Low Level Design

News Article Sorting

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1. Introduction

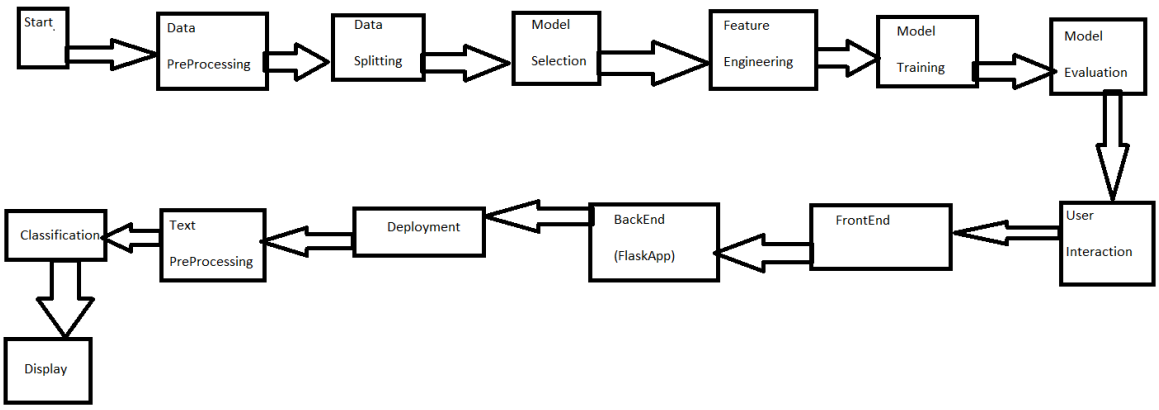
1.1 What is News Article Sorting

News article sorting is crucial for enabling efficient access to information, personalizing content delivery, organizing content repositories, identifying trends, supporting data-driven decisions, and improving overall user experiences in the digital age.

1.2 Scope:

The scope of this project involves developing a machine learning-based system to automatically categorize news articles into relevant topics, enhancing user access to tailored content and enabling potential personalized recommendations.

1.3 Architecture:



2. Project Description

2.1 Data Collection:

2.1.2 Data Set:

Download the dataset for this project from this link (https://www.kaggle.com/c/learn-ai-bbc/data)

Gather a diverse dataset of news articles with labeled categories (Finance, Sports, etc.).

2.2 Exploratory Data Analysis (EDA):

1. Perform basic analysis on the dataset to understand the distribution of categories.

2. Visualize the data to gain insights into the distribution and relationships between categories.

2.3 Feature Engineering:

1. Extract relevant features from the pre-processed text data that could help improve classification accuracy.

2. Consider using techniques like n-grams, topic modelling, and sentiment analysis as additional features.

2.4 Model Selection:

Choose appropriate machine learning models for text classification. Common choices include:

- Decision Tree
- Random Forest
- Naïve Baye's
- Non-negative matrix factorization (NMF)
- Tf-Idf CountVectorizer

2.5 Hyperparameter Tuning:

- GridSearchCV

2.6 Model Training:

1. Split your dataset into training, validation, and test sets.

2. Train your chosen model(s) using the training data and fine-tune hyperparameters.

2.7 Model Evaluation:

1. Evaluate the trained model(s) on the test set using appropriate evaluation metrics (accuracy, precision, recall, F1-score, etc.).

2.8 Model Deployment:

1. Once satisfied with the performance, deploy the trained model to a production environment.

2. Set up an API or web interface that allows users to input news articles for classification.