WhatsAI

WhatsApp Chat NLP Intelligence System

AI-Powered WhatsApp Conversation Analysis Using Natural Language Processing & ML

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PROBLEM STATEMENT

- **Problems with Manual Chat Analysis:**
  - Difficult to analyze thousands of messages manually
  - No understanding of sentiment or emotions
  - No insight into topics of discussion
  - No visualization for chat activity
  - No behavioral analysis like flirting or mood trends
- **Need for Automation:**
  - An AI-based system is required to:
  - Automatically analyze WhatsApp chats
  - Extract hidden insights
  - Provide clear visual outputs

PROJECT OBJECTIVE

To build an intelligent NLP-based system that can:

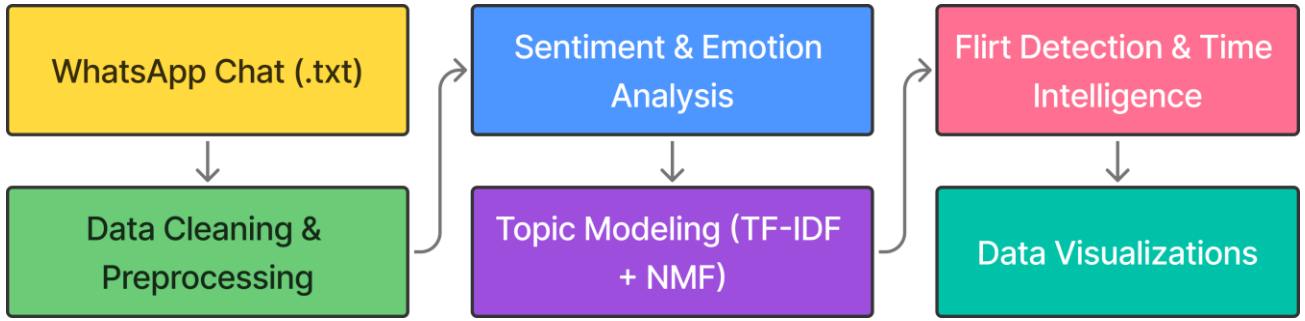
- Clean raw WhatsApp chat data
- Perform Sentiment Analysis
- Perform Emotion Detection
- Extract Top Topics
- Detect Flirt Behavior
- Generate Time & Media Insights
- Visualize everything using graphs & WordClouds

INPUT & OUTPUT

INPUT:

- WhatsApp Chat Export File (.txt)
- Android WhatsApp Format

Workflow of whatsAI:



OUTPUT:

- Cleaned Dataset (.csv)
- Sentiment Bar Chart
- Emotion Distribution Chart
- Topic Modeling Results
- Top 5 Topics → Top 10 Words Each
- Combined WordCloud
- Flirt Percentage Bar Chart
- Time & Media Encounter Dashboard
- Date-wise Message Count Comparison

TECHNOLOGY STACK

Libraries Used:

- Pandas, NumPy → Data Processing
- Scikit-learn → TF-IDF & NMF
- NLTK → Sentiment Analysis (VADER)
- NRCLex → Emotion Detection
- Matplotlib → Data Visualization
- WordCloud → Topic Visualization
- Streamlit → Web Dashboard

Programming Language:

- PYTHON

NLP & ML TECH USED

Natural Language Processing:

- Text Cleaning
- Stopword Removal
- Tokenization
- TF-IDF Vectorization

Machine Learning:

