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Section: A

GenAI & NLP Project Ideas with HF models

Category 3: Analysis & Extraction (The "Smart" Agents)

Fake News Detector

- **Goal**: Analyze a headline to see if it looks sensationalist or reliable.
- **Tech**: Fine-tuned BERT model for classification.

We used a **Hugging Face pre-trained Transformer model based on BERT** called **mrm8488/bert-tiny-finetuned-fake-news-detection** for our fake news classifier.

This model is built on **BERT (Bidirectional Encoder Representations from Transformers)**, which understands context from both left and right sides of a word in a sentence.

We accessed the model using the Hugging Face **pipeline("text-classification")** API, which handles tokenization

pipeline("sentiment-analysis") - for detecting the emotional and sensational tone.

pipeline("ner") - To identify important names and places in the headline

confidence scores show how sure the model is about its prediction.

fine-tuning makes a general model suitable for a specific task like fake news classification.

Cell 1:

Imported the Hugging Face pipeline API. Loaded a **BERT-tiny model fine-tuned for Fake News Detection**.

Cell 2:

Gave a sample **news headline** to the fake news classifier. The model analyzed the text and predicted its class (Fake/Real) with confidence.

Printed the prediction result showing how the fine-tuned BERT model detects sensational or fake news.

Cell 3:

Loaded a **Sentiment Analysis pipeline**. Passed the same news headline to it. The model predicted whether the headline has **positive, negative, or neutral emotion** and printed the result.

Cell 4:

Loaded a Named Entity Recognition (NER) pipeline. Passed the news headline to the pipeline. The model detected and grouped entities such as people, organizations, and locations.

Cell 5:

To analyze a news headline. Prints the input headline. Uses the **Fake News classifier** to predict if the headline is reliable or sensational. Uses the **Sentiment Analysis pipeline** to detect the emotion (positive, negative, neutral). Uses the **NER pipeline** to identify and group named entities like people, organizations, and locations.

Prints the results of all three analyses in a clear format.

```
...
    Headline: Breaking: Scientists discover miracle cure overnight!

    Fake News Prediction:
    [{'label': 'LABEL_1', 'score': 0.9992097616195679}]

    Sentiment Analysis:
    [{'label': 'POSITIVE', 'score': 0.9989691972732544}]

    Named Entity Recognition:
    []
```

Conclusion: combining multiple NLP pipelines creates a **smart analysis agent** instead of a single-task model.