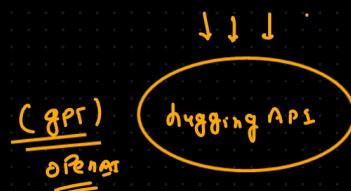


NLP

- ① RNN
- ② LSTM
- ③ GRU
- ④ encoder & Decoder
- ⑤ Attention
- ⑥ transformer
- ⑦ GPT & BERT (Language modeling) ULMFiT
- Projected { ① - BERT ② Google Pegasus }



BERT, GPT, ULMFiT

Project

Transformer

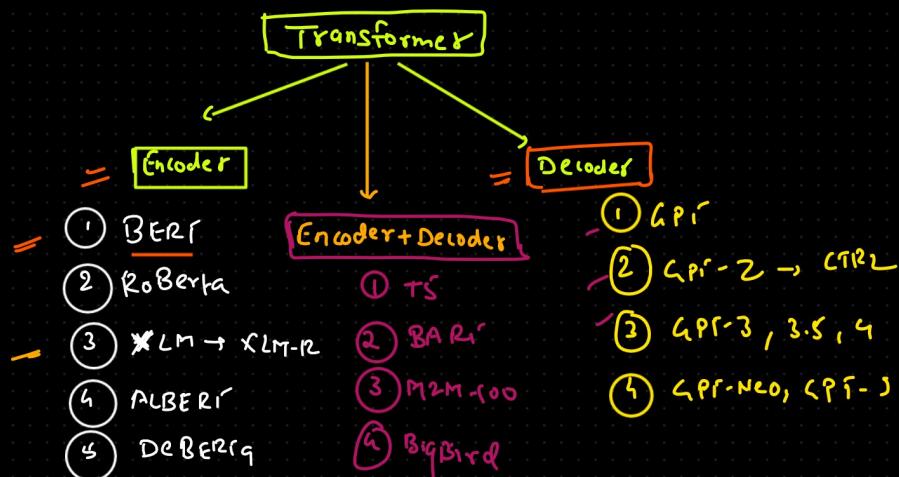
{ ① Encoder
② Decoder }

Attention all your need

- ① RNN
- ② LSTM
- ③ GRU

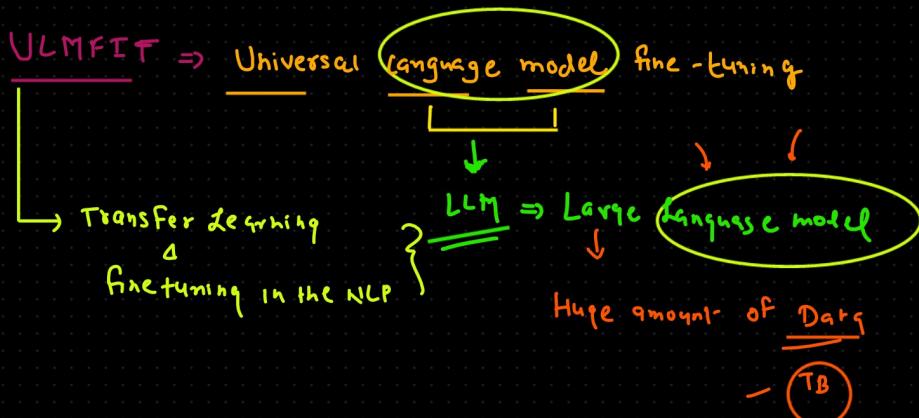
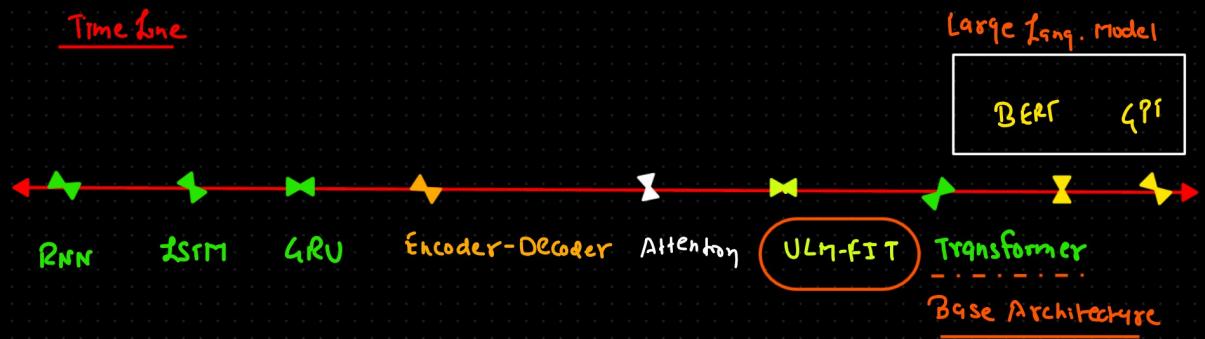
{ Encoder & Decoder
with Attention }

