Project proposal

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Project Proposal Topic: YouTube Comments Spam Detection

1. Introduction: YouTube, as a leading video-sharing platform, consistently faces the ongoing issue of managing spam, which comes in various forms such as irrelevant, abusive, or promotional comments. These spam comments not only diminish the overall user experience but also present a threat to the platform's credibility. The objective of this project is to create an effective spam detection system employing sophisticated data science methods, encompassing both machine learning and deep learning models, to autonomously detect spam comments.

2. Problem Statement: The main task involves differentiating between authentic and spam comments posted on YouTube videos. Spam comments may consist of links, repetitive text, or unrelated promotional content. Manually identifying such spam is both time-consuming and ineffective, highlighting the need for automated systems. The project seeks to develop a reliable spam detection model that can effectively handle various types of spam while keeping false positives to a minimum.

3. Dataset: Dataset will be taken from a random youtube channel which both spam and authentic comments.

4. Methodology:

4.1 Data Scraping: Utilizing tools such as BeautifulSoup, we can build a comprehensive dataset of YouTube comments,containing both spam and legitimate comments.

4.2 Data Wrangling: After data collection, the next step involves cleaning and preprocessing. This includes handling missing values, removing duplicates, and addressing any other data quality issues. Clean data is crucial for the effectiveness of machine learning and deep learning models.

4.3 Feature Extraction: Feature extraction plays a crucial role in differentiating between spam and authentic comments. The utilization of techniques like n-grams and Bag of Words is integral for transforming textual data into a format suitable for training models. The selection of these methods is driven by their effectiveness in capturing relevant information from the comment text.

4.4 Machine Learning Models For machine learning models, we will consider traditional algorithms such as Linear Regression, Logistic Regression, and Support Vector Machines (SVM). The selection will be based on the nature of the dataset and considering factors like interpretability and ease of implementation.

4.5 Deep Learning Models: Deep learning models includes Convolutional Neural Networks (CNN), Artificial Neural Networks (ANN), and Recurrent Neural Networks (RNN). These smart models can help us understand complicated patterns in information, especially in comments where regular computer programs might struggle.

4.6 Evaluation: We will evaluate the performance of our models using metrics such as accuracy, precision, recall, F1-score, and confusion matrices. This comprehensive evaluation will provide insights into the strengths and limitations of each model.

4.7 Comparison:A comparative analysis will be conducted to assess the strengths and weaknesses of machine learning and deep learning models. This will help in understanding which approach is more effective in the context of YouTube comments spam detection.

4.8 Visualization of Results: To improve the presentation of findings, we will generate interactive visualizations using tools such as Plotly. These visualizations will display the performance of the model, highlight the importance of features, and present any insightful observations from the analysis. This will offer a thorough overview of the spam detection system.