

# Fake News Detection in Machine Learning

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## Introduction

Fake news has become a significant concern in today's information age. The spread of misinformation can have serious consequences on society, making it crucial to develop tools that can automatically detect fake news. This project aims to create a machine learning model for fake news detection using a curated dataset and various natural language processing techniques.

## Dataset

We use a publicly available dataset containing labelled examples of both real and fake news articles. The dataset is split into a training set and a test set. You can download the dataset from [link\\_to\\_dataset](#).

## Feature Engineering

To build an effective fake news detection model, preprocess the text data using techniques such as tokenization, stop-word removal, and stemming. Additionally, extracted relevant features like TF-IDF (Term Frequency-Inverse Document Frequency) and word embeddings to represent the text data numerically.

## Model Selection

Experiment with several machine learning models, including but not limited to:

- Logistic Regression
- Decision Tree
- Gradient Descent
- Random Forest

Tried to fine-tune hyperparameters for each model and compare their performance to select the best-performing one.

## Evaluation

The performance of this fake news detection model is evaluated using various metrics, including accuracy, precision and ROC-AUC. Also employ cross-validation techniques to ensure the model's robustness and minimise overfitting.

## Deployment

The selected model is deployed using a web-based interface, allowing users to input news articles for analysis. The deployed system provides real-time predictions on the likelihood of the input being fake or real news.

## Usage

Clone the repository: `git clone https://github.com/sAchin-680/Fake_News_Detection.git`

Install required dependencies: **pandas, numpy, seaborn, matplotlib, sklearn.**

Run the application: Jupyter, vscode.

I welcome contributions to enhance the fake news detection model. If you'd like to contribute, please follow these steps:

## Fork the repository

Create a new branch: `git checkout -b feature/your-feature-name`

Make your changes and commit them: `git commit -m "Add your feature"`

Push to the branch: `git push origin feature/your-feature-name`

Open a pull request detailing your changes.