceref.com/astronomy/observation-simu...	2021-07-05	en	Observation, Simulation, And AI Join Forces To...	\n\nObservation, Simulation, And AI Join Force...
http://www.mysmartrend.com/news-briefs/technic...	2020-04-17	en	Cr Bard Inc Has Returned 48.9% Since SmarTrend...	\n\nCr Bard Inc Has Returned 48.9% Since SmarT...
http://www.productivityapps.itbusinessnet.com/...	2020-06-23	en	Applitools Visual AI Reaches One Billion Image...	\n\nApplitools Visual AI Reaches One Billion I...
http://www.sbwire.com/press-releases/data-scie...	2020-12-24	en	Data Science and Machine-Learning Platforms Ma...	\n\nData Science and Machine-Learning Platform...

shape: (200141, 5)

Filtered the dataset so we could work with articles relevant to *AI's impact on industries and job lines.*

keywords = ['artificial intelligence, 'AI', 'machine learning', 'ML', 'deep learning', 'neural networks', 'data science']

145,455 relevant articles after filtering

Data Cleaning

Three different approaches for text cleaning:

- utilize regex for general text cleaning
- nltk package for creating topic_tokens and entity_tokens

Text Cleaning for Entity Recognition

- Tokenize text (word_tokenize)

Text Cleaning for Topic Modeling

- Lower-case
- Remove all punctuations
- Remove stopwords
- Tokenize using stemmer

General Text Cleaning

- Removing URLs
- Removing extra whitespace
- Removing special characters

New Dataframe:

text	cleaned_text	topic_tokens	entity_tokens
\n\nauckland.scoop.co.nz » AUT boosts AI exper...	aucklandscoopconz AUT boosts AI expertise wi...	[aucklandscoopconz, aut, boost, ai, expertis, ...	[aucklandscoopconz, AUT, boosts, AI, expertise...
\n\nObservation, Simulation, And AI Join Force...	Observation Simulation And AI Join Forces To ...	[observ, simul, ai, join, forc, reveal, clear,...	[Observation, Simulation, And, AI, Join, Force...
\n\nApplitools Visual AI Reaches One Billion I...	Applitools Visual AI Reaches One Billion Imag...	[applitool, visual, ai, reach, one, billion, i...	[Applitools, Visual, AI, Reaches, One, Billion...
\n\nData Science and Machine-Learning Platform...	Data Science and MachineLearning Platforms Ma...	[data, scienc, machinelearn, platform, market,...	[Data, Science, and, MachineLearning, Platform...
\n\nHealthcare Artificial Intelligence Market ...	Healthcare Artificial Intelligence Market Ana...	[healthcar, artifici, intellig, market, analys...	[Healthcare, Artificial, Intelligence, Market,...

Preparing for Topic Modeling

1. Create **dictionary** of all unique topic_tokens
2. Create **corpus** of text
   - helps identify statistical patterns of word co-occurrences across multiple documents.

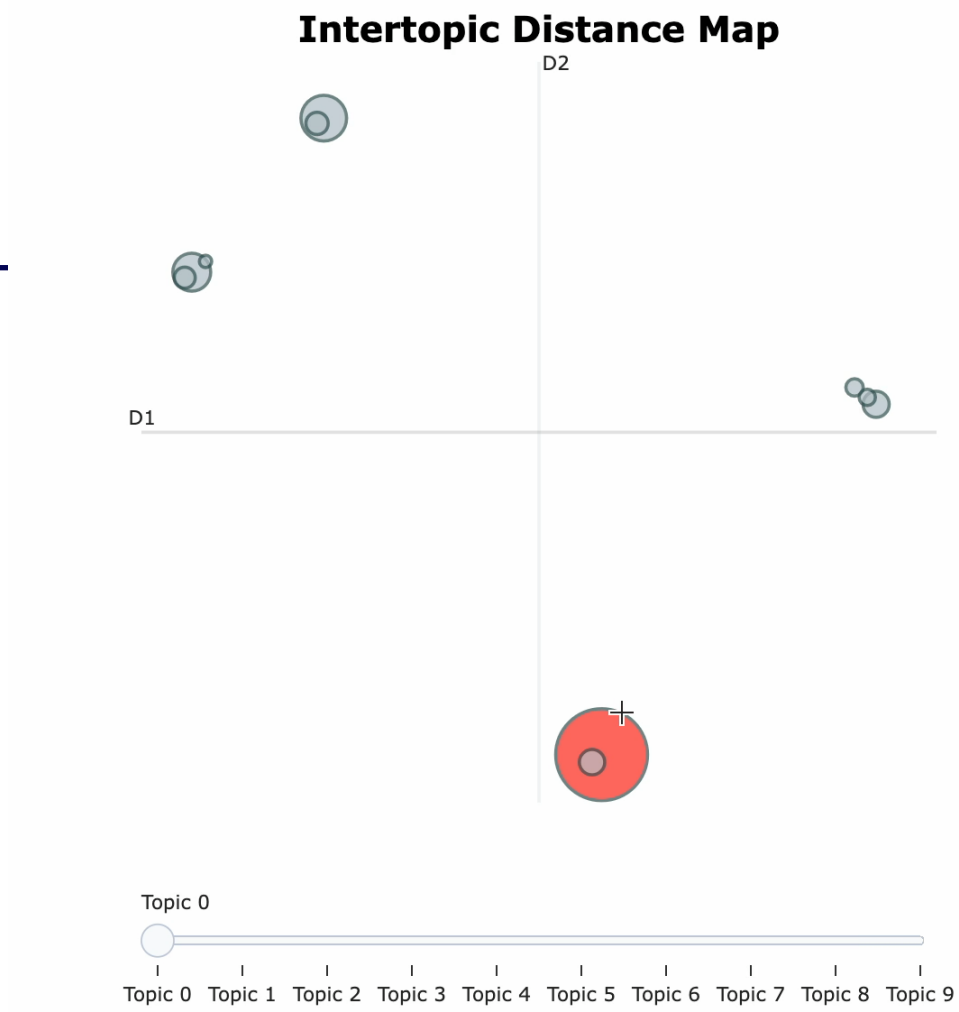
document_word_matrix

	0	1	2	3	4	5	6	7	8	9	...	7233	7234	7235	7236	7237	7238	7239	7240	7241	7242
0	[0, 1]	[1, 8]	[2, 12]	[3, 12]	[4, 12]	[5, 12]	[6, 12]	[7, 12]	[8, 12]	[9, 12]	...	None	None	None	None	None	None	None	None	None	None
1	[16, 1]	[18, 1]	[28, 2]	[30, 1]	[39, 1]	[56, 3]	[66, 1]	[69, 1]	[95, 12]	[105, 1]	...	None	None	None	None	None	None	None	None	None	None
2	[0, 1]	[12, 1]	[15, 1]	[16, 3]	[18, 3]	[20, 1]	[25, 1]	[30, 1]	[39, 2]	[45, 1]	...	None	None	None	None	None	None	None	None	None	None
3	[0, 1]	[11, 1]	[12, 4]	[30, 1]	[37, 2]	[39, 1]	[46, 1]	[51, 2]	[67, 1]	[72, 1]	...	None	None	None	None	None	None	None	None	None	None
4	[18, 1]	[22, 2]	[30, 1]	[31, 1]	[37, 1]	[58, 2]	[87, 2]	[90, 1]	[117, 1]	[129, 1]	...	None	None	None	None	None	None	None	None	None	None

3. Create **embeddings** to prepare for BERTopic:
   - embedding_model = SentenceTransformer("all-MiniLM-L6-v2")
   - corpus_embeddings = embedding_model.encode(corpus)
   - Number of sentences: 145456
   - Dimensions of embeddings: 384

Topic Modeling: BERTopic

Model Architecture for BERTopic	
embedding model	SentenceTransformer("all-MiniLM-L6-v2")
hdbscan_model	HDBSCAN(min_cluster_size=780, metric='euclidean', cluster_selection_method='eom', prediction_data=True)
vectorizer_model	CountVectorizer(stop_words="english", ngram_range=(1, 2))
ctfidf_model	ClassTfidfTransformer()



- ✓ made sure to increase the cluster size to reflect the large dataset of news articles we're working with.

Returned 10 topics as visualized in the Intertopic Distance Map.

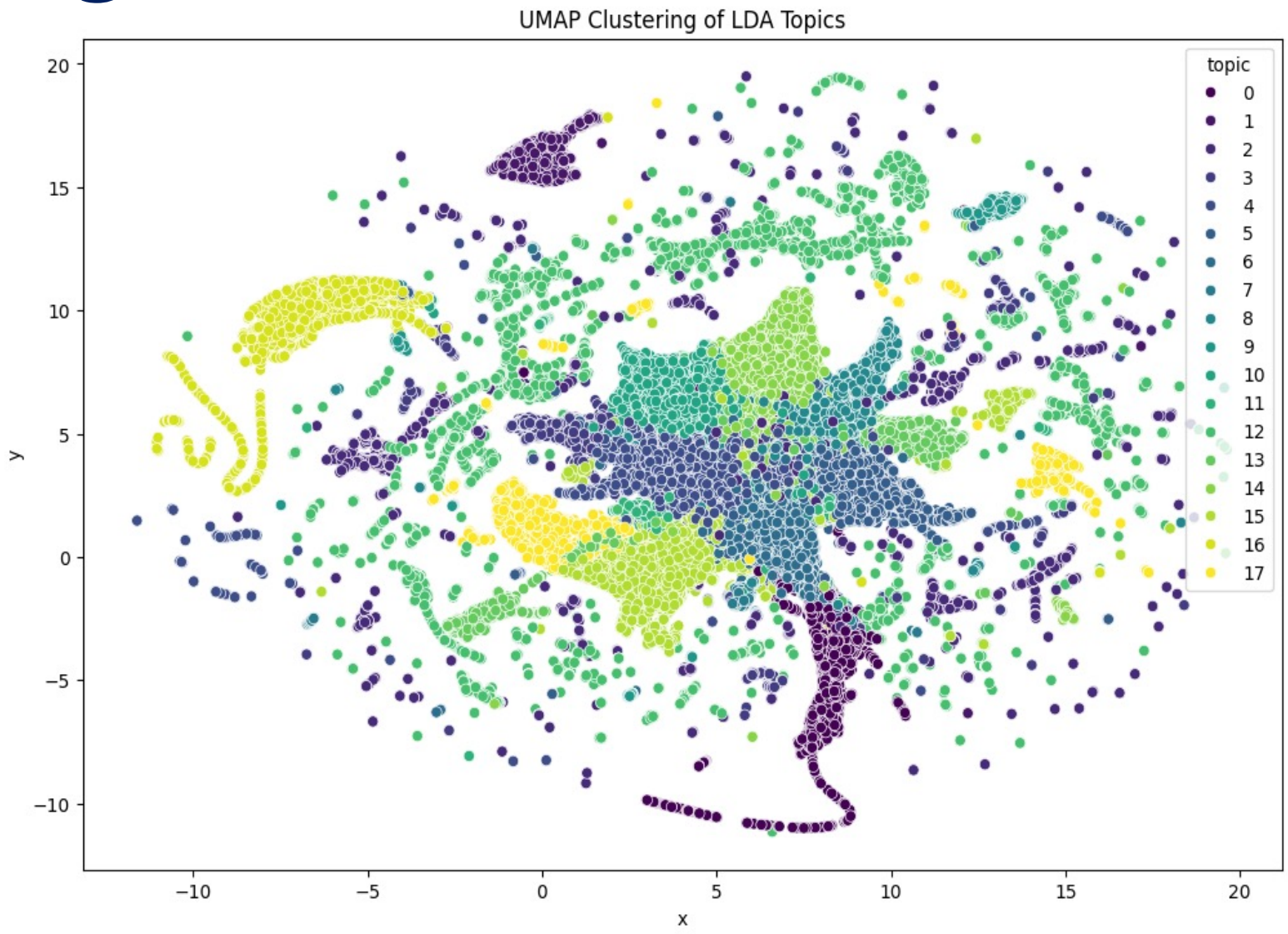
- There seem to be some overlap of topics and it doesn't seem to have returned the most accurate representation of article topics.