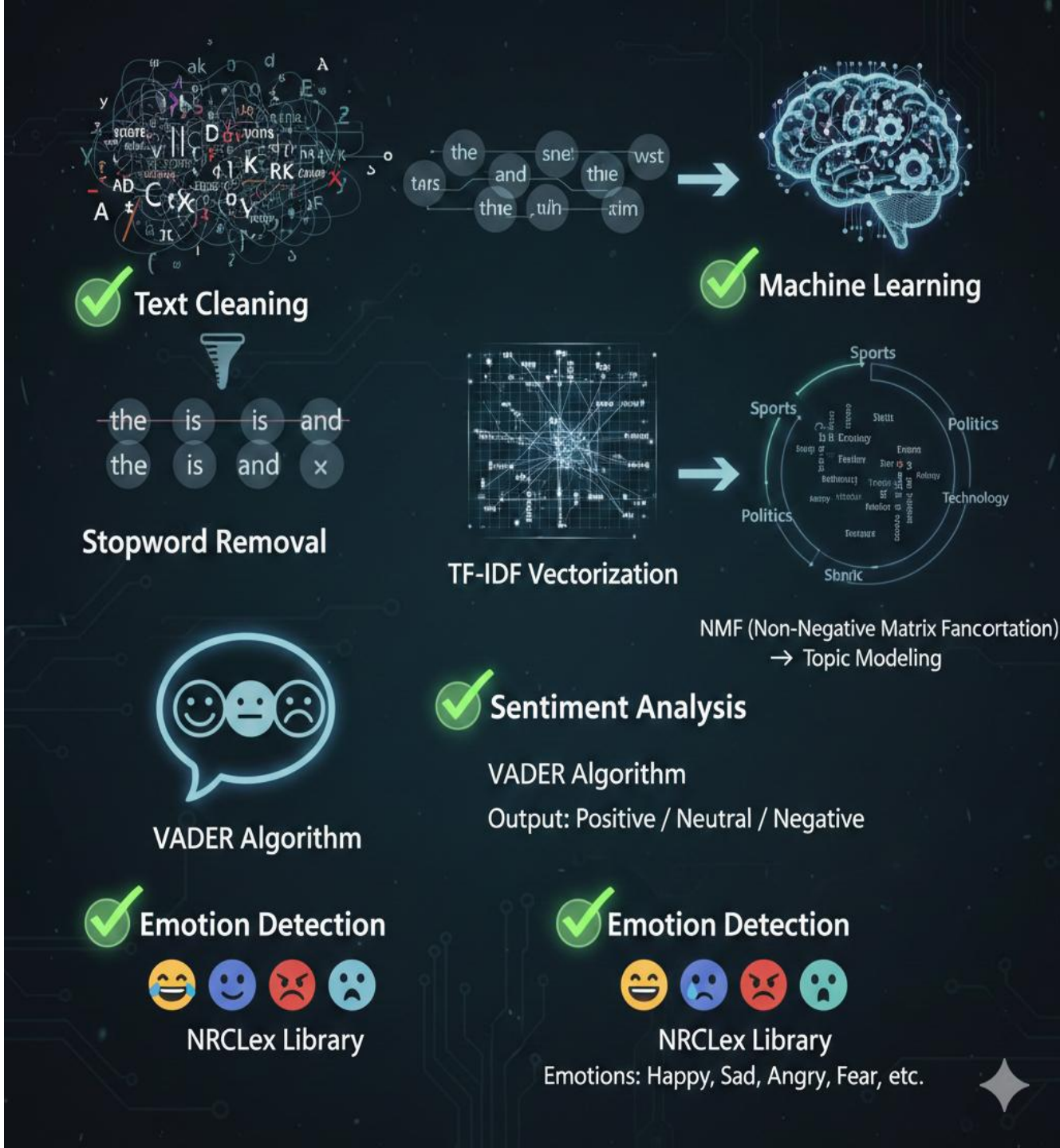
- NMF (Non-Negative Matrix Factorization) ⟶ Topic Modeling

Sentiment Analysis:

- VADER Algorithm
- Output: Positive / Neutral / Negative

Emotion Detection:

- NRCLex Library
- Emotions: Happy, Sad, Angry, Fear, etc.



