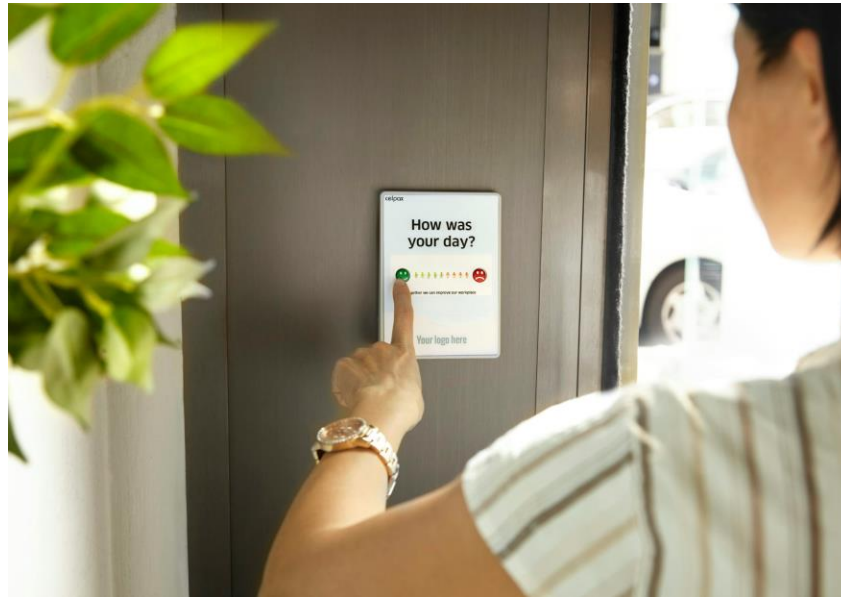# CLINIC TRENDS.AI

A deep dive on customer feedback using most advanced Machine Learning Pipelines

PROBLEM STATEMENT

Many business struggle with turning raw customer feedback into actionable insights.

Traditional surveys are manual, disconnected and hard to analyze, which leads to missed opportunities for service improvement.
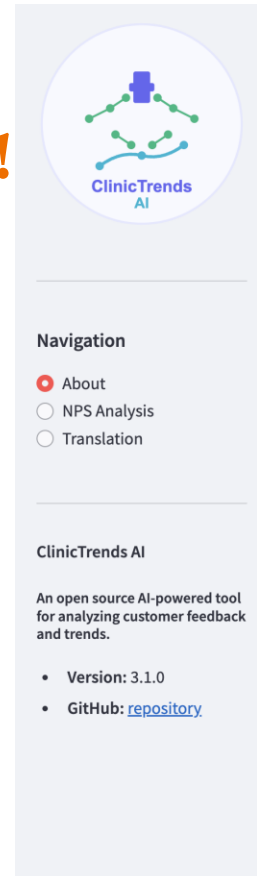
PROPOSED SOLUTION

ClinicTrends AI is our answer!

Smart analytics dashboard that analyzes and visualizes

customer sentiment + NPS data through NLP techniques + AI

ClinicTrends AI 🔍

Navigation
- ⦿ About
- ○ NPS Analysis
- ○ Translation

ClinicTrends AI

An open source AI-powered tool for analyzing customer feedback and trends.

- **Version:** 3.1.0
- **GitHub:** repository

Analyze your Customer Feedback:

- Visualize data throughout the period of your survey (can be yearly, monthly, etc.)
- Measure NPS scores showing who are the Promoters, Passives and Detractors
- Gain insights from customer comments and analyze the sentiment of the comments
- Experience the power of Machine Learning models to predict NPS scores and summarize customer feedback

Key Features

📈 **NPS Analysis**
- Calculate Net Promoter Score
- Track trends over time
- Filter by store and date

💬 **Sentiment Analysis**
- Analyze customer sentiment
- View sentiment distribution
- Generate word clouds

💥 **Topic Modeling**
- Analyze customer feedback
- Have a taste of BERTopic
- Visualize topics