Topic Modeling: LDA

Tuning the Model

Parameters	
min_topics	8
max_topics	20
step_size	1
chunksize	30
passes	10
eval_every	100
alpha	asymmetric
eta	auto

at 18 topics
highest coherence score
≈ 0.4



Topic Labels (ChatGPT generated)

Topic 1: Financial Markets and AI
- stocks, stock, market, ai, nasdaq, markets, news, trading, investment, data

Topic 2: Technology and Consumer Services
- services, products, news, technology, entertainment, business, media, consumer, policy, general

Topic 3: Generative AI and Media
- ai, generative, gray, media, technology, 2023, group, content, new, global

Topic 4: Healthcare and Medical News
- health, medical, healthcare, care, patients, clinical, news, patient, cancer, drug

Topic 5: Artificial Intelligence Research
- ai, intelligence, human, data, technology, artificial, new, systems, like, research

Topic 6: Business and Digital Security
- ai, data, news, business, technology, cloud, digital, security, new, management

Topic 7: AI and Tech Companies
- ai, openai, said, share, news, best, company, new, price, tech

Topic 8: Digital Communications:
- digi, 2020, communications, 2019, nv, 2021, icon, 2018, january, december

Topic 9: Data Science and Machine Learning
- data, ai, learning, machine, business, customer, science, insurance, use, models

Topic 10: Regional News and Industry Updates
- new, newswires, south, ai, news, releases, north, ein, industry, media

Topic 11: India and Global Technology News
- news, india, world, ai, business, share, 2023, technology, latest, entertainment

Topic 12: Online Accounts and Social Media
- republic, email, account, subscribe, news, password, log, sign, facebook, twitter

Topic 13: Media Releases and Technology Platforms
- ai, gray, data, group, media, release, press, platform, technology, statements

Topic 14: Music and Public Radio
- new, music, radio, news, star, public, npr, says, schedule, shows

Topic 15: AI and Mobile Technology
- ai, 2023, best, chatgpt, new, google, news, users, tech, mobile

Topic 16: General AI and Technology News
- news, ai, said, artificial, new, intelligence, public, 2023, weather, technology

Topic 17: Market Research and Forecasts
- market, intelligence, artificial, report, global, analysis, growth, research, industry, forecast

Topic 18: General News and Weather Updates
- ago, hours, news, video, stories, weather, 2023, app, said, new

Sentiment Analysis

- **Approach:** Fine-tuning a RoBERTa model for sentiment analysis which is built on BERT and modified key hyperparamters, removing next-sentence pretraining objective and training, larger mini-batches and learning rate
- **Data** used to fine-tune:
- Includes sentiments for financial news headlines from the perspective of a retail investor.
- Financial News dataset (FinancialPhraseBank) from Kaggle
- num_labels = 3 (negative, neutral, positive)

1. Trained on 2 Epochs

First Epoch:

- The Total Accuracy for Epoch 0: 60.61%
- Training Loss Epoch: 0.9064
- Training Accuracy Epoch: 60.61%

Second Epoch:

- The Total Accuracy for Epoch 1: 81.35%
- Training Loss Epoch: 0.4749
- Training Accuracy Epoch: 81.35%

Key Variables	
max_length	256
train_batch_size	8
valid_batch_size	4
learning_rate	1e-05
tokenizer	RobertaTokenizer.from_pretrained ('roberta-base')
model	RobertaForSequenceClassification. from_pretrained('roberta-base', num_labels=3)
optimizer	optimizer = AdamW(model.parameters())

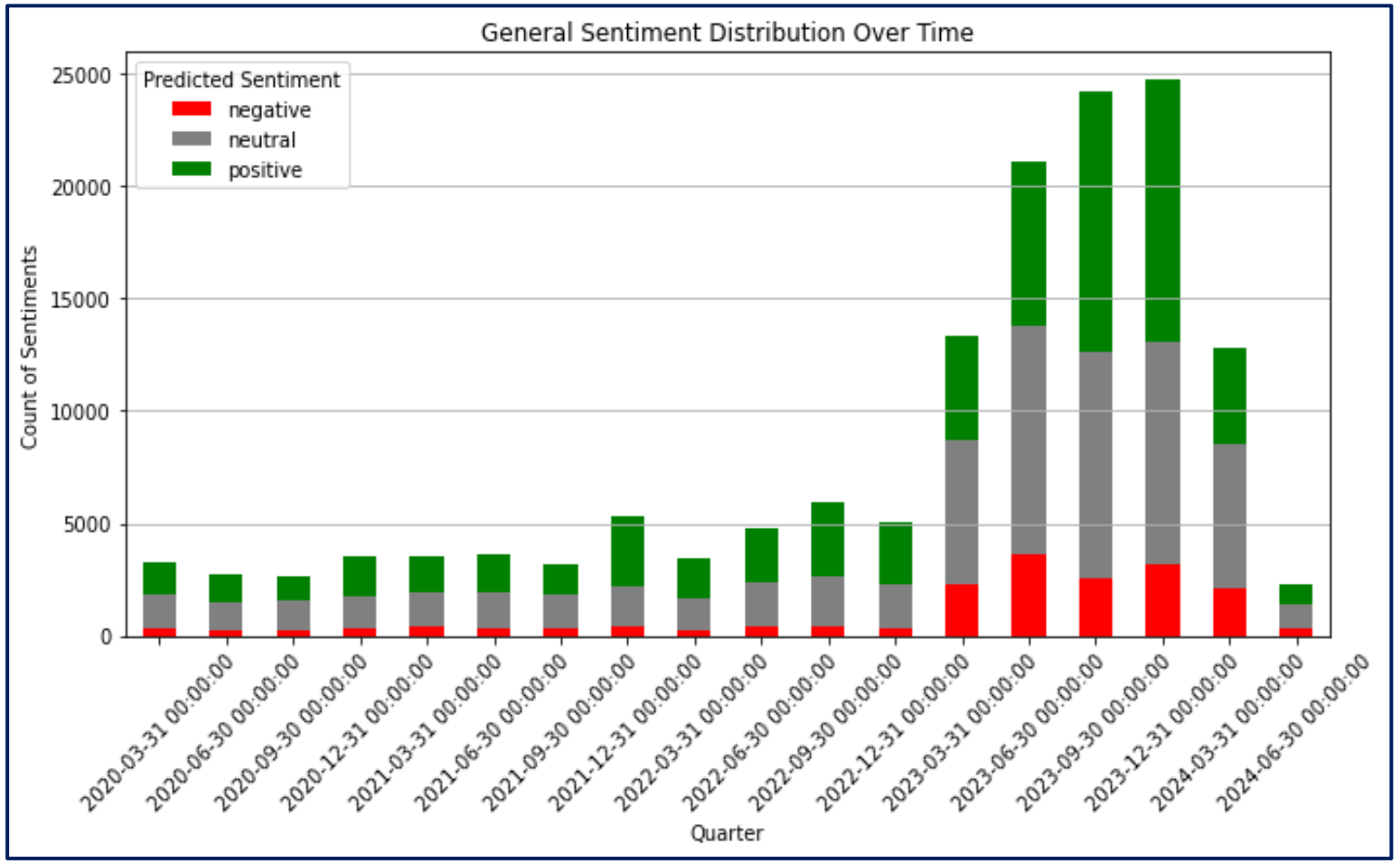
Sentiment Analysis

2. Validation of the model utilizing: loss_function = torch.nn.CrossEntropyLoss()

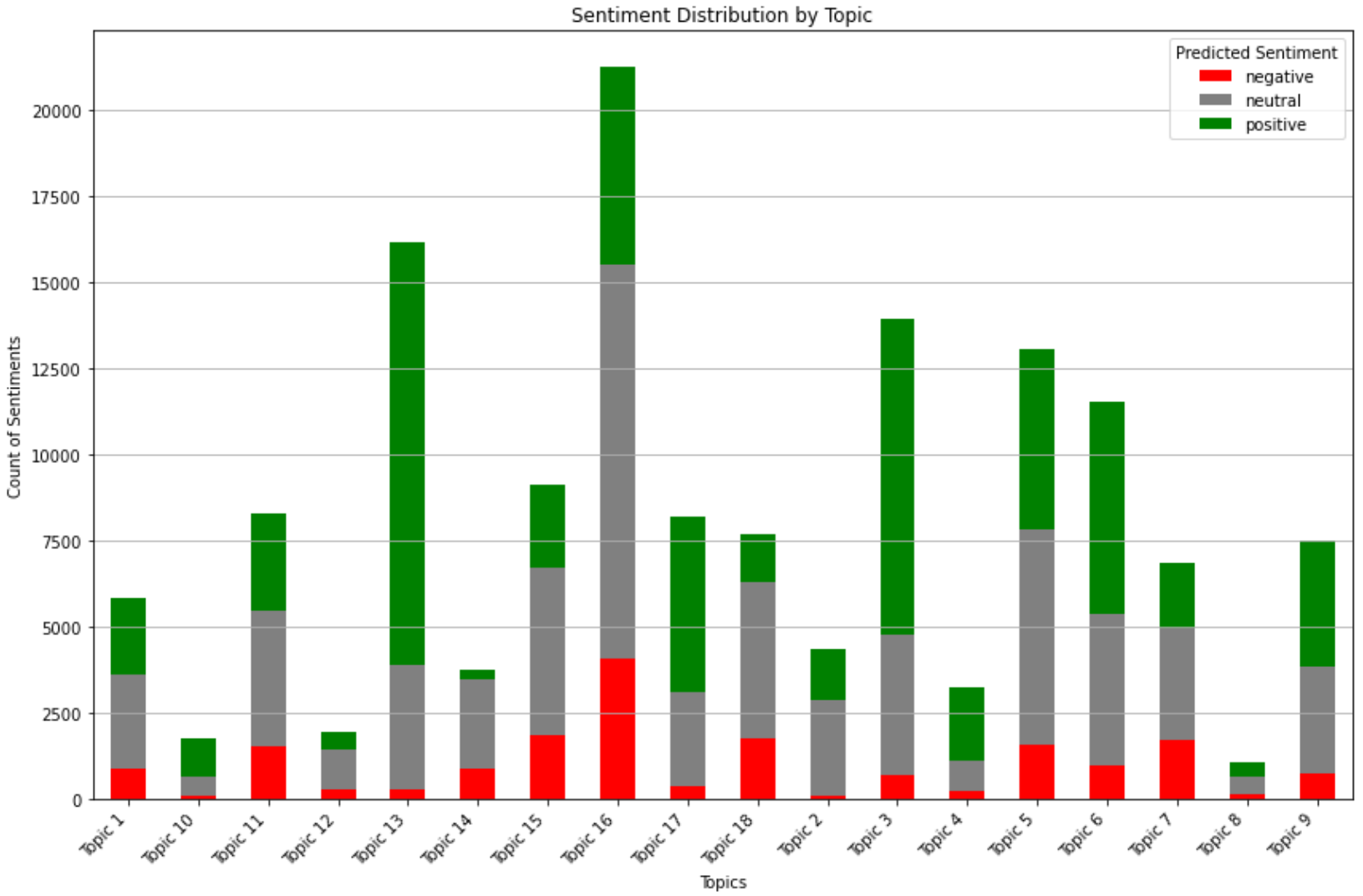
- Validation Loss Epoch: 0.3679
- Validation Accuracy Epoch: 84.62%
- Accuracy on test data = 84.6233%

