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INTRODUCTION

- ✔ Sentiment analysis is a key technique in Natural Language Processing (NLP)
- ✔ It helps understand public emotions expressed on social media platforms
- ✔ Growing importance in areas such as marketing, public policy, and crisis management

PROBLEM STATEMENT

- ✔ The rise of social media has resulted in a massive volume of opinionated data
- ✔ Businesses and organizations struggle to interpret these opinions at scale
- ✔ There's a need to decode nuanced emotions beyond basic sentiment

OBJECTIVES

- ✔ Analyze and interpret emotions from social media text
- ✔ Classify sentiments as positive, negative, or neutral
- ✔ Identify specific emotions like joy, anger, fear, etc
- ✔ Derive actionable insights from emotional trends

DATA COLLECTION

- ✔ Sources: twitter, reddit, facebook, youtube comments
- ✔ Tools: tweepy, pushshift api, web scraping tools
- ✔ Data size: [insert number of records or date range]

DATA PREPROCESSING

- ✔ Removing stopwords, links, mentions, and emojis
- ✔ Converting text to lowercase, tokenization, lemmatization
- ✔ Handling slang, abbreviations, and emoticons

SENTIMENT CLASSIFICATION TECHNIQUES

- ✔ Lexicon-Based Methods: VADER, TextBlob
- ✔ Machine Learning Models: Logistic Regression, Naive Bayes, SVM
- ✔ Deep Learning Models: LSTM, BERT for context-aware analysis

EMOTION DETECTION

- ✔ Detect specific emotions using emotion lexicons (e.g., NRC EmoLex)
- ✔ Emotions include: Joy, Anger, Fear, Sadness, Surprise, Disgust
- ✔ Multi-label classification for nuanced results

FEATURE EXTRACTION

- ✔ Bag of words (bow)
- ✔ Tf-idf (term frequency-inverse document frequency)
- ✔ Word embeddings (word2vec, glove)
- ✔ Transformers (bert embeddings)

MODEL EVALUATION

- ✔ Evaluation Metrics
- ✔ Accuracy
- ✔ Precision
- ✔ Recall
- ✔ F1-Score
- ✔ Confusion Matrix for visualization

VISUALIZATION OF RESULTS

- ✔ Sentiment distribution bar/pie charts
- ✔ Word clouds for each emotion
- ✔ Time-series plots showing emotion trends over time

REAL-WORLD APPLICATIONS

- ✔ Customer experience analysis
- ✔ Political sentiment tracking
- ✔ Market research and product feedback
- ✔ Mental health monitoring

CHALLENGES

- ✔ Detecting sarcasm and irony
- ✔ Handling mixed languages and regional dialects
- ✔ Dealing with short forms, slang, and spelling errors
- ✔ Privacy and ethical considerations

FUTURE SCOPE

- ✔ Real-time emotion tracking
- ✔ Multimodal sentiment analysis (text + images + voice)
- ✔ Support for regional and low-resource languages
- ✔ Emotion-aware chatbots and assistants

CONCLUSION

- ✔ Sentiment analysis enables powerful emotion insights
- ✔ Helps businesses, researchers, and governments make informed decisions
- ✔ Continuous improvements in AI/ML models will enhance emotional intelligence of systems

THANKS YOU