- Transformer
E4D ⇒ Self attention



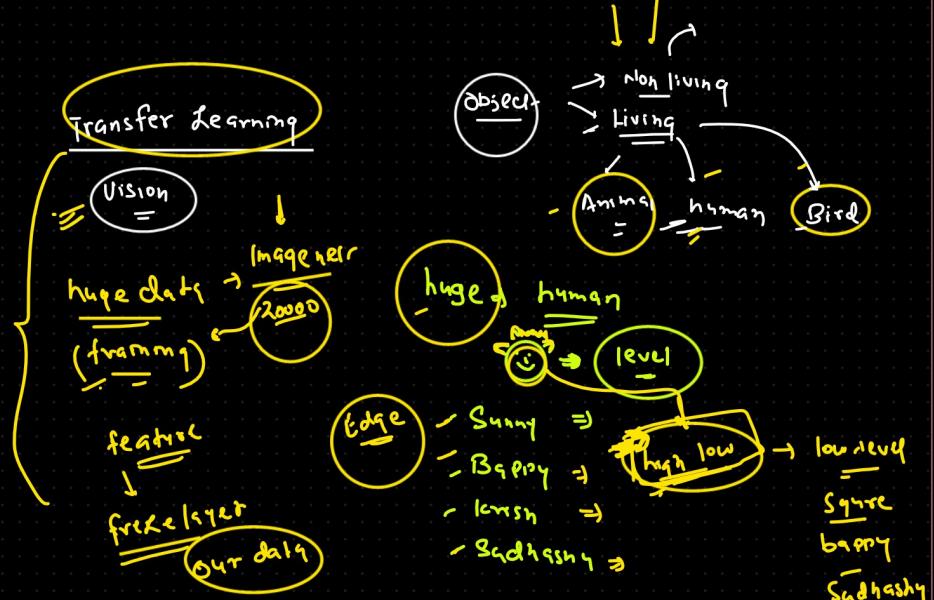
(6) ELECTRA

(5) Megatron



Computer Vision

- 1 Image classification
- 2 obj. Detection
- 3 Segmentation
- 4 OCR
- 5 tracking