3. Making sentiment predictions on our dataset of news articles.

Predicted Sentiment Value Counts	
positive	63989
neutral	63366
negative	18101



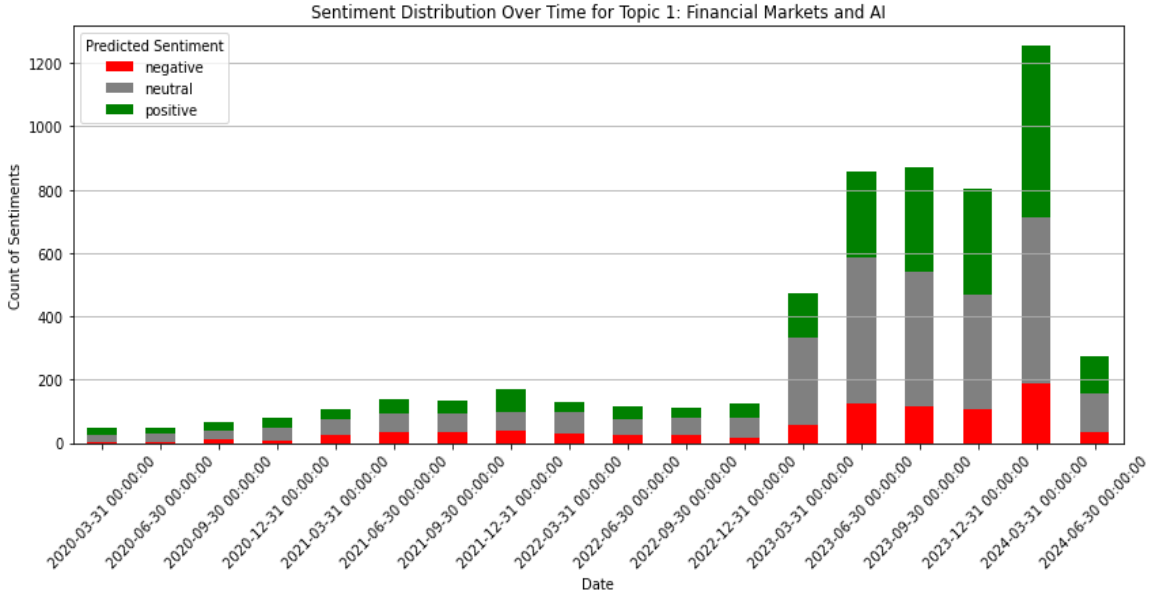
Sentiment Analysis by Topic

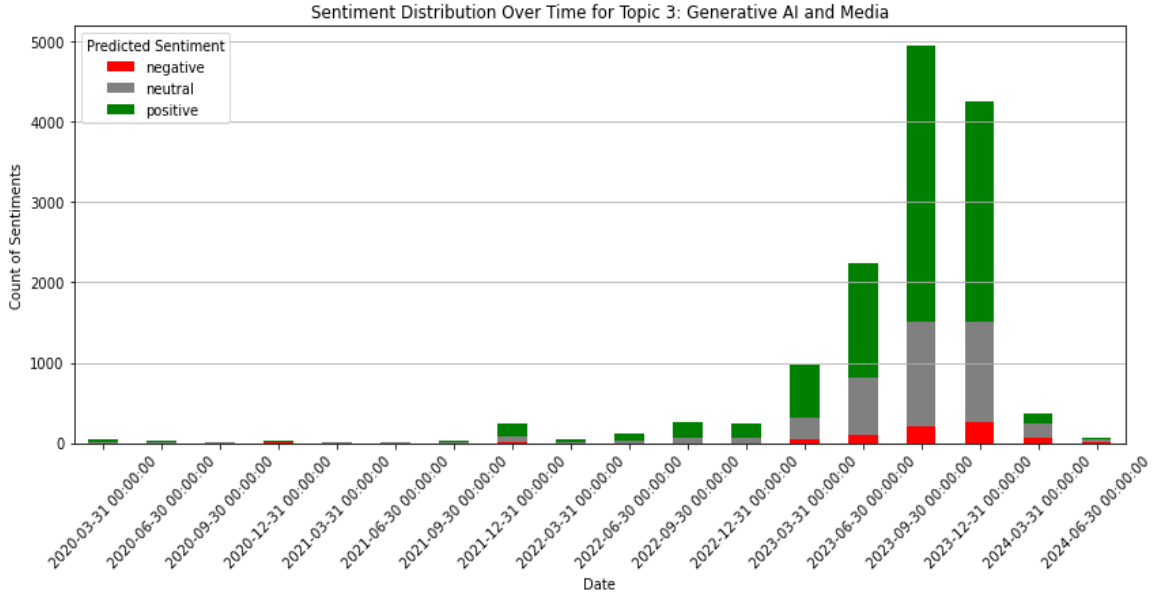


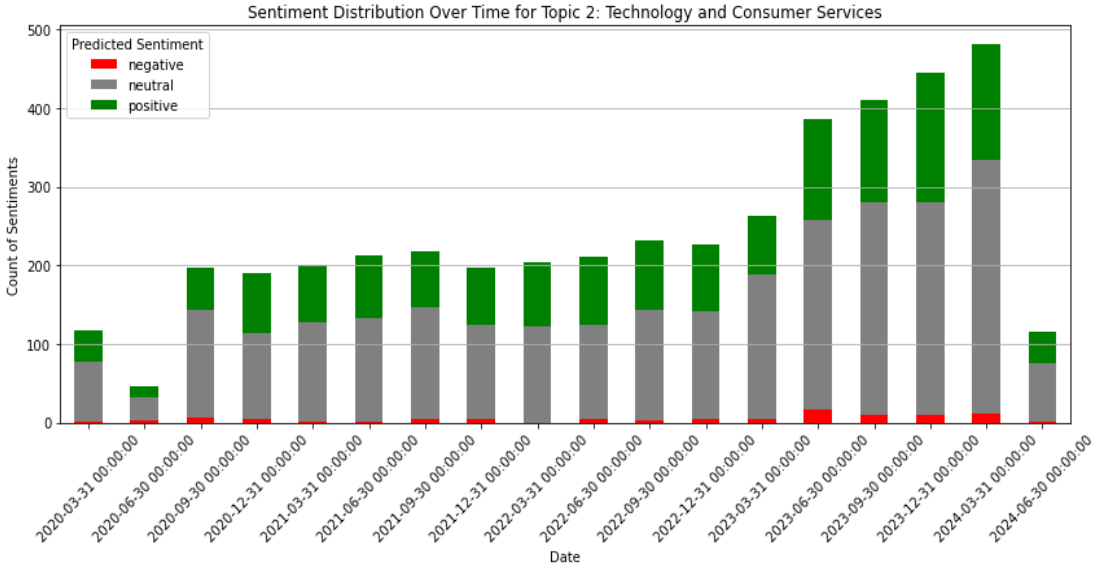
Insights:

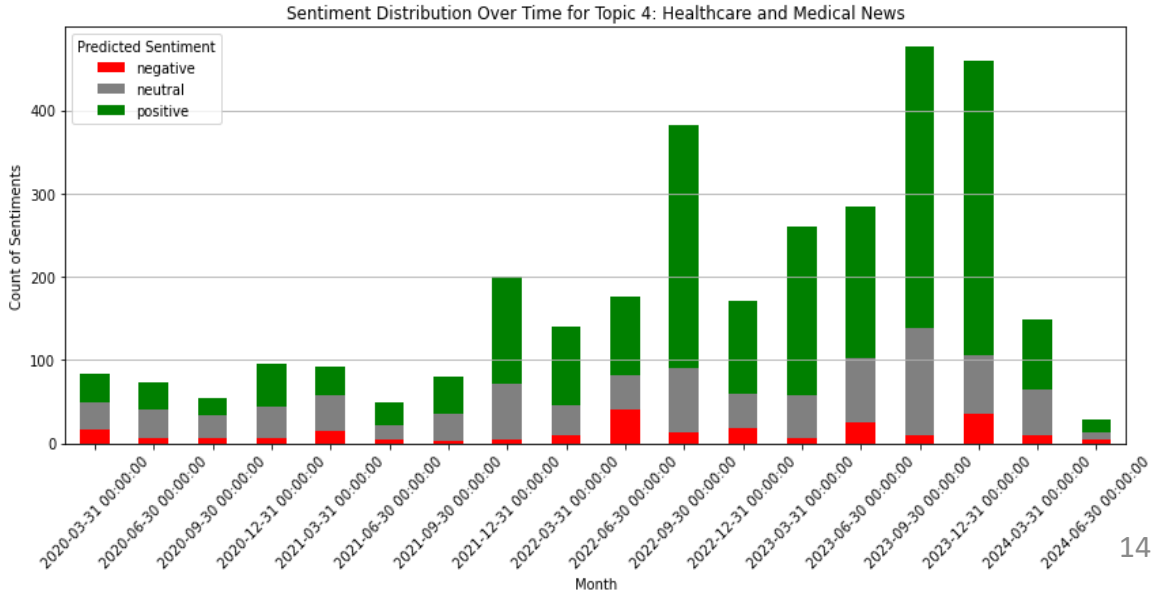
- **Topic 16 General AI and Technology News and Topic 13 Media Releases and Technology Platforms** have the most number sentiments. This should directly reflect the most dominating topics in our dataset.
- Topic 13 has the highest count of positive sentiments while Topic 16 has the highest count of neutral and negative sentiments.
- **Topic 3 Generative AI and Media** also has the next highest count of positive sentiments.