🗣️ **Translation**
- Translate customer feedback
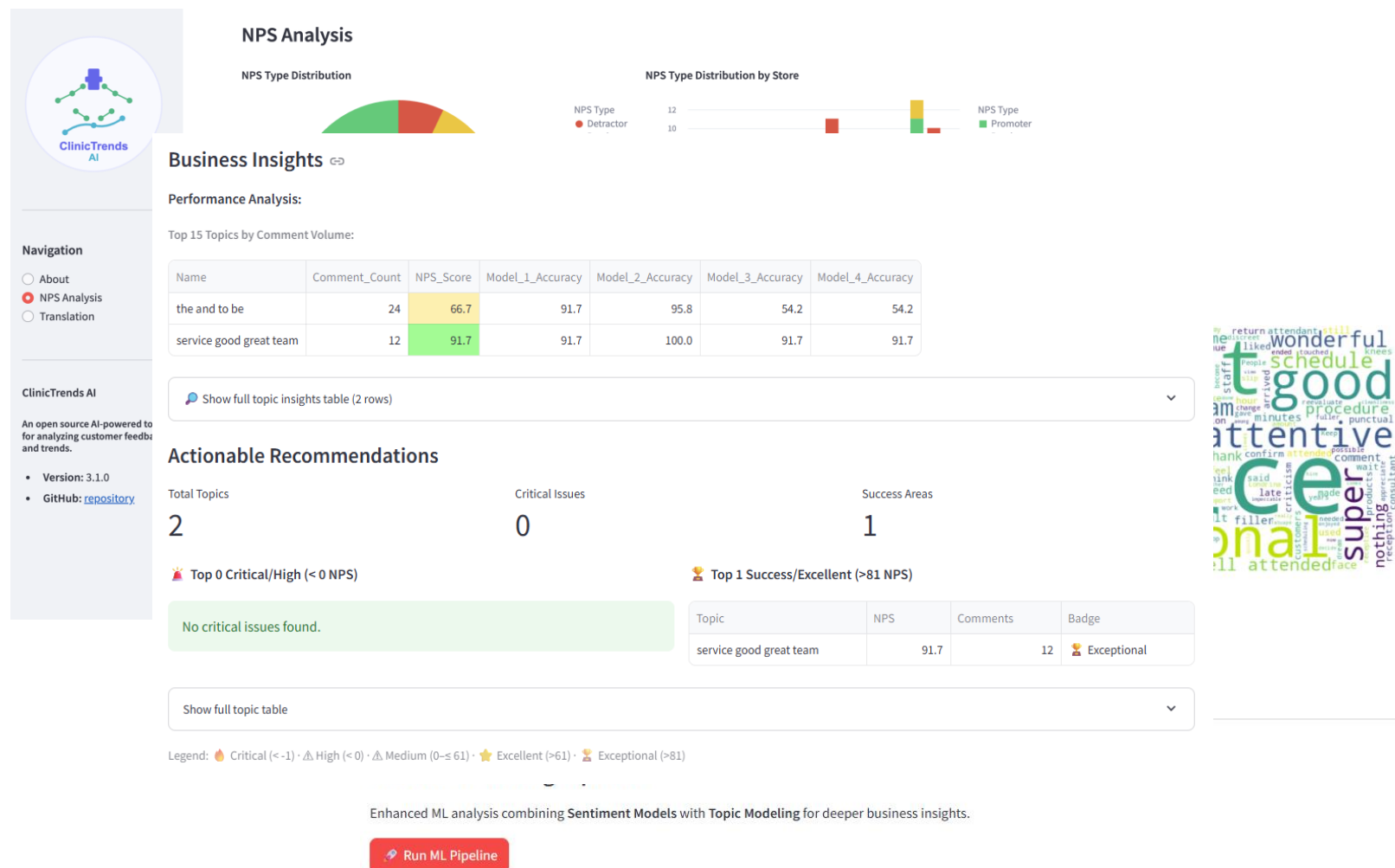- Support for multiple languages
- Batch process CSV files

