Technical Documentation

1. Architecture Overview

NewsBot 2.0 is built on a modular NLP architecture that integrates text classification, topic modeling, sentiment analysis, multilingual processing, and conversational interfaces. Each module is encapsulated in its own directory within the `src/` folder, supporting clean separation of concerns and reusability. The system is designed to run seamlessly in Google Colab and supports exportable outputs for business consumption.

2. API Reference

Each core module exposes Python classes and methods for functionality. For instance, `TopicModeler` provides methods such as `fit_transform`, `get_topic_words`, and `visualize_topics`. Similarly, `NewsClassifier` includes `train_model`, `predict`, and `evaluate_model`. Full API documentation is available in `docs/api_reference.md`.

3. Installation Guide

1. Clone the GitHub repository: `git clone https://github.com/vkazo/ITAI2373-NewsBot-Final` 2. Install dependencies: `pip install -r requirements.txt` 3. Ensure NLTK corpora are downloaded (run first-time setup block in notebook). 4. Load spaCy models: `python -m spacy download en_core_web_sm` 5. Use Colab or Jupyter to run the notebook modules under `notebooks/`.

4. Configuration Manual

All runtime settings and keys are stored in `config/settings.py`. Sensitive API keys should be stored separately in `api_keys_template.txt` and not committed to GitHub. Configuration includes default language, model parameters, and thresholds for classifiers and clustering.