**AI\_Phase2**

**TITLE :** PROJECT 2: Fake news detection using NLP

**FAKE NEWS DETECTION USING NLP**

**INTRODUCTION:**

In this ambitious project, we aim to create an advanced Natural Language Processing (NLP) model using scikit-learn. Our goal is to develop a web application that seamlessly integrates with popular

news sources via their APIs. This web application will offer real-time news predictions, empowering users to evaluate the credibility of news articles as they emerge, thus promoting a more discerning

readership.

**PROJECT SCOPE AND OBJECTIVES:**

This project has a multi-faceted scope, including the development of a highly accurate news credibility differentiation model and the creation of a user-friendly web application to make this technology

accessible to the public.

**OBJECTIVES**:

**1. Model Development for Credibility Differentiation:**

* **Algorithm Exploration:** We will experiment with various machine learning algorithms, such as Random Forest and Naive Bayes, to build a model that excels in distinguishing real news from fake news.
* **High Accuracy:** Our primary objective is to identify the algorithm or combination of algorithms that provides the highest accuracy in news credibility assessment.
* **Model Optimization:** We will fine-tune the selected algorithm(s) to ensure optimal performance.

**2. Web Application Development:**

* **User-Friendly Interface:** Our aim is to design and develop a user-friendly web application that simplifies technical complexities, ensuring an intuitive user experience.
* **Python with Django Rest Framework:** We will implement the application using Python's Django Rest Framework for efficient integration with our trained model.
* **React.js Front-End:** The front-end of the application will be constructed with React.js to deliver a seamless and responsive user experience.

**3. Real-Time News Integration:**

* **Integration with The Guardian API:** We intend to leverage The Guardian news platform's free API to access real-time news articles, ensuring a continuous flow of data for our system.
* **Dynamic Predictions:** The system will dynamically predict the credibility of news articles as they are retrieved in real-time.

**4. Database Management:**

* **Prediction Storage:** To prevent redundant predictions, we will implement a database system to store the outcomes of previous news credibility assessments.
* **Efficient Data Handling:** The database will facilitate efficient data management, enabling the avoidance of repetitive analysis.

**5. User-Facing Display:**

* **Presentation of Predictions:** The web application will present news articles along with the predictions made by our model, clearly indicating whether the news is real or fake.
* **User Accessibility:** Our goal is to ensure that users can easily access and interpret the credibility assessment without requiring an understanding of the underlying technical aspects.

**DETAILED PROJECT PLAN:**

**1. Model Training in Google Colab**

* Preprocess and clean the news dataset.
* Implement and test various machine learning algorithms (e.g., Random Forest, Naive Bayes).
* Analyze the performance metrics of each algorithm (e.g., accuracy, precision, recall).
* Choose the algorithm that demonstrates the highest accuracy for news credibility assessment.
* Save the trained model in Google Colab.
* Export the selected model from Google Colab to your local machine.

**2. Web Application Development**

* Set up a Django project for the web application.
* Develop the RESTful API to handle incoming news data and predictions.
* Begin developing the user interface using React.js.
* Establish communication with the Django REST API to fetch predictions.
* Integrate the web application with The Guardian's news API to retrieve real-time news articles.
* Implement logic for running background threads every 10 seconds to fetch new news.
* Develop functionality to check whether the news is already in the database.
* Set up a database system to store news articles and their predicted results.
* Establish database connectivity within the Django project.

**3. Testing, Deployment, and Monitoring**

* Conduct extensive testing, including unit testing and integration testing, to ensure the system functions correctly.
* Verify the accuracy of news predictions.
* Address and resolve any issues or bugs that arise during testing.
* Plan for regular maintenance, updates, and scalability considerations.

**4. Project Evaluation**

* Continuously monitor the accuracy of news predictions.
* Stay updated with developments in machine learning and NLP to enhance the model's accuracy.

**CONCLUSION:**

Our project represents a fusion of advanced NLP model training with user-centric web application development, signaling an innovative approach to combat misinformation. With a carefully selected algorithm, real-time news predictions, and a commitment to user-friendliness, we are positioned to empower individuals with reliable news assessments. As we move forward, our dedication to accuracy

and continuous improvement remains steadfast, marking the beginning of a new phase in our mission to promote informed decision-making and accurate information dissemination.