

Project Title

NewsBot Intelligence System 2.0

Instructor

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GitHub Repository

<https://github.com/vkazo>

Architecture Overview

NewsBot 2.0 is structured as a modular, production-ready AI system designed to perform end-to-end news analysis.

It includes modules for data processing, analysis, language modeling, multilingual capabilities, and conversational interaction.

The core architecture follows best practices in code separation, scalability, and testing.

Module Breakdown

- `data_processing/`: Handles text cleaning, TF-IDF extraction, and data validation.
- `analysis/`: Contains classifier, sentiment analyzer, NER extractor, and topic modeler.
- `language_models/`: Implements summarizer, generator, and semantic embeddings.
- `multilingual/`: Includes language detection, translation, and cross-lingual analysis.
- `conversation/`: Enables natural language query processing and response generation.
- `utils/`: Utility functions for visualization, exporting, and model evaluation.

Installation Guide

To install and run NewsBot 2.0:

1. Clone the repository: ``git clone https://github.com/vkazo/ITAI2373-NewsBot-Final``
2. Navigate to the project directory: ``cd ITAI2373-NewsBot-Final``
3. Install dependencies: ``pip install -r requirements.txt``

4. Download language models: ``python -m spacy download en_core_web_sm``

Configuration Manual

Configuration is managed through ``config/settings.py``.

- All credentials (API keys) should follow the ``api_keys_template.txt`` format.
- Language model behavior and NLP thresholds can be modified in the settings.
- Logging, runtime flags, and processing limits are configurable.

API Reference

All modules and functions include comprehensive docstrings.

Additional detailed references can be found in ``docs/api_reference.md``, which is generated from inline comments and automated tools.

Classes such as ``TopicModeler``, ``QueryProcessor``, and ``Summarizer`` are built with extensibility and reusability in mind.