Sentiment Analysis: Topics 1-4

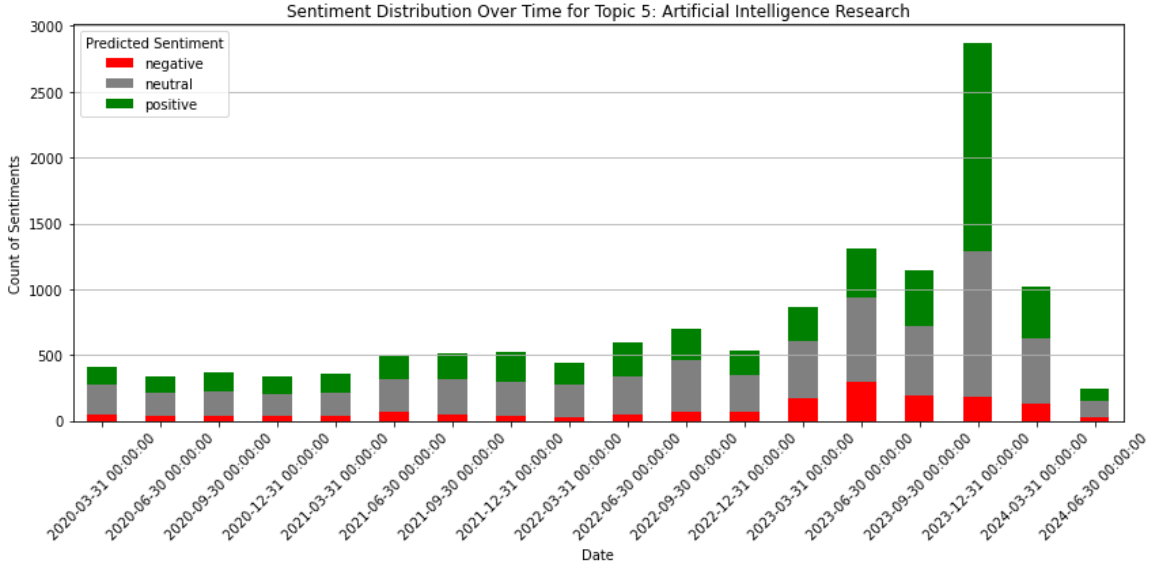


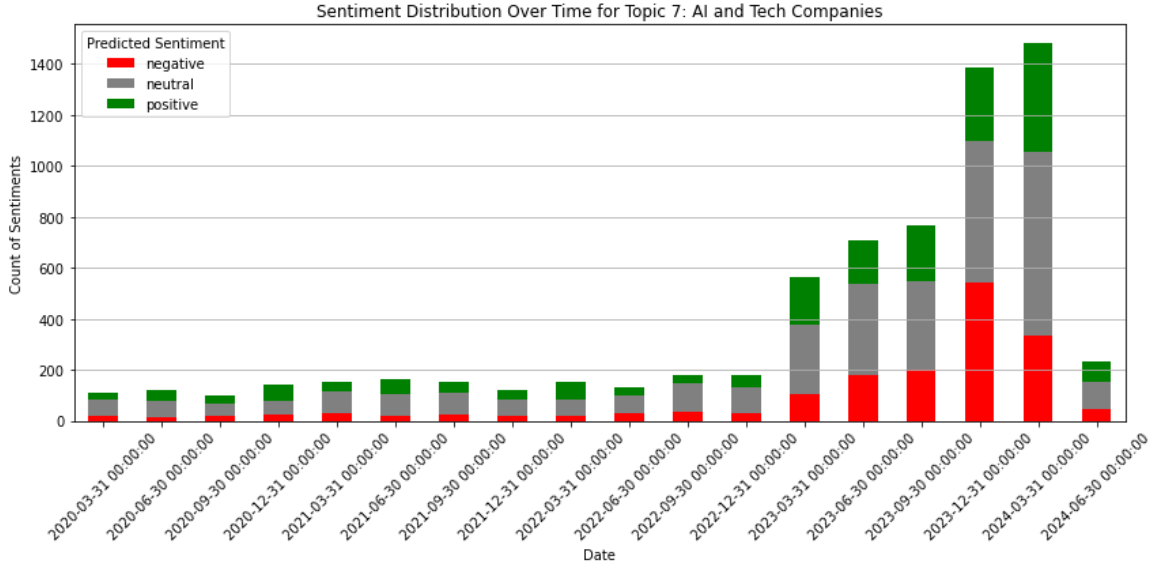


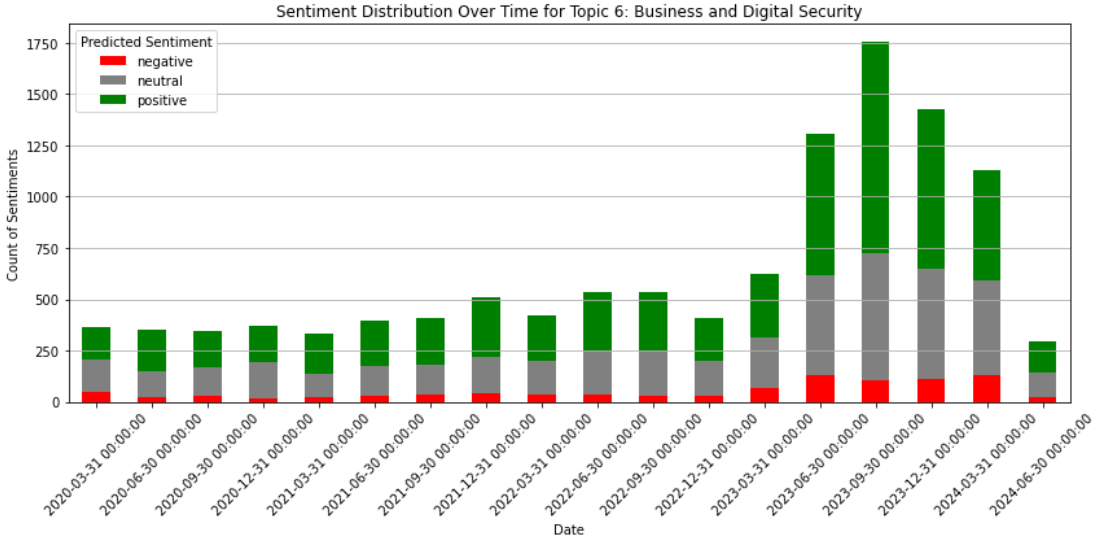


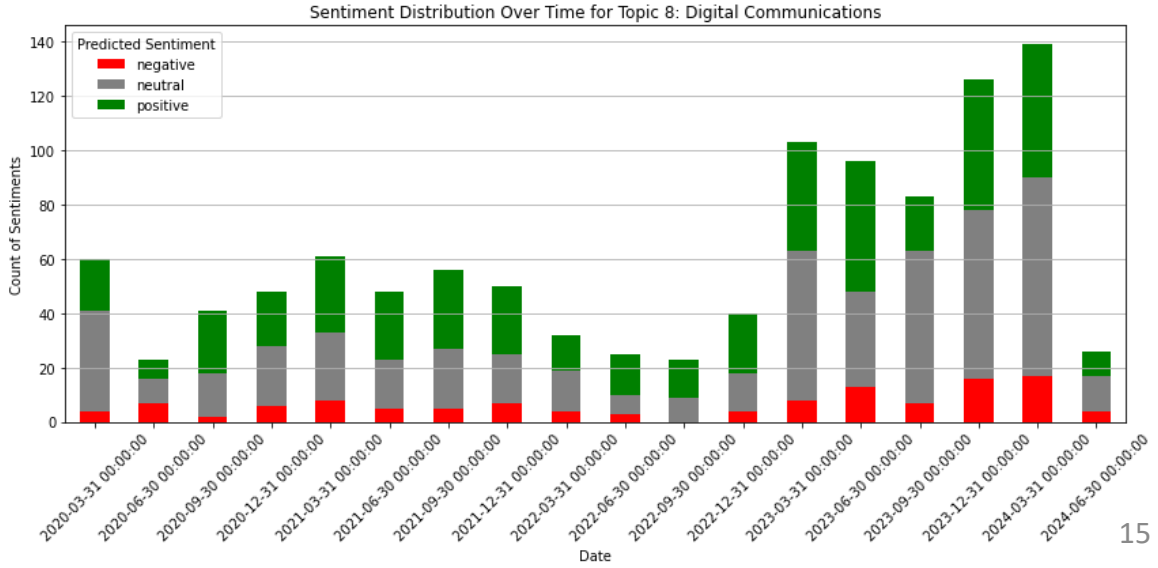


Sentiment Analysis: Topics 5-8

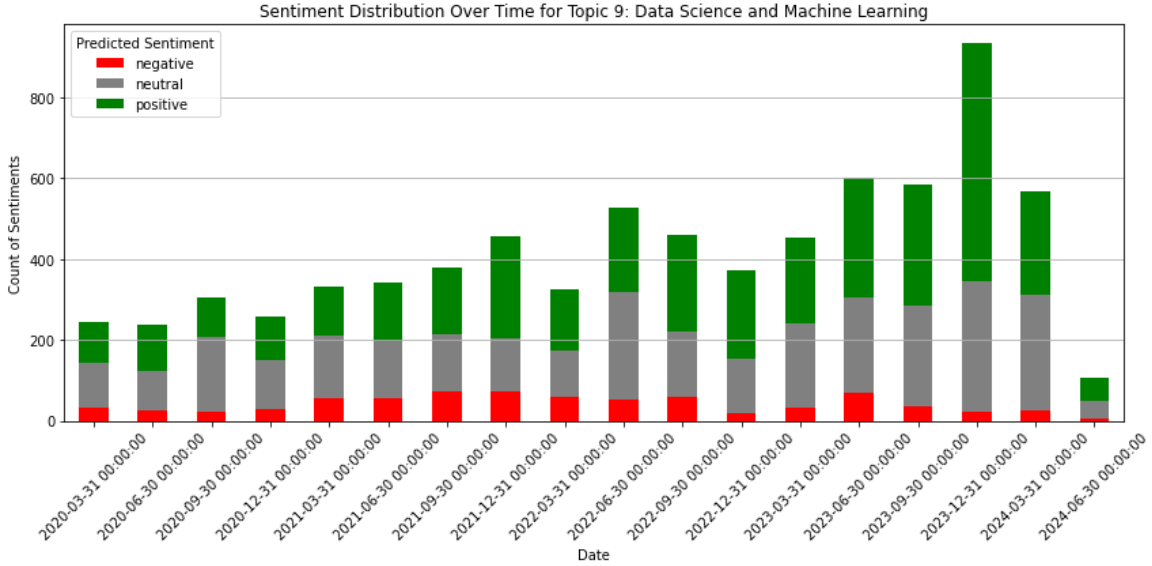


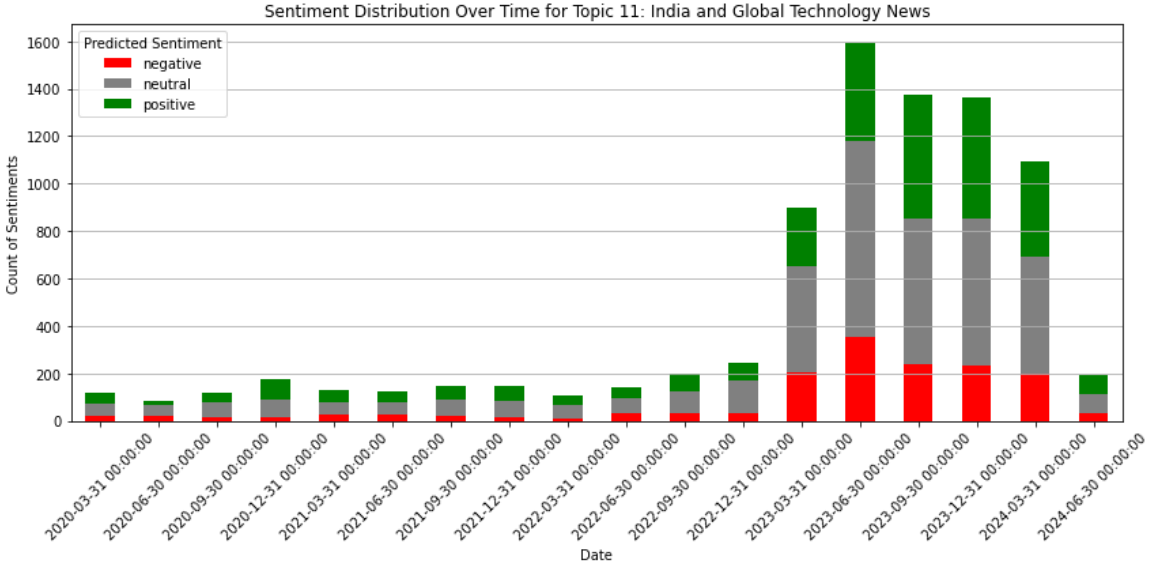


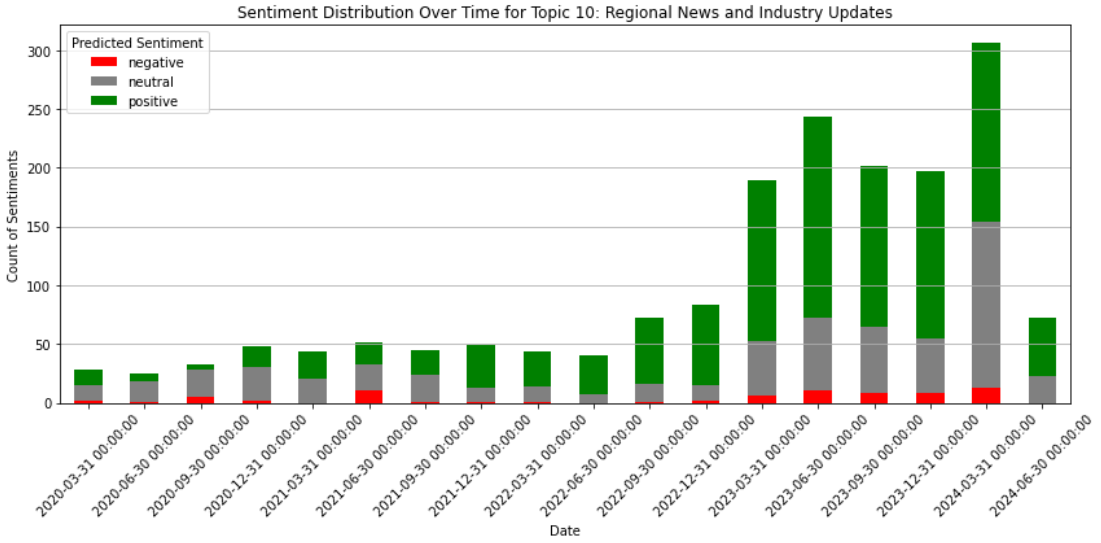


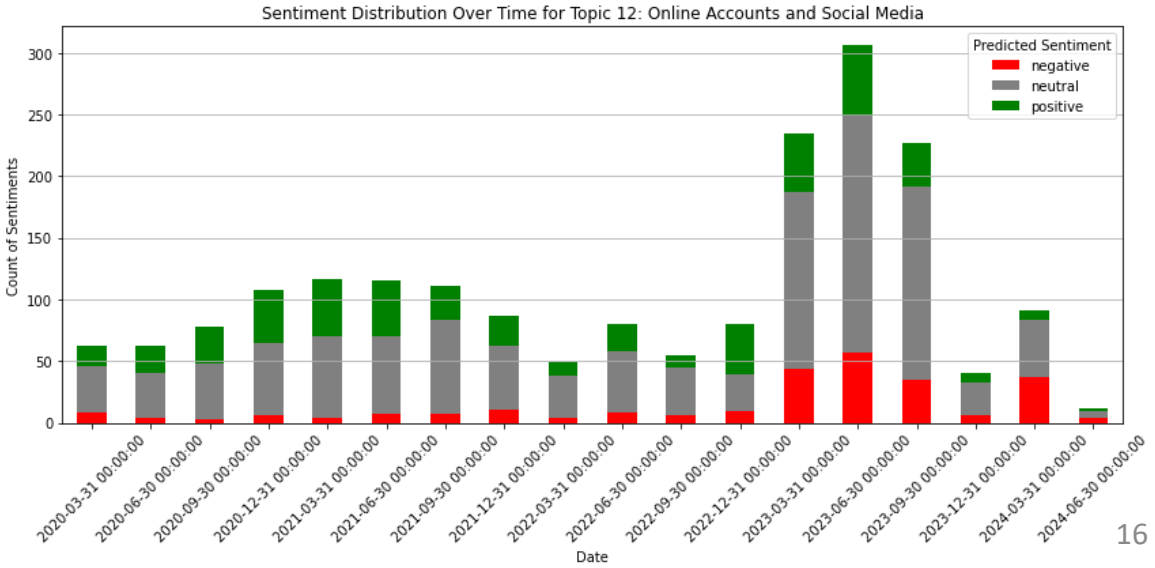


Sentiment Analysis: Topics 9-12

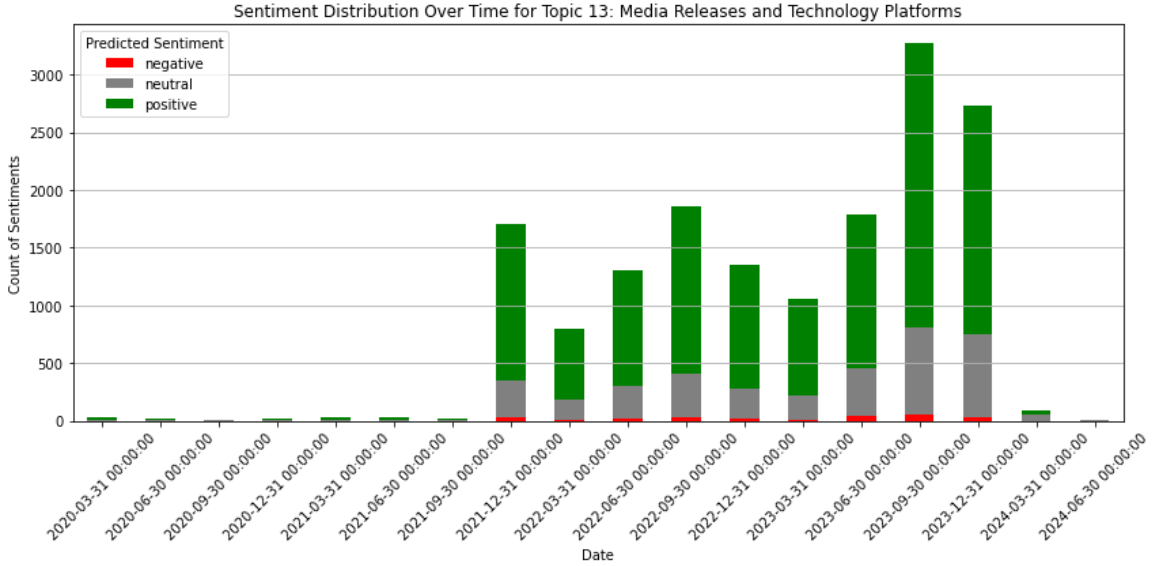