🚀 **Ready to unlock all features?**
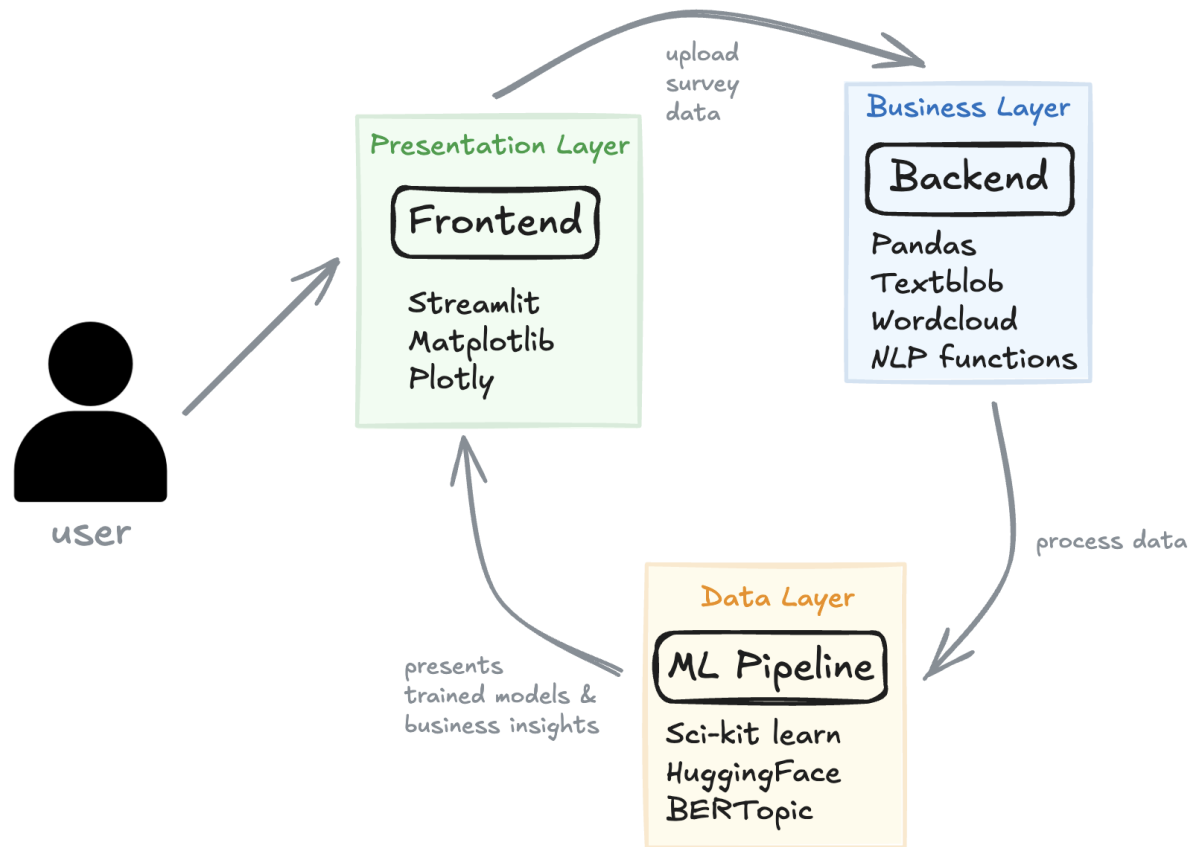Click the button below read more about the Project!

✏️ Click me!

KEY FEATURES

- CSV upload and export

- NPS scoring:
  - Alert generation reporting

- Sentiment analysis

- Machine Learning Pipeline:
  - 4 custom models
  - Topic Modeling
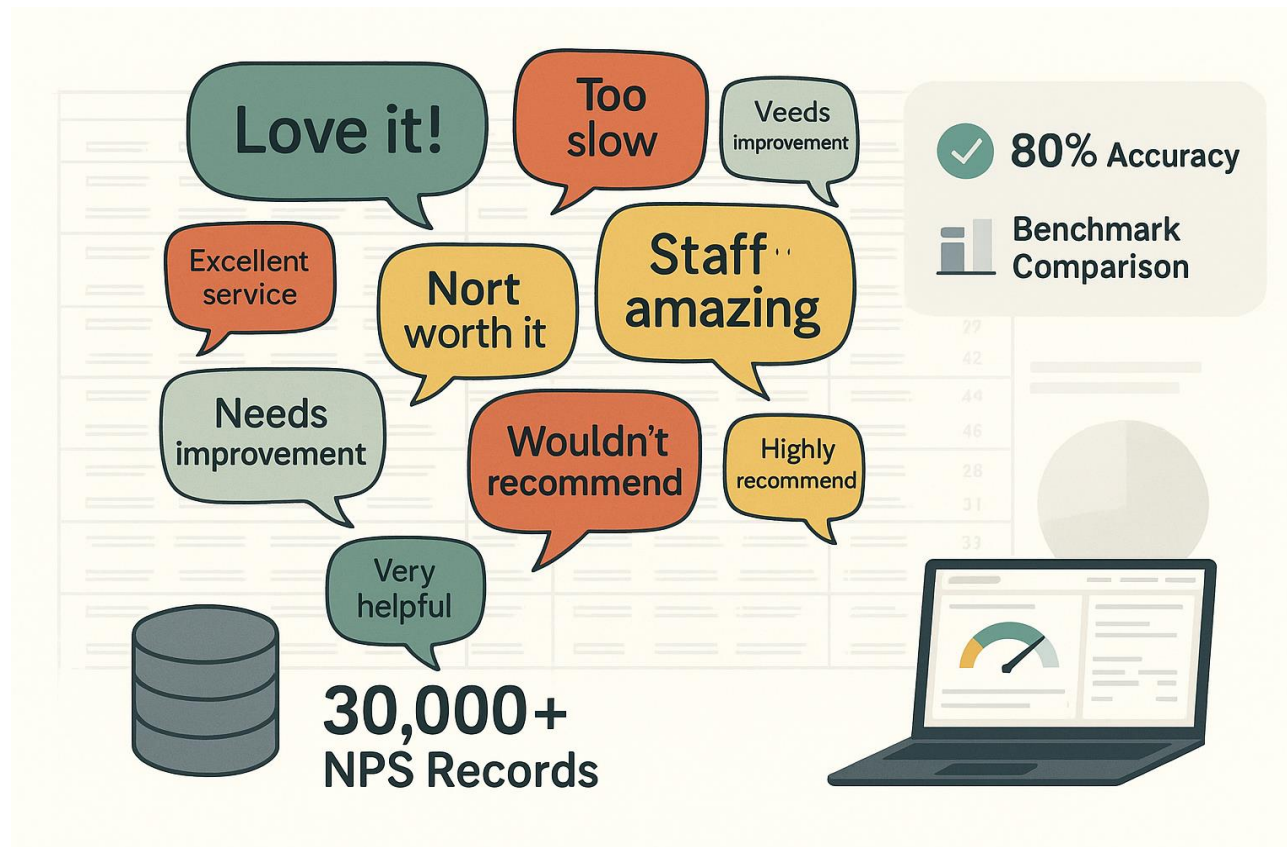 - Business Insights

