
Twitter Sentiment Prediction Python Package

This project focuses on predicting the sentiment of Twitter posts using Natural Language Processing (NLP) techniques. It is an end-to-end machine learning project that includes data preprocessing, model building, hyperparameter tuning, and deployment.

How I built this package

[Download code packaging process.pdf](#)

Features

- **ETL Pipeline:** Extract, transform, and load (ETL) processes implemented using PySpark and SQL.
 - **Text Processing:** Cleaned text data using regex, removed special characters, and vectorized text using TF-IDF.
 - **Model Building:** Implemented Logistic Regression and Multinomial Naive Bayes for sentiment prediction.
 - **Hyperparameter Tuning:** Optimized models using GridSearchCV.
 - **Experiment Tracking:** Logged experiments with MLflow for efficient performance comparison.
 - **Model Packaging:** Prepared reusable model packages using `sdist` and `wheel`.
 - **Deployment Ready:** Plan to host the project on Render for public access.
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Installation

1. Clone the repository:

```
bash git clone https://github.com/vijaytakbhate2002/sentiment_prediction_python_package.git
```
 2. Install the package using pip:

```
bash pip install git+https://github.com/vijaytakbhate2002/sentiment_prediction_python_package.git
```
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Usage

Prediction Example

To predict the sentiment of a Twitter post, you can use the following Python code:

```
from sentiment_prediction import predict
predict.predictor("this is a negative tweet")
```

This will return:

```
[ 'Negative' ]
```

Sentiment Classes

The prediction function supports four sentiment classes:

- **Positive**

- Negative
- Neutral
- Irrelevant

Project Structure

```
sentiment_prediction_python_package/  
├──  
│   ├── sentiment_prediction/                # Main package directory  
│   │   ├── config/                          #  
│   │   │   ├── config.py                  # Configuration file  
│   │   │   └──  
│   │   ├── data_manipulation/              # Model training and prediction scripts  
│   │   │   ├── data_handling.py           # Training pipeline  
│   │   │   ├── data_processing.py         # Prediction pipeline  
│   │   │   └── text_filer.py              # Text filtering utilities  
│   │   └──  
│   │   ├── trained_models/                # Trained models and metadata  
│   │   │   ├── classifier.pkl              # Classifier model  
│   │   │   ├── vectorizer.pkl             # Vectorizer model  
│   │   │   └── encoder.pkl                # Encoder model  
│   │   └──  
│   ├── dist/                              # Distribution packages (generated)  
│   ├──  
│   ├── build/                             # Build files (generated)  
│   ├──  
│   ├── sentiment_prediction.egg-info/      # Egg-info metadata (generated)  
│   ├──  
│   ├── .gitignore                         # Excluded files and folders  
│   ├── MANIFEST.in                       # Configuration file with paths and constants  
│   ├── README.md                         # Project documentation  
│   ├── requirements.txt                   # Project dependencies  
│   └── setup.py                           # Package metadata and configuration
```

Contribution

Feel free to submit issues or pull requests. Contributions are welcome!

License

This project is licensed under the MIT License.

Author

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GitHub Repository: [Twitter Sentiment Prediction Python Package](#)