TOPIC MODELING & WORD CLOUD RESULT

- Topic Modeling Output:
  - Top 5 Topics Extracted
  - Top 10 Words from Each Topic
  - Combined into **ONE Meaningful WordCloud**
- Benefits:
  - Understand what people talk about most
  - Detect:
    - Education Topics
    - Office / Work Discussion
    - Personal Conversation
    - Planning & Coordination
- Visualization:
  - One Colorful WordCloud built using **50 important words**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Topic 1 - Top 10 Words:
['details', 'soon', 'ask', 'yes', 'sure', 'read', 'abstract', 'kk', 'yeah', 'mam']

Topic 2 - Top 10 Words:
['yes', 'just', 'finiliaze', 'send', 'know', 'think', 'tomorrow', 'number', 'mam', 'ok']

Topic 3 - Top 10 Words:
['yes', 'soon', 'mam', 'abstracts', 'vignesh', 'think', 'details', 'finiliaze', 'sent', 'project']

Topic 4 - Top 10 Words:
['ml', 'phone', 'students', 'need', 'ask', 'details', 'office', 'vignesh', 'number', 'send']

Topic 5 - Top 10 Words:
['share', 'yeah', 'yes', 'mam', 'office', 'know', 'just', 'tomorrow', 'church', 'hi']
```

FLIRT, TIME & MEDIA ENCOUNTERS

Flirt Analysis:

- Flirt detected using **120+ flirt keywords**
- Flirt Percentage Bar Chart generated for each user
- Shows who flirts more in chat

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💘 FLIRT ENCOUNTERS:

Talkative: AR❤
Less Talkative: Mabel Infoziant

Flirt Percentage by AR❤: 6.9
Flirt Percentage by Mabel Infoziant: 13.04
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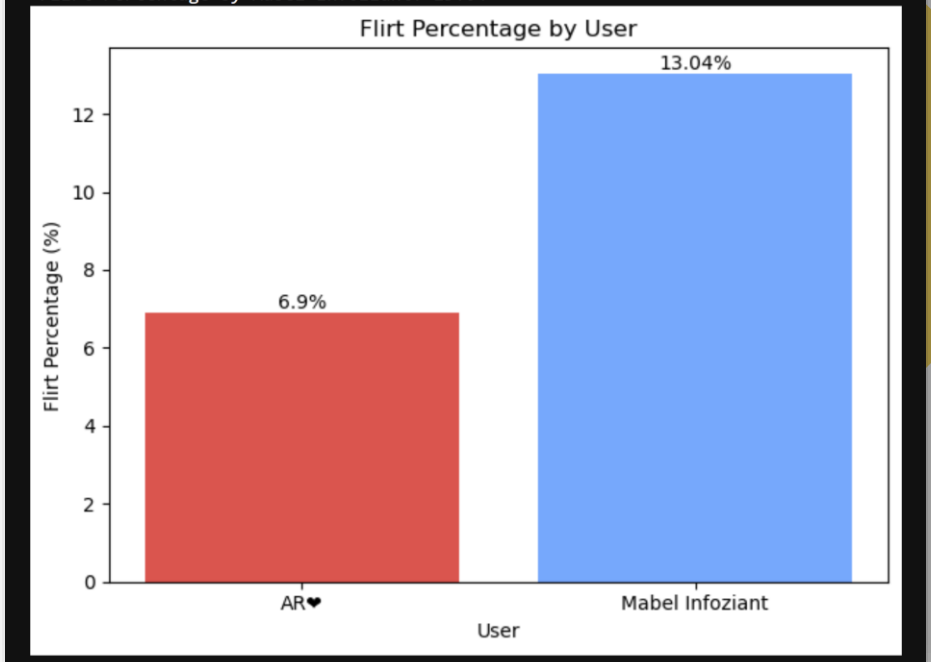

MEDIA ENCOUNTERS (REAL RESULTS):

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🕒 TIME ENCOUNTERS:
Most Active Date: 2019-12-05
Most Active Day: Thursday
Most Active Hour: 13:00
Average Messages per Day: 7.43

📁 MEDIA ENCOUNTERS:
Media Count: 0
Deleted Message Count: 1
Missed Voice Call Count: 0
Missed Video Call Count: 0
```