SYSTEM ARCHITECTURE

The app combines several modules:

- Frontend built with Streamlit

- Preprocessing engine using pandas

- ML Pipeline with:
  - TF-IDF Logistic Regression
  - HuggingFace Transformers
  - Topic modeling and insights

MASSIVE DATA SCALE

- People really write their feelings on a web form!
- 30,000+ NPS records: real customer voices.

TESTING & VALIDATING

We used sample datasets and unit tests to validate model accuracy, user inputs, and edge cases.

🤖 Machine Learning Pipeline

Enhanced ML analysis combining **Sentiment Models** with **Topic Modeling** for deeper business insights.

🚀 Run ML Pipeline

✅ All models trained successfully

🎯 Model Performance Overview

Model 2: Comment-Score Fusion 🥇
🟢 Accuracy ❓
90.5%

🟢 F1-Score ❓
0.904

⏱ Time   📊 Predictions
<0.01s   42

Model 1: Comment-Based
🟡 Accuracy
76.2%
↓ -14.3%

🟡 F1-Score
0.755
↓ -15.0%

⏱ Time   📊 Predictions
<0.01s   42

Model 3: Transformer
🔴 Accuracy
61.8%
↓ -28.6%

🔴 F1-Score
0.617
↓ -28.8%

⏱ Time   📊 Predictions
4.02s   207

Model 4: Hybrid
🔴 Accuracy
61.8%
↓ -28.6%

🔴 F1-Score
0.611
↓ -29.3%
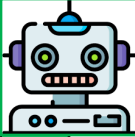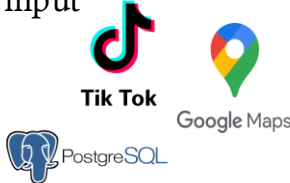
⏱ Time   📊 Predictions
3.90s   207

OUTCOMES... FUTURE WORK

Streamlit Setup

v1.0.0

- Core Streamlit application architecture
- Multi-page navigation system
- Translation capabilities via Deep-translator
- Sentiment Analysis using TextBlob + wordcloud generation
- 4 Machine Learning model implementations
- Pytest setup

Intelligent Enhancement

v2.0.0

- A/B testing framework for model comparison
- Model fine-tuning and reaching accuracy of +80%
- Automated hyperparameter optimization
- Implemented Topic Modeling with BERTopic

Machine Learning Pipeline

v3.0.0

- Advanced feature engineering pipelines
- Machine Learning Pipeline (4 models) to NPS Page
- Topic Modeling to Machine Learning Pipeline
- Pytest Coverage

Enterprise Integration

v4.0.0

- Real-time model retraining capabilities
- RESTful API development
- Database integration
- User authentication & role-based access
- Advanced security & compliance features
- Automate pipeline input

AI-Powered Insights

v5.0.0

- GPT-powered natural language insights
- Automated report generation
- Predictive customer lifetime value modeling
- Integration with CRM systems

DEMO INSTRUCTIONS

To test the tool, simply upload a CSV with customer comments and scores.

The app will process the data, present a graphics and allow you to run ML pipelines.

https://sep-torrens-dr-ranju-group-1.streamlit.app/

TORRENS UNIVERSITY AUSTRALIA

THANK YOU!

Shout out to the Open-Source Community!

ClinicTrends AI is built on top of these awesome libraries:

Streamlit
pandas
BERTopic
scikit learn
Hugging Face

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