Task-2

Text classifier → Sentiment predict kre (+ve/-ve)
↳ agr confidence low hai prediction ka to sys fallback kre
↳ ya auto. feedback kare/ ya dobara feedback mange.

Self-Healing Clarification Dag Project

(GPU) - graphical processing unit

(1) LangGraph :

- Python lib hai jo "LLM-based multi agent workflows ko graph ke form me banane mai madad karti hai.
- Node or Edge k through complex design automatic

(2) DAGs (Directed Acyclic Graph) : (no loop)

- workflow m use krte hai taki data aur decision ek clean, acyclic order me process ho.

(3) DistilBERT

- yai google ke BERT model ka chhota or fast version hai (huggingface.co)
- Knowledge distillation se train hota hai taaki model size aur inference time kam ho jaye.
- (DistilBERT NLP class) task k liye famous hai kyuki accha hai or resource kumkhte hai

(4) LoRA (Low-Rank Adaption)

- Ek efficient fine-tuning technique hai jisme base model ke weights freeze kar ke, kuch chote "low-rank" matrices ko train kiya jata hai.
- Full tuning ke compare mai CPU memory or time dono bach jata hai.
- LoRA se hum badi model ko specific tasks ke liye jaldi customize kar sakte hai.

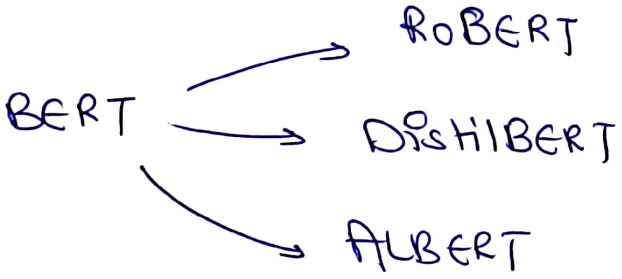
① fine tuning DistilBERT

↳ the procen of fine-tuning "DistilBERT" for Sentiment analysis asing a dataset of restaurant or any dataset reviews.

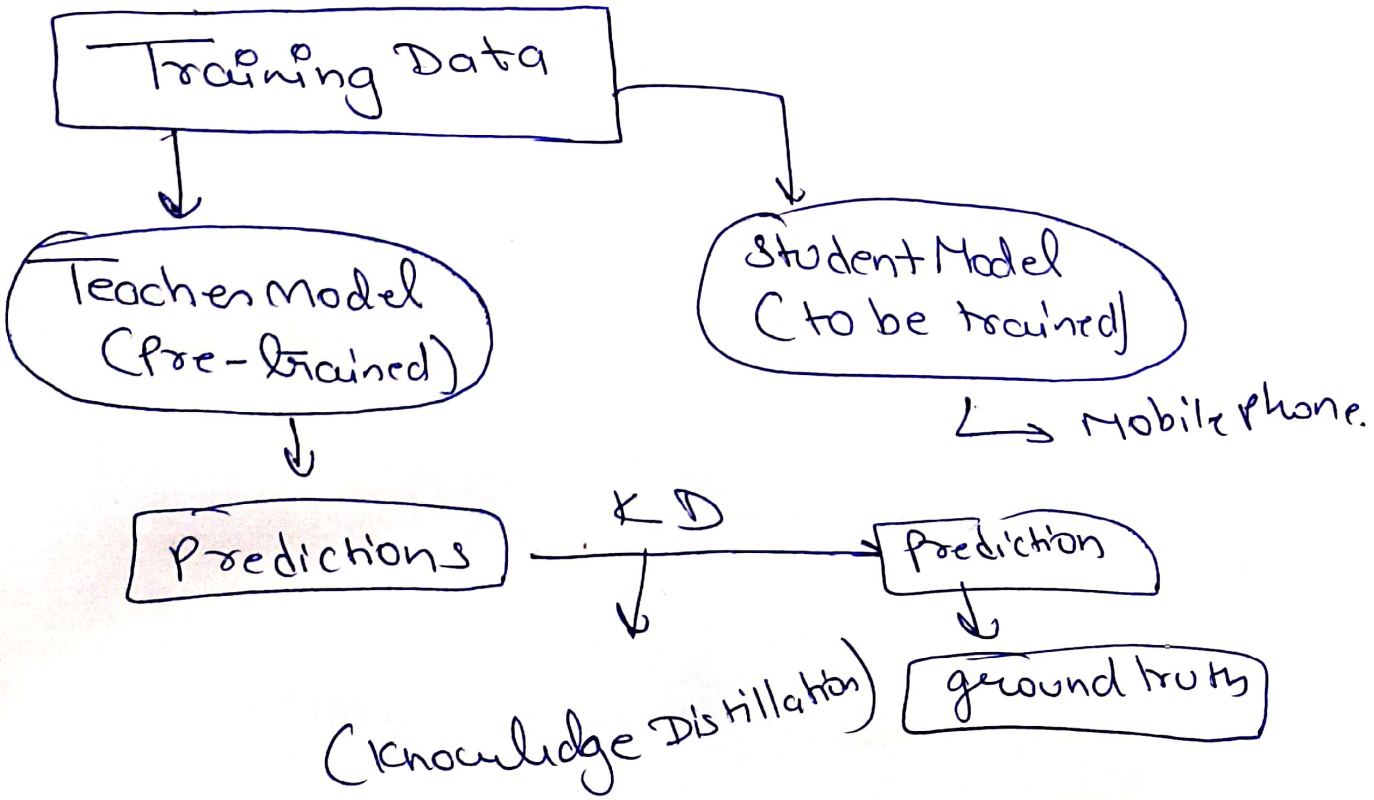
→ DistilBERT is smaller & faster Version of BERT By google. (encoder-based transformes model ↳ 2018)