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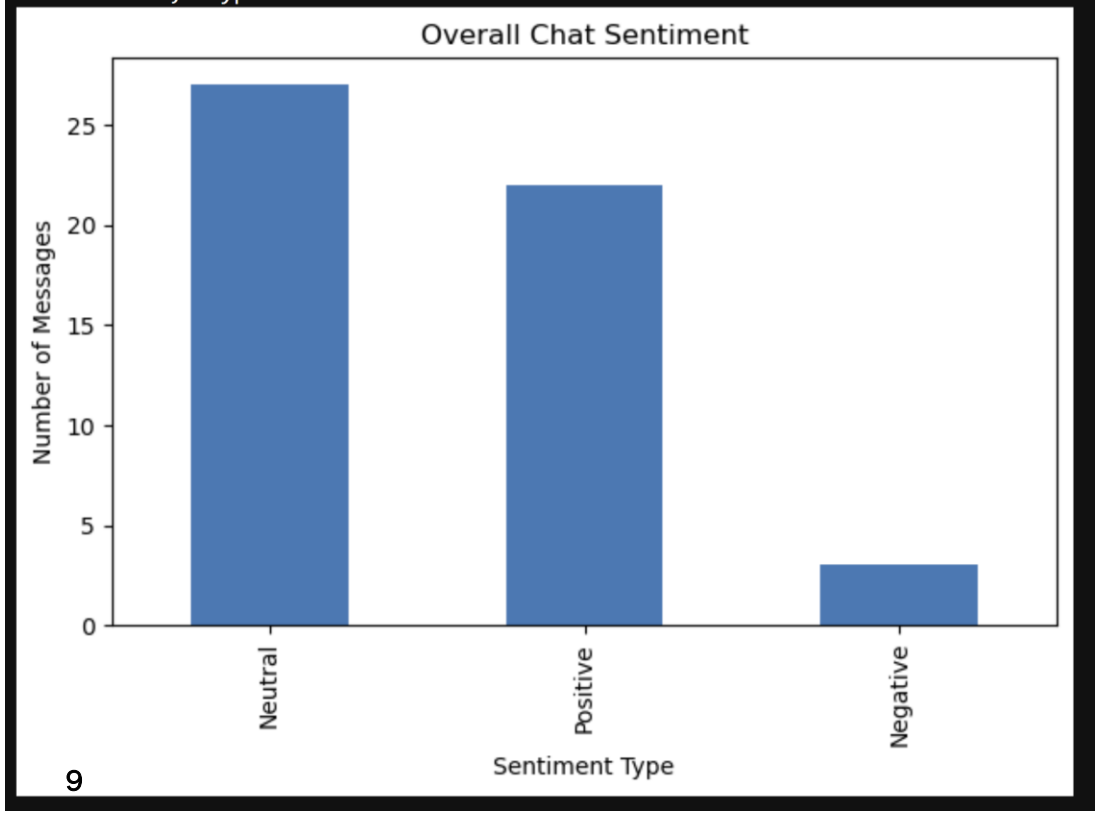
✅ AI AUTO INSIGHTS:

• 👤 Most active user: AR❤
• 😊 Overall chat mood: Neutral
• 🧠 Most discussed topic: Topic 0
• ⏰ Peak chatting hour: 13:00
```

Date-wise Message Count by User

Sentiment Analysis Result

