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Architecture
Big Data Internship Report

Social media community using optimized clustering algorithm

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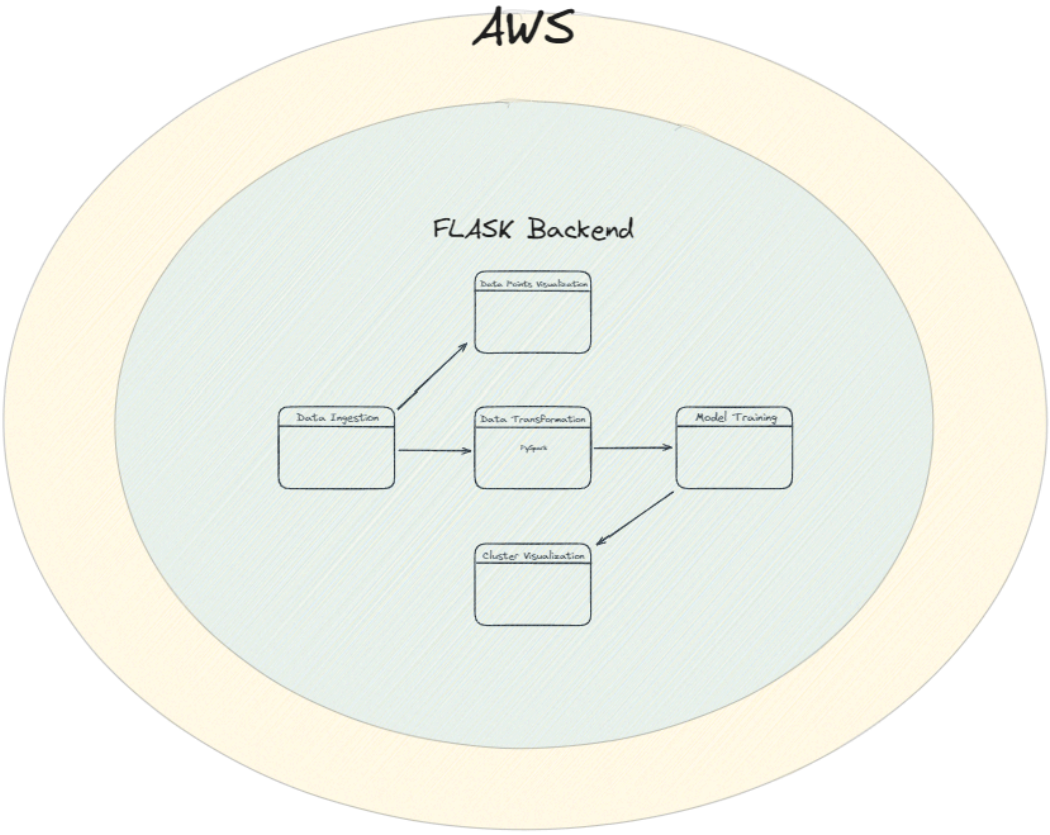
Architecture



Architecture Details

The project aims to cluster users in a social network based on their activity data using a Big Data approach. This involves data ingestion, transformation, modeling, and visualization. Then for interaction with users, the project has an api developed in flask, and deployed on AWS Beanstalk.

System Overview

- Data Source: Synthetic user and post data generated using Faker.
- Data Processing Framework: Apache Spark for handling large datasets.
- Machine Learning Algorithm: K-Means Clustering using Scikit-learn.
- Visualization: Plotly for visualizing clustered data.

- Web Interface: Flask for pipeline interaction.
- AWS Beanstalk: For deployment of the project.

Key Components

- Data Ingestion: Generates synthetic data using Faker and processes it with Apache Spark.
- Data Transformation: Aggregates user data and applies PCA for dimensionality reduction.
- Model Training: Utilizes K-Means clustering to group users based on activity.
- Visualization: Displays clusters using an interactive Plotly graph.
- Web Application: Provides a user interface to run the pipeline and view results.

Technologies Used

- Python
- Apache Spark
- Scikit-learn
- Plotly
- Flask
- AWS Beanstalk