↙ (BERT + NLP)

→ More powerful when we use NLP along with that



o used in project like

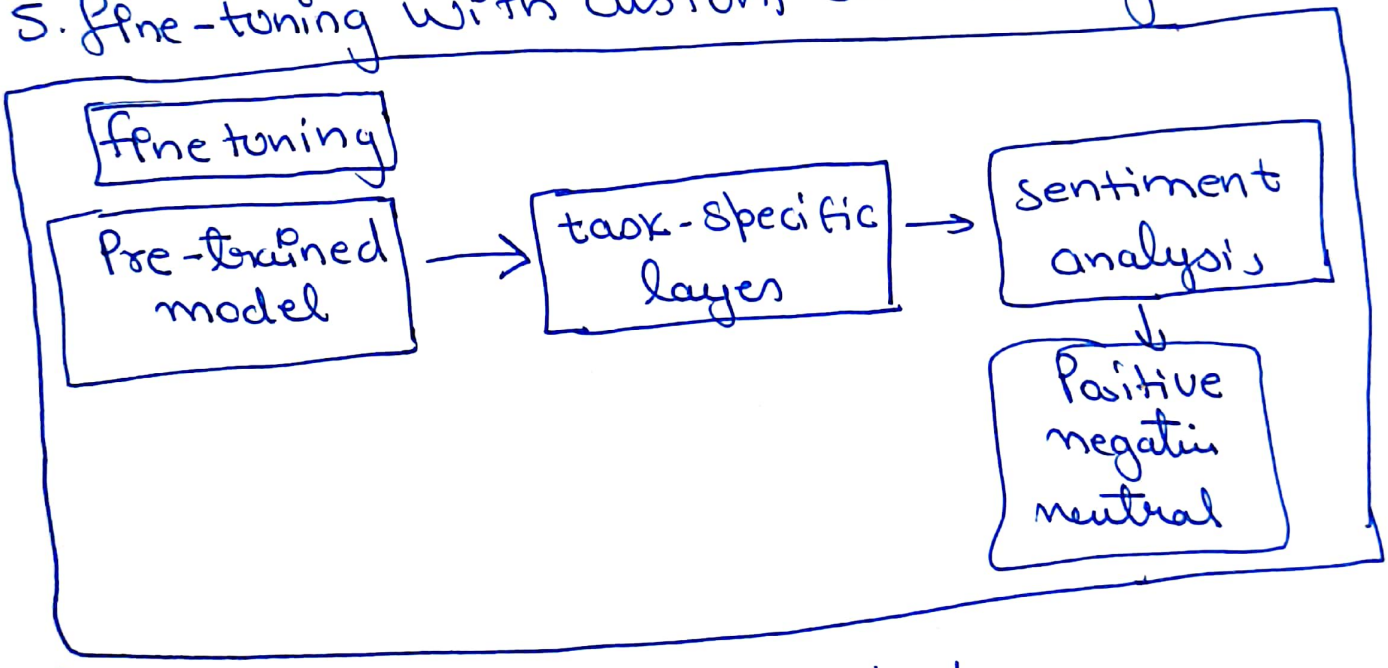


Step By Step implementation

1. import Library
2. Preparing Dataset
3. Load dataset
4. Pytorch Dataset (Preprocessing Data) and Data loader.

> attention mask – something pass to the model so that we can mark out the padded token so Model don't pay attention

5. fine-tuning with custom classifier layer.



7. Understanding pooled-output
   - aggregate representation
   - Derived from [CLS] token

8. Inspect DistilBERT

9. fine tuning

(10) Evaluation

(11) freezing Base model

(12) using huggingface Transformers.

About fine-tuned_model

1. Config.json :-