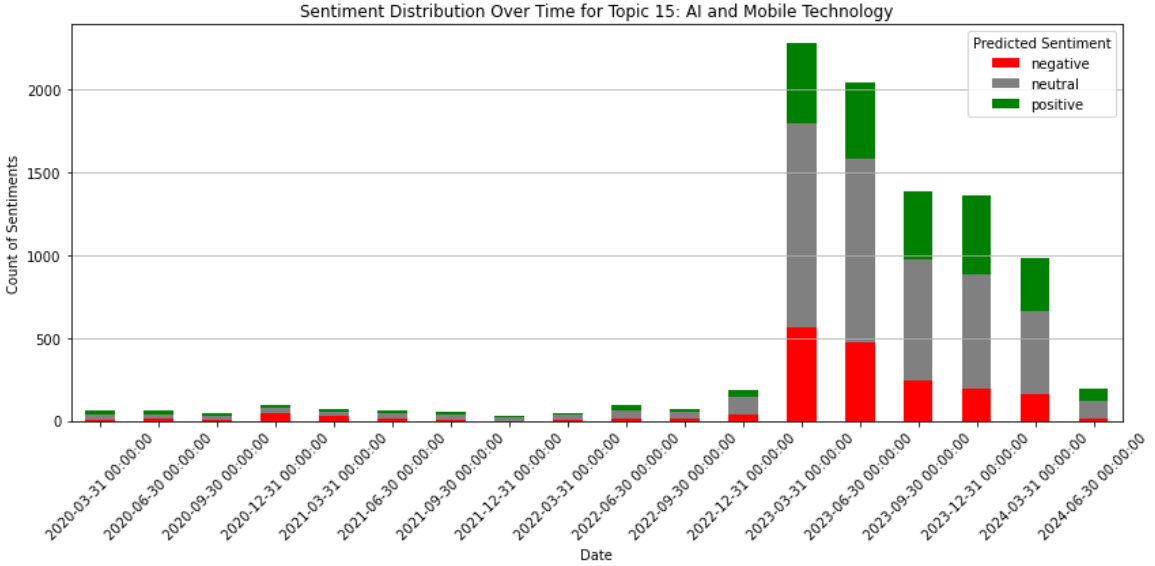


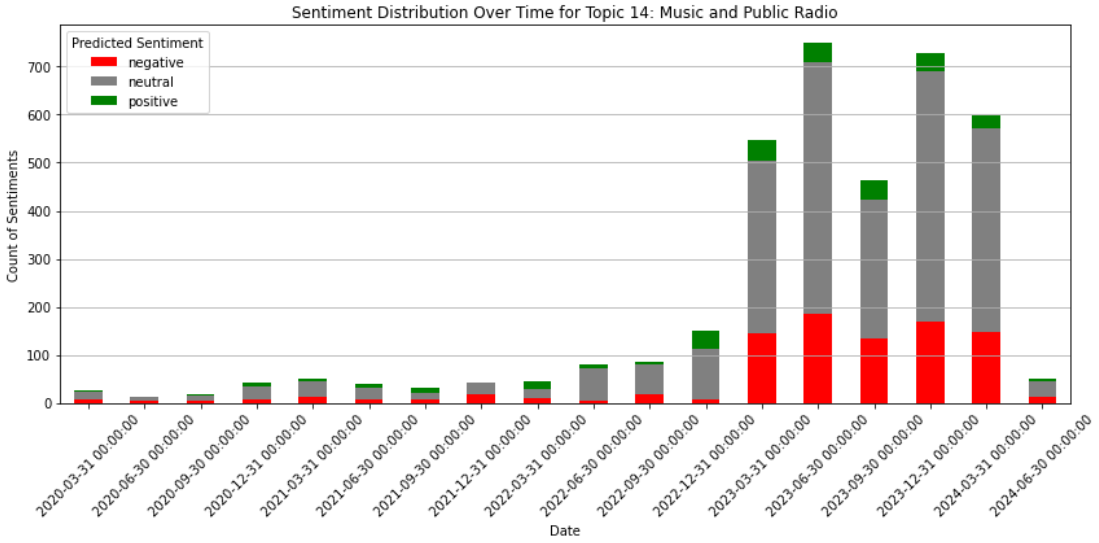


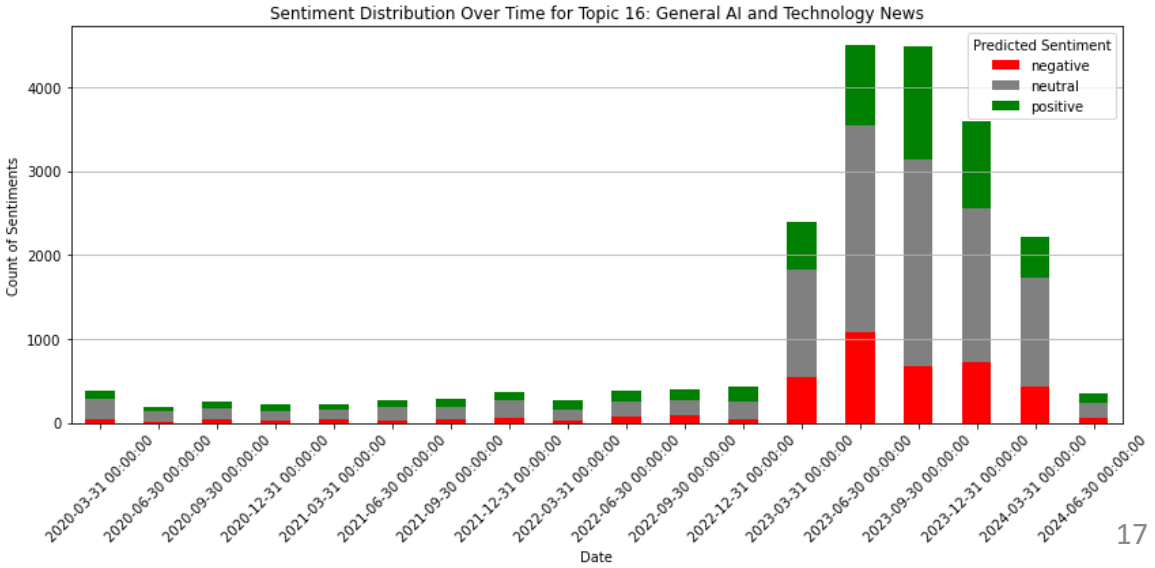


Sentiment Analysis: Topics 13-16

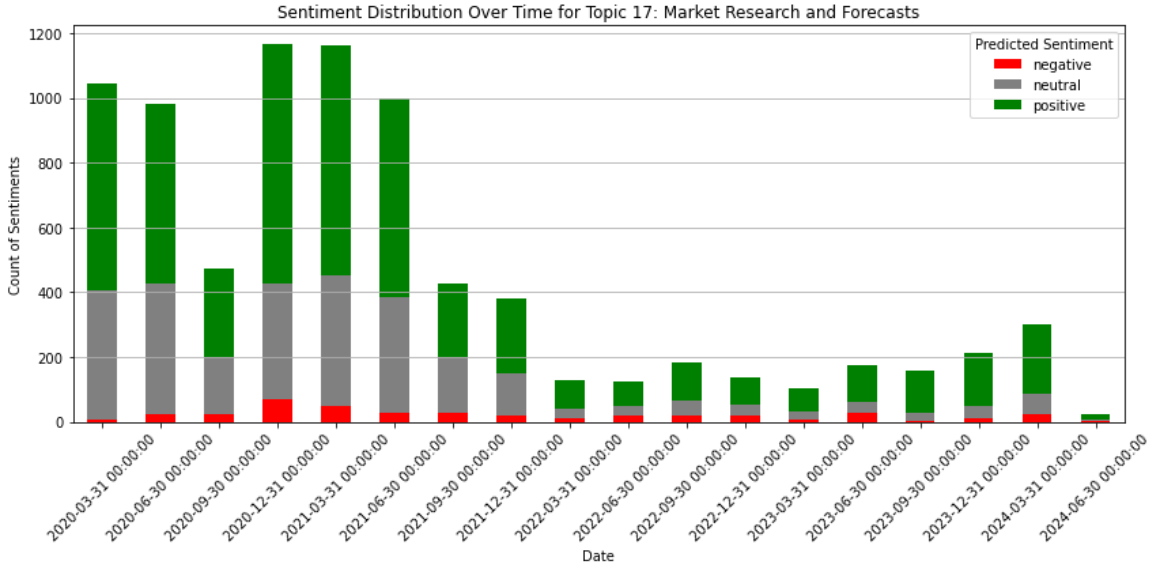


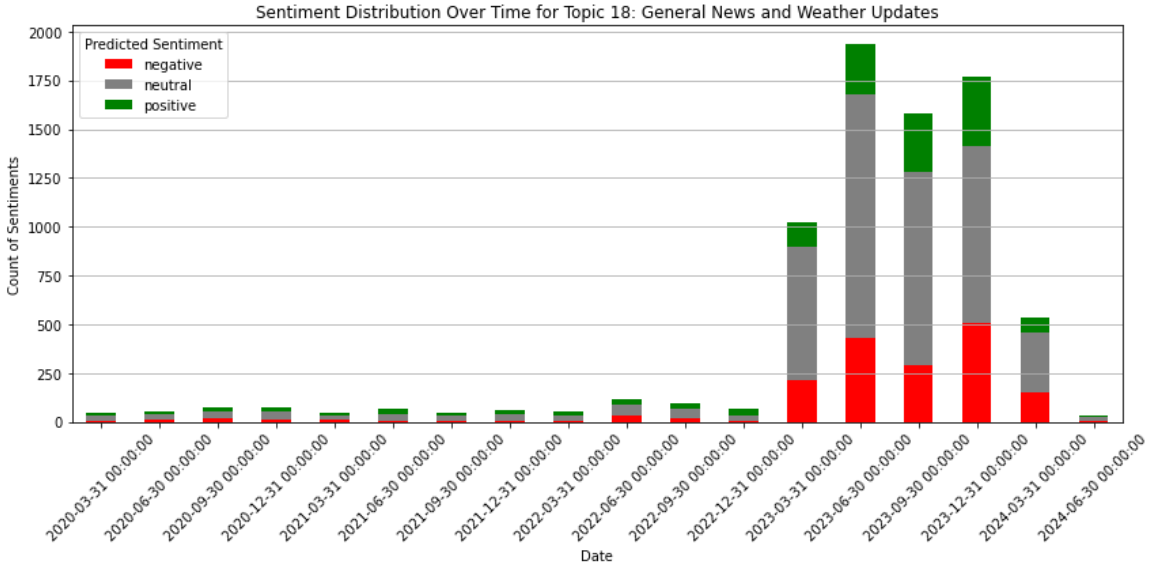






Sentiment Analysis: Topics 17-18

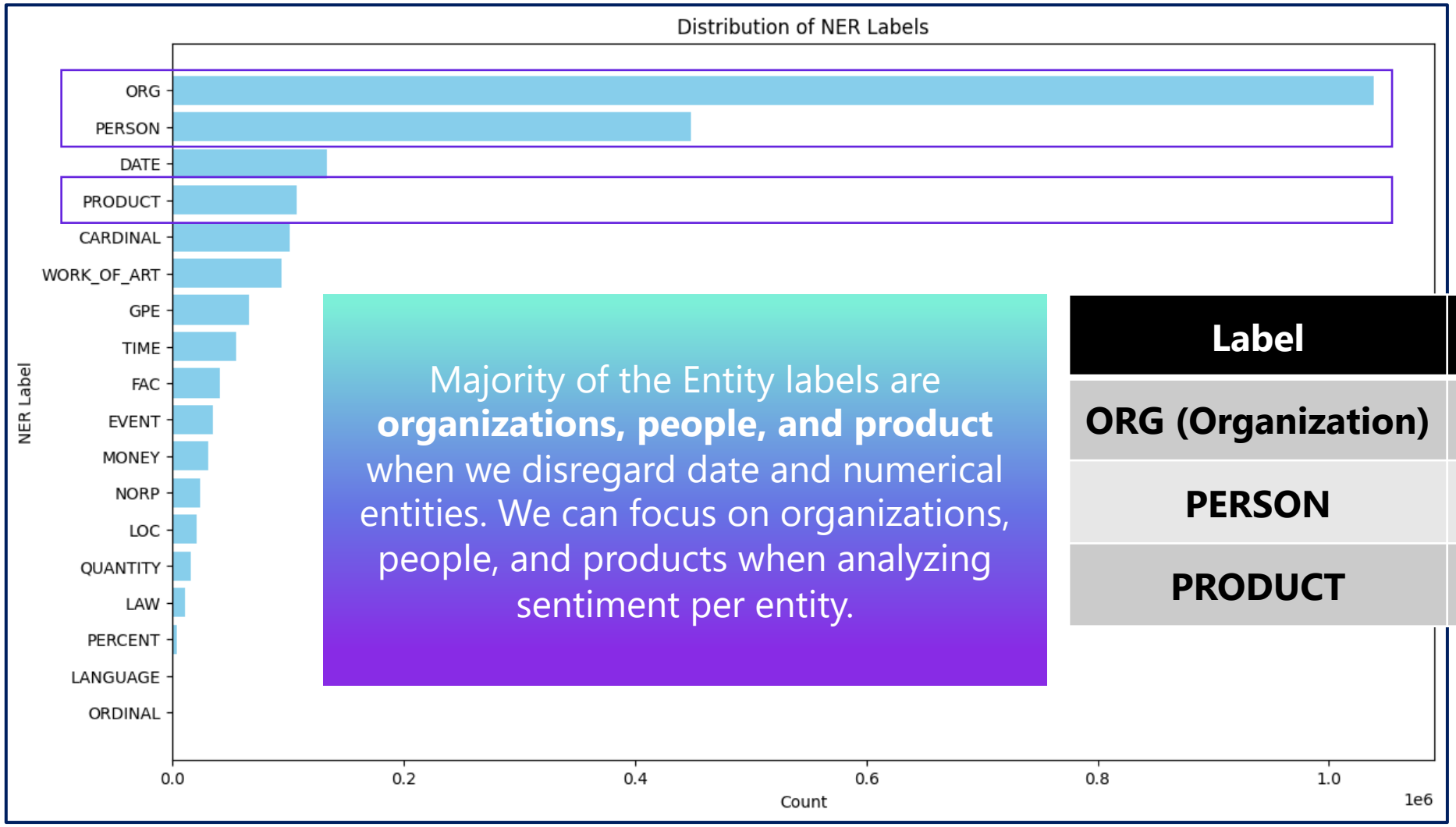




Insights

- Except for Topic 17, we see a trend where count of sentiments increase between Q4 2022 and Q4 of 2023. Since **Topic 17 is on Market Research and Forecasts**, news articles associated to this topic probably predicted the emergence of Generative AI and other advanced Machines Learning technologies. It makes sense that these articles were prospectively written.
- **Topic 14 Music and Public Radio** dominantly has netural and negative sentiments.
- **Topic 4 Healthcare and Medical News** surprisingly has a high proportion of articles with positive proportion.