```
sentiment_label
Neutral     27
Positive    22
Negative     3
Name: count, dtype: int64
```



Date-wise Message Count by User

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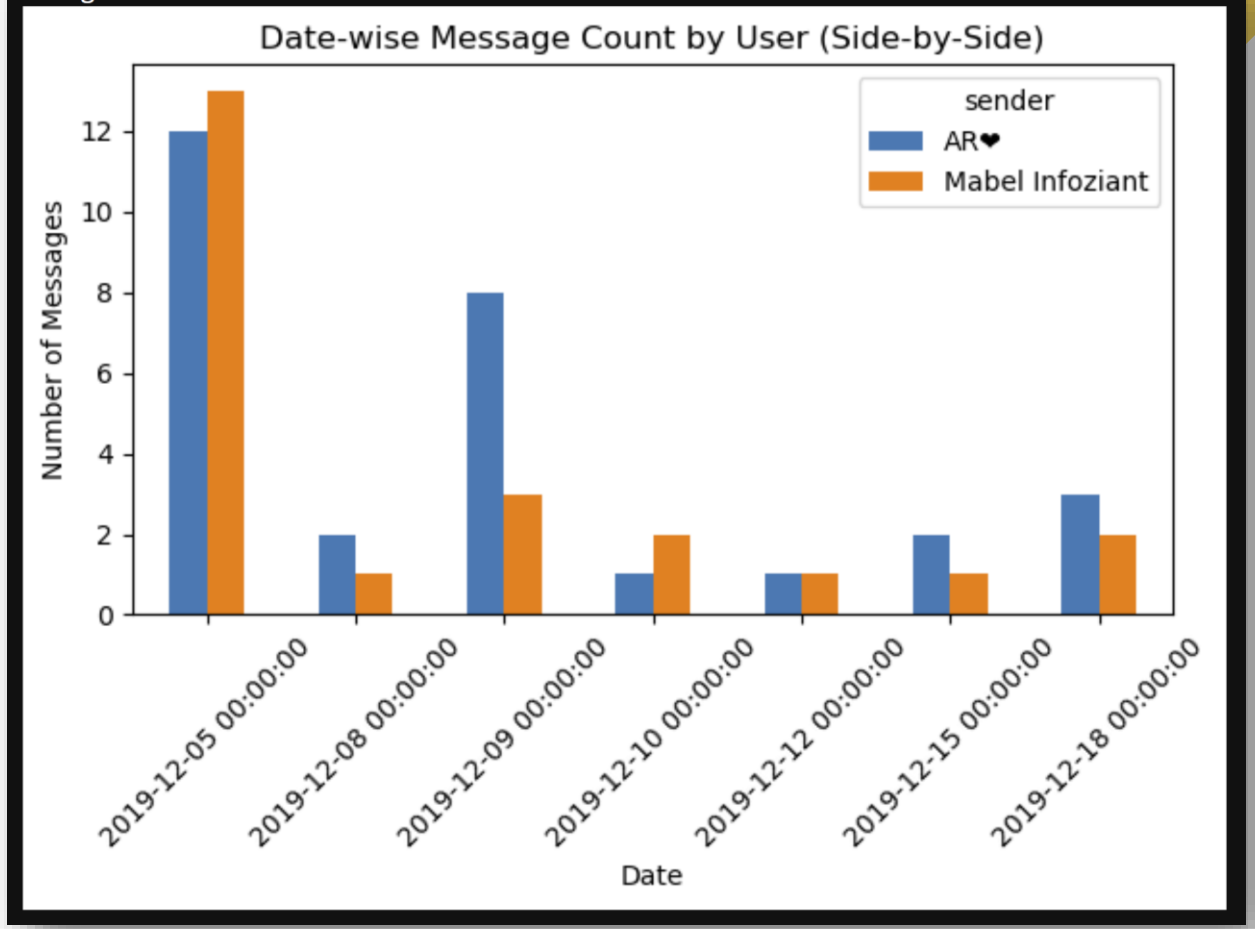

FINAL CONCLUSION:

- WhatsAI successfully performs automatic WhatsApp chat analysis
- Converts raw chat into:
  - Sentiment
  - Emotions
  - Topics
  - Flirt Behavior
  - Time & Media Intelligence
- Provides user-friendly visual dashboards
- Applications:
  - Personal Chat Analysis
  - Relationship Insights
  - Social Behavior Studies
  - AI & NLP Research Projects

Thank YOU
Dr. Subramani