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- **Problem Statement ID –SIH25035**
- **Problem Statement Title-Sentiment Analysis for E-Consultation Module**
- **Theme-Miscellaneous**
- **PS Category- Software**
- **Team ID-**
- **Team Name –DIGITAL SAVIOURS**

AI –Powered Sentiment Analysis Platform

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Proposed Solution

- Web-based platform for analyzing public feedback on legislative drafts
- AI-powered sentiment analysis using advanced NLP technique
- Automated summarization of key points from comments
- Interactive visualization of sentiment trends and word frequency

How it addresses the problem:

- Reduces manual effort in analyzing large volumes of comments
- Identifies overall sentiment trends and key concerns
- Provides actionable insights through automated summarization
- Visual representation helps in quick understanding of public opinion

Innovation and uniqueness:

- Combines multiple NLP techniques for accurate sentiment analysis
- Context-aware summarization specific to legislative language
- Interactive dashboard with multiple visualization options
- Support for both CSV upload and manual comment entry

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TECHNICAL APPROACH

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Technologies Used:

python

FastAPI

SQLite

Chart.js

wordcloud

Implementation Process:

1. Data ingestion (CSV upload or manual input)
2. Text preprocessing and cleaning
3. Sentiment analysis using VADER and custom models
4. Text summarization using TF-IDF and extractive methods
5. Word cloud generation from processed text
6. Visualization of results in interactive dashboard

System Architecture:

CSV Upload → Manual Input → Processing → Analysis → Results

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FEASIBILITY AND VIABILITY

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Feasibility Analysis:

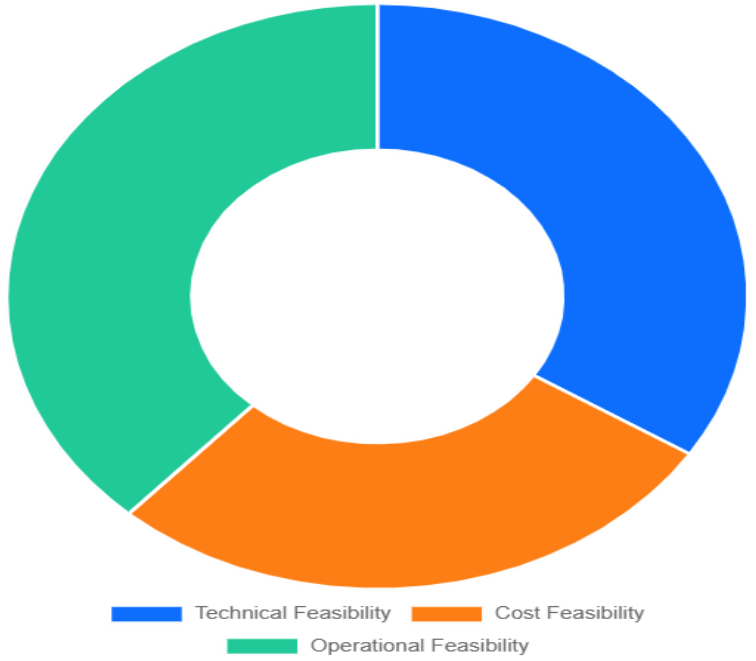
- Uses open-source technologies with no licensing costs
- Modular architecture allows for easy maintenance
- Scalable design to handle large volumes of comments
- Minimal hardware requirements for deployment

Risk Mitigation Strategies:

- Implement hybrid sentiment analysis for better accuracy
- Add support for multilingual processing in future versions
- Follow data encryption and privacy best practices
- Design API-first for easy integration with existing systems and Provide comprehensive documentation

Potential Challenges:

- Handling ambiguous or sarcastic comments
- Processing comments in multiple languages
- Ensuring data privacy and security
- Integration with existing MCA systems



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IMPACT AND BENEFITS

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Potential Impact:

- Significant reduction in time required to analyze public feedback
- More accurate identification of public sentiment trends
- Improved transparency in the legislative process
- Data-driven decision making for policy improvements

Target Audience:

- Ministry of Corporate Affairs officials
- Policy makers and legislative drafters
- Public consultation teams
- Stakeholders providing feedback on legislation

Key Benefits:

- Increased efficiency in processing public feedback
- Cost savings through automation of manual processes
- Enhanced public engagement in policy making
- Improved quality of legislation through better feedback analysis

70%
Time Savings

90%
Accuracy

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RESEARCH AND REFERENCES

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Natural Language Processing with Python
Steven Bird, Ewan Klein, and Edward Loper - O'Reilly Media
VADER: A Parsimonious Rule-based Model for Sentiment Analysis of Social Media Text
C.J. Hutto and Eric Gilbert - Georgia Institute of Technology
FastAPI Documentation

https://fastapi.tiangolo.com/

Text Summarization Techniques: A Brief Survey

Mehdi Allahyari et al. - University of Georgia

Ministry of Corporate Affairs - E-Consultation Module

https://www.mca.gov.in/

Research Methodology:Research Methodology:

- Analyzed problem statement and current manual process
- Reviewed existing sentiment analysis approaches and libraries
- Evaluated multiple text preprocessing and summarization techniques
- Conducted comparative study of visualization frameworks
- Designed architecture ensuring scalability and modularity
- Tested solution with sample data to validate accuracy