Work - model ka architecture aur setting store krta hai.

Eg - how many layer, hidden size etc

Tell - yai model kobatati hai uska structur kya hai

2. Pytorch_model.bin :-

Work - ye actual model weights hota hai (mind of AI)

Eg - Store history

- Trained model ka result hai, prediction is k through hoti hai.

3. tokenizer_config.json/ vocab.json/merges.txt

Work - model ko text smjhane layak format mai convert krta hai.

- convert words to numbes by tokenizer

→ Presentation Tip :- Jab user input deta hai, tokenizer use model ke language me translati karta hai.

4. training_args.bin

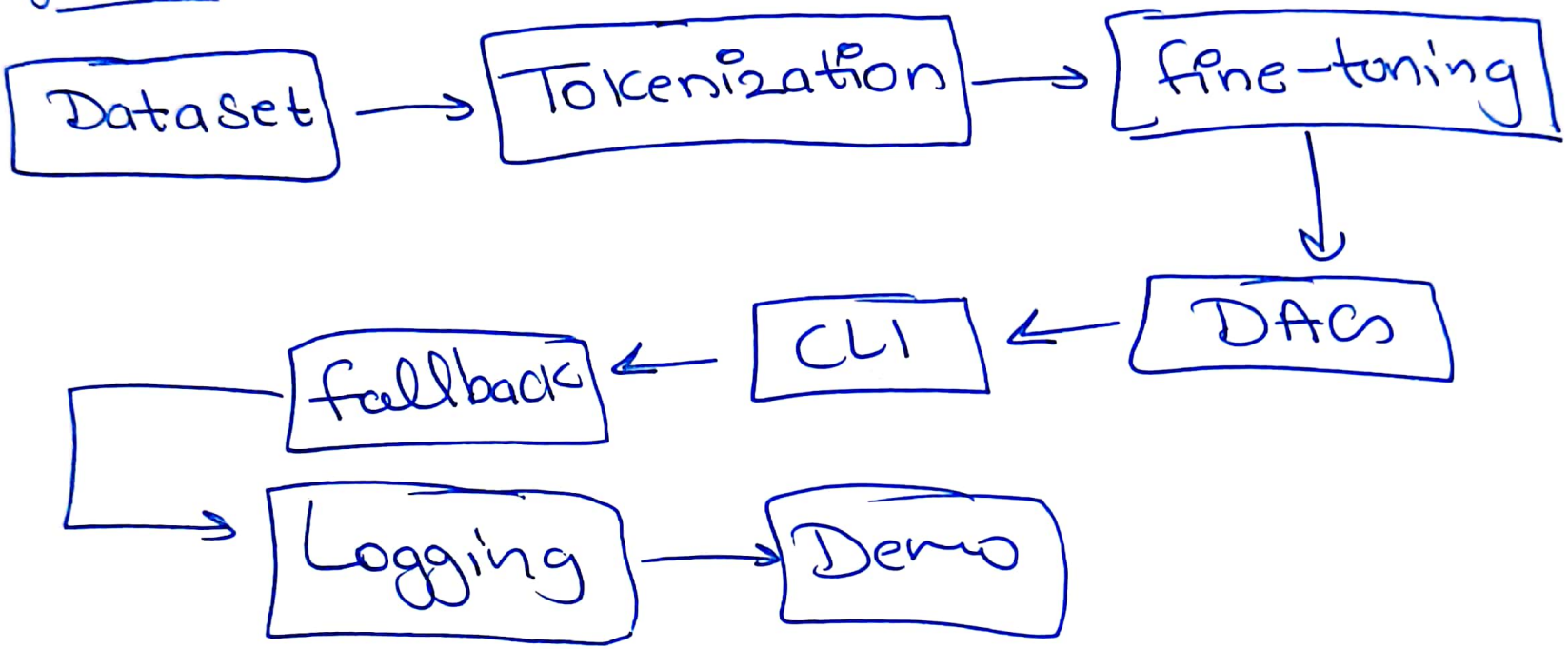
- work - fine tunning ke tym jo setting use kr gayi thi use store krta hai.

