

Understanding of the HandsOn

1. Fundamentals of Model Architectures

In the **Unit1_Benchmark.ipynb** file, we had been experimenting with different transformer architectures to understand their primary functions:

- **Encoder-only models (BERT, RoBERTa):** Understood that BERT and RoBERTa are encoder-only models. While testing them for text generation, it was observed that BERT is more naturally suited for tasks like Masked Language Modeling rather than open-ended generation.
- **Encoder-Decoder models (BART):** It is an encoder-decoder model. Used it to generate text from the prompt

2. Practical Application: Automated Summarization

The **TL;DR for News Articles.ipynb** notebook demonstrates the ability to build a functional end-to-end NLP pipeline:

- **Summarization Pipeline:** implemented a "TL;DR" tool using the sshleifer/distilbart-cnn-12-6 model, which is a distilled version of BART optimized for summarization.
- **Parameter Tuning:** gained experience in controlling model output by setting max_length, min_length, and disabling sampling (do_sample=False) to ensure concise and deterministic summaries.

3. Core NLP Tasks and Hands-on Skills

In **HandsOn-1_Unit1.ipynb** and across the other files, practiced several core NLP techniques:

- **Masked Language Modeling (MLM):** used BERT to predict missing words in sentences, achieving high confidence scores (e.g., 54% for predicting "create" in a sentence about Generative AI).
- **The Pipeline API:** have become proficient in using the Hugging Face pipeline abstraction to quickly deploy models for text-generation, summarization, and fill-mask tasks