Entity Recognition

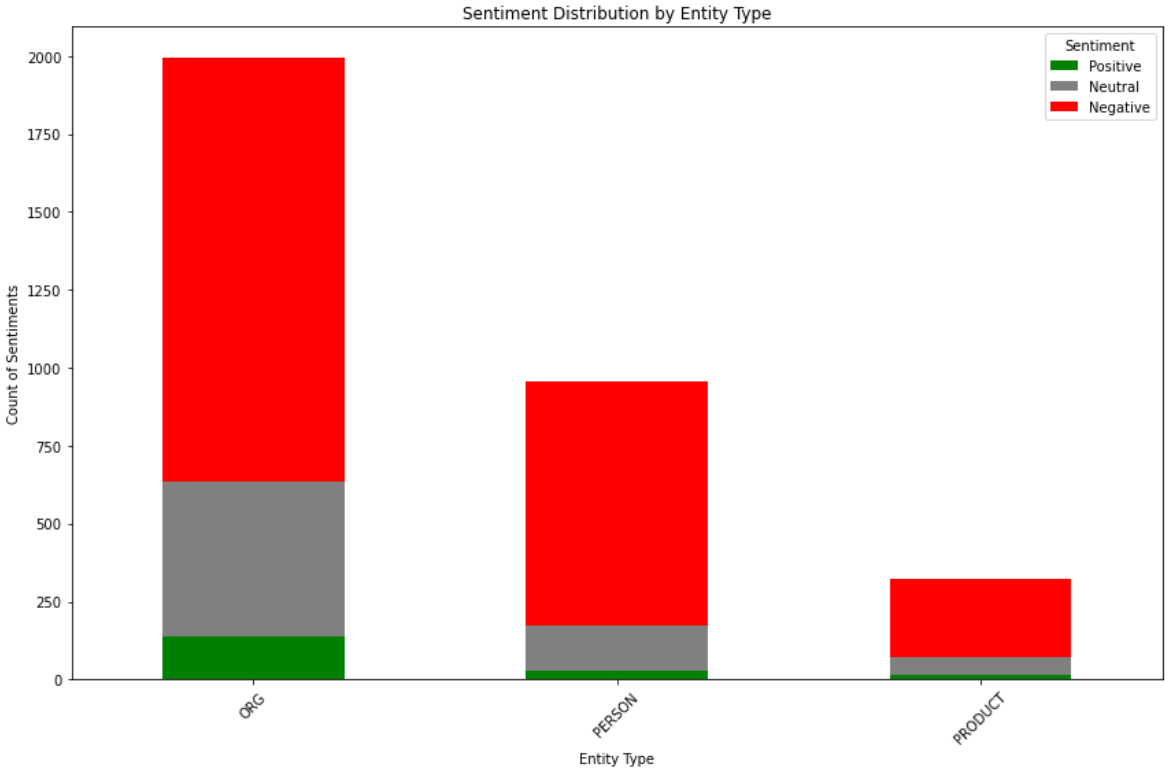


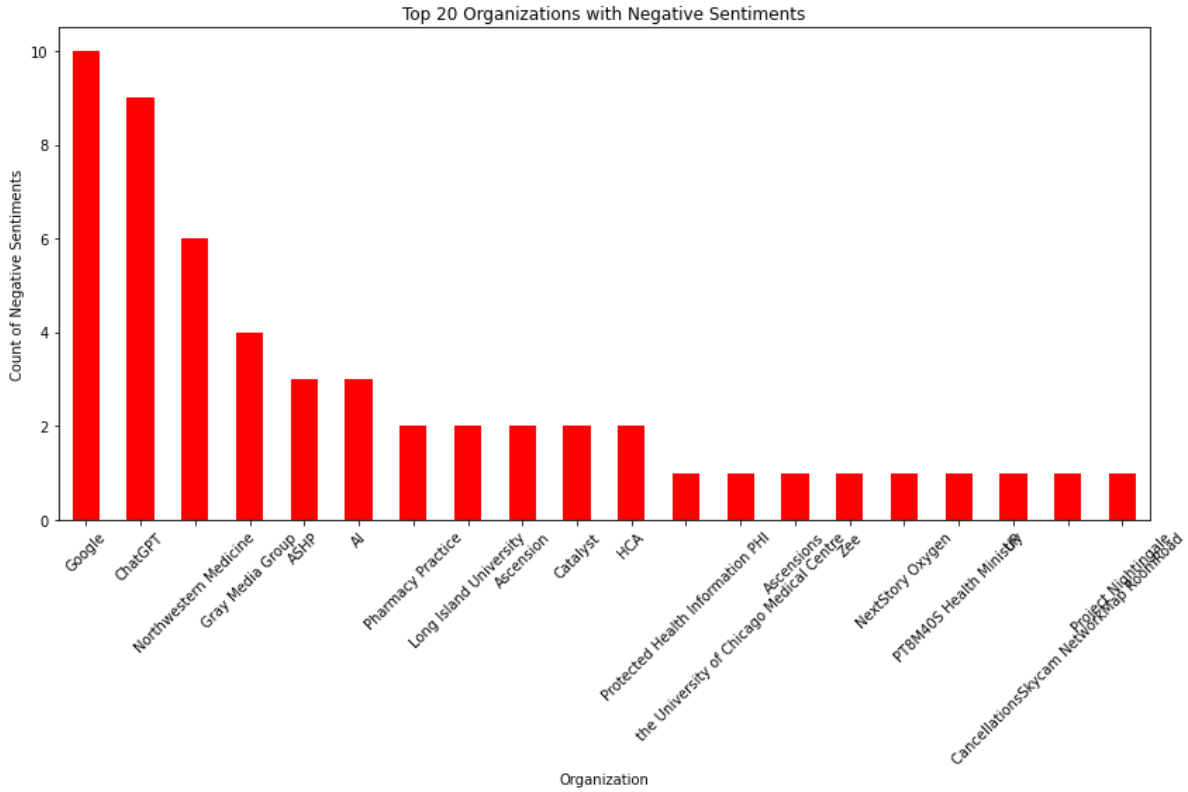
Majority of the Entity labels are **organizations, people, and product** when we disregard date and numerical entities. We can focus on organizations, people, and products when analyzing sentiment per entity.

Label	Entity Count
ORG (Organization)	1,039,131
PERSON	448,323
PRODUCT	107.649

Entity-level Sentiment Analysis

We will be focusing on **Topic 4 Healthcare and Medical News** since it had a surprisingly high portion of articles with positive sentiment. let's observe mentioned entities' sentiments.





Unlike what we saw at the article and topic-level, at the entity-level filtering only organizations, people, and product, we see a very high portion of entities tagged with negative sentiment. We see that organizations like Google and ChatGPT have the most count of negative sentiments.

Topic 4 Entities: Sentiment Analysis

A snippet of one of the articles that discusses ChatGPT in healthcare, tagged as negative.

BureauInvestigateTVPowerNationCircle Country Music and LifestyleLatest NewscastsPress ReleasesStudy Finds ChatGPT Provides Inaccurate Responses to Drug QuestionsPublished Dec 4 2023 at 1101 PM CSTUpdated 1 hour agoFailing to check AIgenerated advice could endanger patientsBETHESDA Md Nov 30 2023 PRNewswire ChatGPTs answers to nearly threequarters of drugrelated questions reviewed by pharmacists were incomplete or wrong in some cases providing inaccurate responses that could endanger patients according to a study presented at the American Society of HealthSystem Pharmacists Midyear Clinical Meeting Dec 37 in Anaheim California When asked to cite references the artificial intelligence program also generated fake citations to support some responsesPRNewswireHealthcare professionals and patients should be cautious about using ChatGPT as an authoritative source for medicationrelated information said Sara Grossman PharmD Associate Professor of Pharmacy Practice at Long Island University and a lead author of the study Anyone who uses ChatGPT for medicationrelated information should verify the information using trusted sourcesGrossman and her team challenged the free version of ChatGPT by OpenAI with real questions posed to Long Island Universitys College of Pharmacy drug information service over a 16month period in 2022 and 2023 Pharmacists involved in the study first researched and answered 45 questions and each answer was reviewed by a second investigator These responses served as the standard against which the responses generated by ChatGPT were to be compared Researchers excluded six questions because there was a lack of literature to provide a datadriven response leaving 39 questions for ChatGPT to answerOnly 10 of the 39 ChatGPTprovided responses were judged to be satisfactory according to the criteria established by the investigators For the other 29 questions responses generated by ChatGPT did not directly address the question 11 or were inaccurate 10 andor incomplete 12 For each question researchers asked ChatGPT to provide references so that the information provided could be verified References were provided in just eight responses and each included nonexistent referencesIn one case researchers asked ChatGPT whether a drug interaction exists between the COVID19 antiviral Paxlovid and the bloodpressure lowering medication verapamil and ChatGPT indicated no interactions had been reported for this combination of drugsIn reality these medications have the potential to interact with one another and combined use may result in excessive lowering of blood pressure Grossman said Without knowledge of this interaction a patient may suffer from an unwanted and preventable side effectAIbased tools have the potential to impact both clinical and operational aspects of care said Gina Luchen PharmD ASHP director of digital health and data Pharmacists should remain vigilant stewards of patient safety by evaluating the appropriateness and validity of specific AI tools for medicationrelated uses and continuing to educate patients on trusted sources for medication informationTina Zerilli PharmD Associate Professor of Pharmacy Practice at Long Island University will present ChatGPT Evaluation of Its Ability to Respond to Drug Information Questions at 2 pm PST on Dec 5About the ASHP Midyear Clinical Meeting ExpositionASHPs Midyear Clinical Meeting and Exhibition is the largest gathering of pharmacy professionals in the world Attended by more than 20000 pharmacy professionals from across the globe the Midyear meeting provides opportunities for professional development networking enhancing practice skills and staying current with the latest products and innovations Tag and follow ASHP and the meeting on social media ASHP23 and ASHPOfficialAbout ASHPASHP is the largest association of pharmacy professionals in the United States representing 60000 pharmacists student pharmacists and pharmacy technicians in all	Topic 4	negative	ChatGPT	ORG

We can see that this article discusses how false information provided by ChatGPT in the healthcare industry can lead to endagering patients. ChatGPT was able to asnwer only 10 of 39 questions, it was inaccurate and incomplete, referring to nonexistent sources. This is clearly a dangerous use of GenAI in the healthcare industry.