5) special_tokens_map.json & added_tokens.json

Work - if we add extra tokens so file store its reference.

Presentation - if any special symbol giv to model, it memories it.

Flow



Command

first of all

1. python -m venv venv
2. pip install -r requirements.txt
3. pip install main.py

① dag_workflow.py

↳ py run_demo.py

your input : negative | positive (confidence give) %

② pymain.py

↳ The movie was good but it didn't do well for me.

o/p (negative)

↙ fallback

→ Not good but not great either.

o/p (negative)

→ classify meh

your input : skip

→ The movie was great but people didn't make hit at that time

↓ clarification ask?

your input: positive

→ batch

Enter text : The movie was good

Enter text : The movie didnt go well for me

Enter text : ok ish movie

Enter : done

Stats : — give stats also

workflow :

quit !

first of all
① ~~python -m venv venv~~
② ~~pip install -r requir.txt~~
③ .

!unzip -q self-healing-project.zip

!pip install -r requirement.txt
!pip uninstal -y peft

imp

download & train model in Collab takemore fy — after train → load in fintune-model folder.

Scanned with OKEN Scanner

Resource for Project

Youtube Video (By —) : Donato Capitella.

① Ek practical hands on walkthrough hai jisme DistilBERT to sentiment analysis ke liye tune kiya gaya hai.

learn — dataset load krna,
model train krna,
evaluation.

Perfect for — self healing classification pipeline model.

② (By :- Krish Naik)

— langgraph Getting Started with Langgraph.

↳ gen into to langgraph
↳ How to create simple work flow
↳ How to define nodes
↳ Stateful execution kaise hoti hai

Help in — Inference Node
— Confidence Check Node
— fallback Node
— and hlp in implementation

③ (By — AI Tech News)

Master LLM fine-Tuning: LORA & QLORA Explanation

— Help in to tune fine model like DistilBERT

- Strong for model-fine-tuning with low resource
-

(4) fine tuning DistilBERT for intent Detection
(By: AI with NOOR)

Cover Data prep, tokenization, training evaluation

(5) Langhgraph train for Explore diff things
By (Harishveel AI)

x _____ ∝ _____
Documentation

) Huggingface Transformer - model for fine Tunin

learn - • How to laad DistilBERT
• How to tokenize and prepare datase
• fine tuning using trainer API
• Inference on new example.

- And
One And Only
"Chat-gpt"