Political Sentiment and Community Analysis

Requirements Analysis

Our application is a real-time dashboard that fetches live social media data (e.g., from Twitter, Reddit, etc.) and analyzes sentiment in posts and comments. The results will be displayed on an interactive graph where nodes represent users and edges represent interactions (likes, replies, mentions, etc.).

The technologies used on the backend side are Django together with TensorFlow/PyTorch for model training and building algorithms for sentiment analysis. We will also use the Ogdf library for graph generation. ReactJs and NodeJs will be used for Frontend.

The methods we are going to use for sentiment analysis will be: lexicon based approaches (examples of lexicons: WordNet, SentiWordNet), machine learning approaches (Naive Bayes, Support vector machine, K-nearest Neighbors, etc), deep learning approaches (CNN, LSTM, CNN-RNN, etc) and hybrid approaches.

The backend of the application will be composed of Base Api and Data Collector Api. Base Api will have a multi-level structure, containing a middleware for intercepting a JWT token used for authentication and authorization. Then the requests will be taken over by the controllers, the business logic will be in the services and through the repositories we will access the data from MongoDb.

Requirements

Backend:

- ➔ Microservices architecture
- ➔ A service that obtains data using the 𝕏 Api, preprocesses it and stores it in a MongoDb database
- ➔ A service that generates the graphs representations
- ➔ A service that trains different types of models and applies sentiment analysis algorithms on the collected data
- ➔ Login/Register System

Frontend:

- ➔ The user will login or register to use the application
- ➔ The user will interact with the application using a dashboard
- ➔ The user will be able to visualize graphs and different types of diagrams on different political topics
- ➔ The user will be able to visualize the polarization in social media communities