Topic 4 Entities: Sentiment Analysis

A snippet of one of the articles that discusses ChatGPT in healthcare, tagged as positive.

to enhance diagnostic decisionmaking in health careThe Permanente Medical Group logoPRNewswireWith support from the Gordon and Betty Moore Foundation AIMHI will award grants of up to 750000 for three to five US health care systems to support the use of AI and ML to improve diagnoses and patient outcomes AI and ML have shown promise in early warning systems that analyze hospital patients data to identify when patients are at risk of serious decline and may need intervention large language models similar to ChatGPT that streamline medical record notetaking and computer vision technology to analyze medical images for tumors cancers and surgical guidance The request for proposals and additional information are available online at kporgaimhiWere aiming to cut through the buzz around AI in health care to prove the promise and positive impact of this exciting technology for improving patient outcomes said Vincent Liu MD principal investigator of AIMHI In addition to supporting algorithmic research the AIMHI program will develop best practices and improve the capacity for AIML deployment in diverse health care settings Its vital that we use these powerful tools thoughtfully and in a way that scales to benefit patients physicians and care teamsThe request for proposals is now open and letters of intent are due June 30 2023 A national advisory committee and expert reviewers from Kaiser Permanente will assess proposals and work closely with the selected project teams during their 2year grant periodAt Kaiser Permanente weve demonstrated the realworld benefits of AI and ML with groundbreaking algorithms said Stephen Parodi MD executive vice president of The Permanente Federation Our early warning systems are at work 24 hours a day 7 days a week to identify highrisk hospitalized patients One of these programs has saved an estimated 500 lives a year With this initiative we hope to support the spread of impactful work in health systems of all sizes across the countryAbout Permanente Medical Groups The Permanente Medical Groups are selfgoverned physicianled prepaid multispecialty medical groups composed of more than 23000 physicians We are dedicated to the mission of improving the health of our patients and communities Together with the Kaiser Foundation Health Plans and Kaiser Foundation Hospitals we are Kaiser Permanente an	Topic 4	positive	ChatGPT	ORG

Unlike the previous article, we can see that this article discusses how AI and ML tools show promising improvements in building an ‘early warning system that analyze hospital patients data to identify when patients are at risk of serious decline and may need intervention of large language models similar to ChatGPT that streamline medical record notetaking and computer vision technology to analyze medical images for tumors, cancers, and surgical guidance.” Such GenAI and ML tools can be utilized to increase efficiency in a physician’s day-to-day, improving healthcare quality overall.

Recommendations for the Healthcare Industry

Enhance Decision Support Systems:

- **Recommendation**: AI-powered decision support systems can be developed to assist physicians in diagnosing diseases and recommending treatment plans based on patient data and medical literature.
- **Impact**: This can reduce diagnostic errors and improve treatment outcomes, leading to better patient care and reduced healthcare costs. Further training and detailed fine-tuning would need to occur based on previous cases of hallucinations and provision of inaccurate information.

Automate Administrative Tasks:

- **Recommendation**: Implement AI solutions for automating administrative tasks such as scheduling, billing, and medical record management.
- **Impact**: This can free up healthcare professionals to focus more on patient care, improving efficiency and reducing burnout.

Early Warning Systems:

- **Recommendation**: Utilize AI and ML tools to further develop early warning systems that analyze patient data to predict and prevent serious health declines.
- **Impact**: Early intervention can save lives and reduce the burden on healthcare facilities by preventing emergency situations.

Medical Imaging and Diagnostics:

- **Recommendation**: Refine computer vision technology to analyze medical images for detecting tumors, cancers, and other anomalies.
- **Impact**: This can enhance the accuracy and speed of diagnostics, leading to early detection and better treatment outcomes.

General Recommendations

Training and Upskilling:

- **Recommendation**: Implement training programs to upskill employees in using AI tools and understanding their applications.
- **Impact**: This can improve employee productivity and enable a smoother transition to AI-enhanced workflows.

AI Ethics and Governance:

- **Recommendation**: Establish ethical guidelines and governance frameworks to ensure responsible AI use.
- **Impact**: This can prevent misuse of AI technologies and address ethical concerns, promoting sustainable and socially responsible AI adoption.

Address Negative Sentiments:

- **Recommendation**: Address the concerns around AI by improving the quality and reliability of AI outputs, particularly in critical areas like healthcare.
- **Impact**: This can mitigate negative sentiments and build a positive perception of AI technologies.

Monitor and Evaluate AI Impact:

- **Recommendation**: Continuously monitor and evaluate the impact of AI implementations to identify areas for improvement and ensure they deliver the intended benefits.
- **Impact**: This can help in fine-tuning AI solutions and maximizing their positive impact on productivity and job automation.

Appendix & References

Entity Recognition Key

CARDINAL:
- **Description**: Numerals that do not fall under another type.
- **Examples**: "one", "two", "123".

DATE:
- **Description**: Absolute or relative dates or periods.
- **Examples**: "January 1, 2020", "Monday", "last week".

EVENT:
- **Description**: Named events, including historical and sports events.
- **Examples**: "World War II", "Olympics", "Super Bowl".

FAC (Facility):
- **Description**: Buildings, airports, highways, bridges, etc.
- **Examples**: "Eiffel Tower", "JFK Airport", "Golden Gate Bridge".

GPE (Geopolitical Entity):
- **Description**: Countries, cities, states.
- **Examples**: "United States", "Paris", "California".

LANGUAGE:
- **Description**: Any named language.
- **Examples**: "English", "Spanish", "Mandarin".

LAW:
- **Description**: Named documents made into laws.
- **Examples**: "Constitution", "NAFTA", "Article 50".

LOC (Location):
- **Description**: Non-GPE locations, mountain ranges, bodies of water.
- **Examples**: "Himalayas", "Pacific Ocean", "Sahara Desert".

MONEY:
- **Description**: Monetary values, including units.
- **Examples**: "$100", "20 euros", "¥5000".

NORP:
- **Description**: Nationalities or religious or political groups.
- **Examples**: "American", "Buddhists", "Republicans".

ORDINAL:
- **Description**: Ordinal numbers.
- **Examples**: "first", "second", "23rd".

ORG (Organization):
- **Description**: Companies, agencies, institutions, etc.
- **Examples**: "Google", "United Nations

PERCENT:
- **Description**: Percentage values, including the percent sign.
- **Examples**: "45%", "10 percent", "half".

PERSON:
- **Description**: People, including fictional.
- **Examples**: "John Smith", "Albert Einstein", "Sherlock Holmes".

PRODUCT:
- **Description**: Objects, vehicles, foods, etc. (Not services.)
- **Examples**: "iPhone", "Boeing 747", "Coca-Cola".

QUANTITY:
- **Description**: Measurements that are not percentages, money, or time.
- **Examples**: "10 kg", "5 miles", "2 liters".

TIME:
- **Description**: Times smaller than a day.
- **Examples**: "2:00 PM", "morning", "dusk".

WORK_OF_ART:
- **Description**: Titles of books, songs, etc.
- **Examples**: "Mona Lisa", "War and Peace", "Bohemian Rhapsody".

News Article examples per topic & sentiment

[18]:
```
# Topic 4 & positive
selected_articles = select_articles(df, "Topic 4", "positive")
selected_articles
```

81789	2023-03-06	project describes his use of ChatGPT as a study aid Upon reflection he found value in using the tool to unearth context relevant to the question which supported his ability to recall external information and make logical connections from medical courses as expected by the question Using this tool to enhance selfdirected reflective learning is but one example of the opportunities that ChatGPT brings to enhancing medical educationThe corresponding author David Chartash PhD from Yale University School of Medicine remarked JMIR Medical Education has proved time and again to understand the value of the integration of medical informatics in medical education This study builds upon on the fundamental principles which I have previously written about with colleagues last year see published work here as medical education seeks to develop competencies in clinical informatics for medical students exposure to the fundamentals of novel technology in preclinical years that may shape their practice such as with dialogic AI will support their ability to understand the technologyaugmented clinical practice they will inherit when they graduateThe authors of the study believe that their results make a compelling case for the potential use of ChatGPT as an interactive medical education tool as it provides users with contextually interpretable and narratively coherent translation of medical knowledge along with its answers This study published by JMIR Publications marks a significant advancement in natural language processing models for medical question answering and could have a profound impact on the future learning environment for medical studentsTo further demonstrate the capabilities of this tool the authors asked ChatGPT to summarize their research findings Want to know how ChatGPT performed Read the second Conclusions of this paper hereJMIR Medical Education Launches a Theme Issue on ChatGPT Generative Language Models and AI in Medical EducationGiven the interest this research has generated among medical educators and researchers JMIR Medical Education has released a call for papers for its upcoming theme issue and ecollection titled ChatGPT and Generative Language Models in Medical Education 2 This special issue aims to	Topic 4	positive

[29]:
```
# Topic 14 & Negative
selected_articles = select_articles(df, "Topic 14", "negative")
selected_articles
```

81789	2023-03-06	James Cameron doubts AI can write a good story and says weaponization of AI is the biggest danger to society I warned you in 1984 Daily Mail Online Home Showbiz Femail Royals Health Science Sports Politics UK Money Video Travel Shop Headlines UK Showbiz Meghan Markle Jeremy Renner TikTok Taylor Swift Kim Kardashian Video Games Puzzles My Profile Logout Login Privacy Policy Feedback Wednesday Jul 19th 2023 4PM 87F 7PM 81F 5Day Forecast Advertisement Abducted Carlee Russell researched Liam Neeson movie Taken and if she was too old for an Amber alert before vanishing with cash and robe she stole from work as she refuses to talk to cops Harry and Meghan asked to return on Air Force One with Biden after Queens funeral but were DENIED Two killed after gunman stormed a building site in Auckland At least six injured in rampage hours ahead of Womens World Cup opening match MAUREEN CALLAHAN A disgraced Gilgo Beach police chief who used prostitutes drugs and torture porn and the shaming questions about why it REALLY took 13 years for cops to catch a serial killer in their midst Tonight is only third time in history the Powerball jackpot has topped 1 BILLION as MegaMillions hits 720M and pushes the combined payout to the fifth largest figure ever HANNAH E MEYERS Guntoting gangs of CHILDREN are terrorizing America because soft new Democrat laws let them get away with murder And we all pay the devastating price The dark side of sharenting Parents who upload photos of their young children to social media are handing their likeness over to pedophiles and sick digital pranksters and these families found out the hard way The Views Whoopi Goldberg accuses cohost Joy Behar of overshadowing her after 80yearolds PHONE started ringing liveon air as she was speaking This screams Im a snob Interior designer faces furious backlash after revealing three things that she says make a house look tacky Major Pfizer factory is wiped out by 135mph tornado which tore through North Carolina town Monster storm ruins 50000 pallets of medicines at one of the worlds largest sterile injectable facilities John Daly famous for his insane oncourse diet of cigarettes Coke and MMs turns heads with stars and stripes outfit and Trump sweater at	Topic 14	negative

References

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2. *Roberta*. Hugging Face. (2024). https://huggingface.co/docs/transformers/en/model_doc/roberta

3. Sinha, A. (2020, May 27). *Sentiment Analysis for Financial News*. Kaggle. https://www.kaggle.com/datasets/ankurzing/sentiment-analysis-for-financial-news

4. Taunk, D. (2024). *Fine Tuning Roberta for Sentiment Analysis*. Google colab. https://colab.research.google.com/github/DhavalTaunk08/NLP_scripts/blob/master/sentiment_analysis_using_roberta.ipynb#scrollTo=c3Q9NDdmqEyo

Thank You