NLP \Rightarrow Diversity

- 1 Sentiment Analysis
- 2 NER
- 3 Text generation

Common

finetuning
transfer learning

ULM-FiT \Rightarrow finetuning
transfer learning

Language modelling \Rightarrow Understanding the Language

Big corpora \Rightarrow Next word Prediction

BERT (NSP, MLM) =

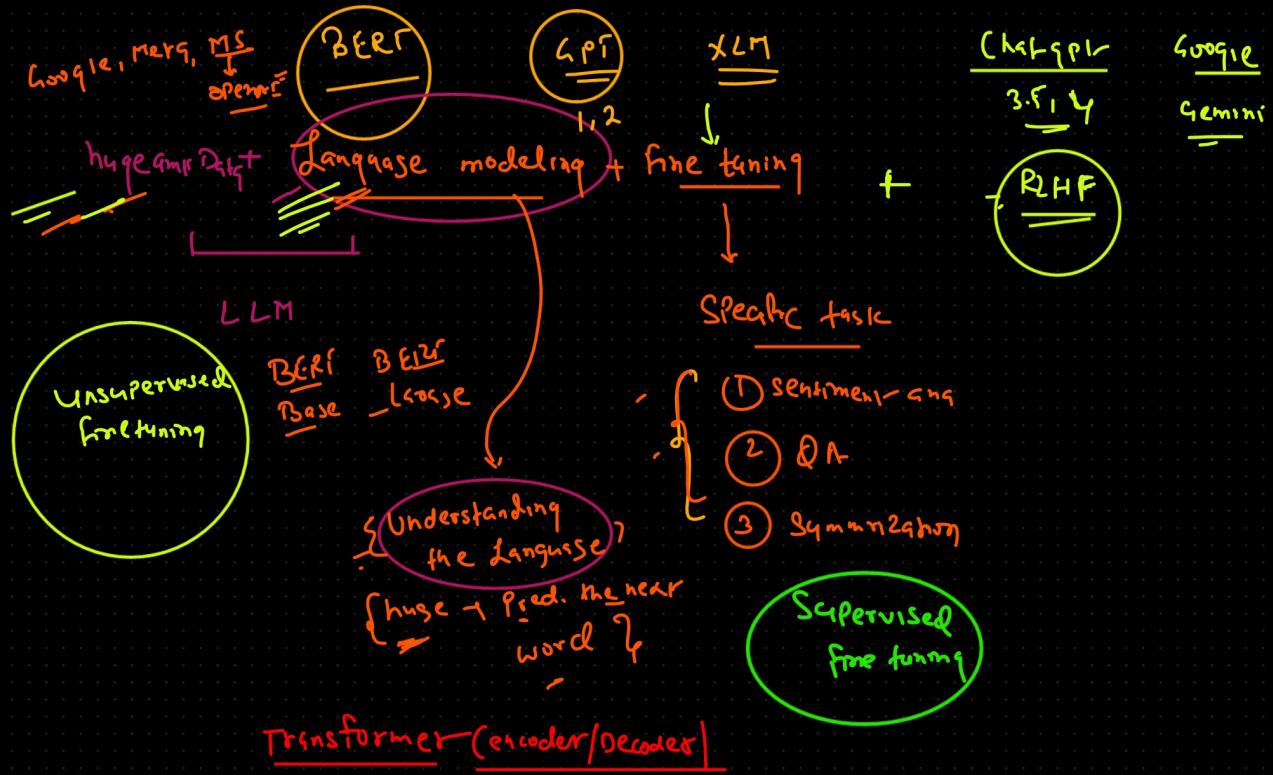
Model of Language

Tesla, Inc. (/tɛslə/ TESS-lə or /tɛzla/ TEZ-lə[a]) is an American multinational automotive and clean energy company headquartered in Austin, Texas, which designs and manufactures electric vehicles (cars and trucks), stationary battery energy storage devices from home to grid-scale, solar panels and solar shingles, and related products and services. Its subsidiary Tesla Energy develops and is a major installer of photovoltaic systems in the United States and is one of the largest global suppliers of battery energy storage systems with 6.5 gigawatt-hours (GWh) installed in 2022.

Tesla is one of the world's most valuable companies and, as of 2023, is the world's most valuable automaker. In 2022, the company led the battery electric vehicle market, with 18% share.

Tesla was incorporated in July 2003 by Martin Eberhard and Marc Tarpenning as Tesla Motors. The company's name is a tribute to inventor and electrical engineer Nikola Tesla. In February 2004, via a \$6.5 million investment, Elon Musk became the company's largest shareholder. He became CEO in 2008. Tesla's announced mission is to create products which help "accelerate the world's transition to sustainable energy."

The company began production of its first car model, the Roadster sports car, in 2008. This was followed by the Model S sedan in 2012, the Model X SUV in 2015, the Model 3 sedan in 2017, the Model Y crossover in 2020, the Tesla Semi truck in 2022 and the Cybertruck light-duty pickup truck in 2023.[7] The Model 3 is the all-time bestselling plug-in electric car worldwide, and in June 2021 became the first electric car to sell 1 million units globally.[8]



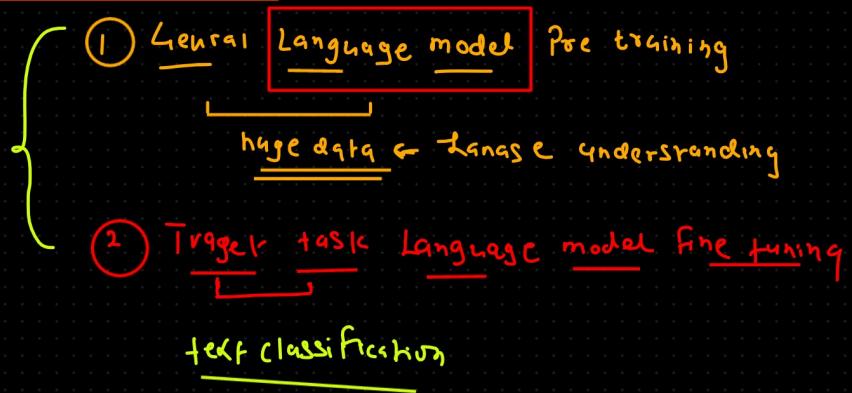
ULMFiT → Transfer Learning & fine tuning 2018

text classification

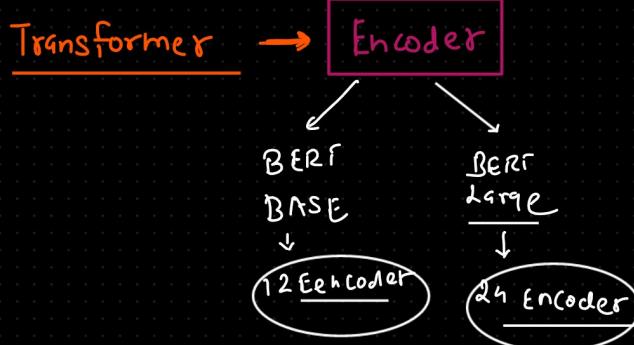
Model Architecture

- 1 RNN
- 2 LSTM

Fine tuning Methodology



BERT ⇒ ① Model

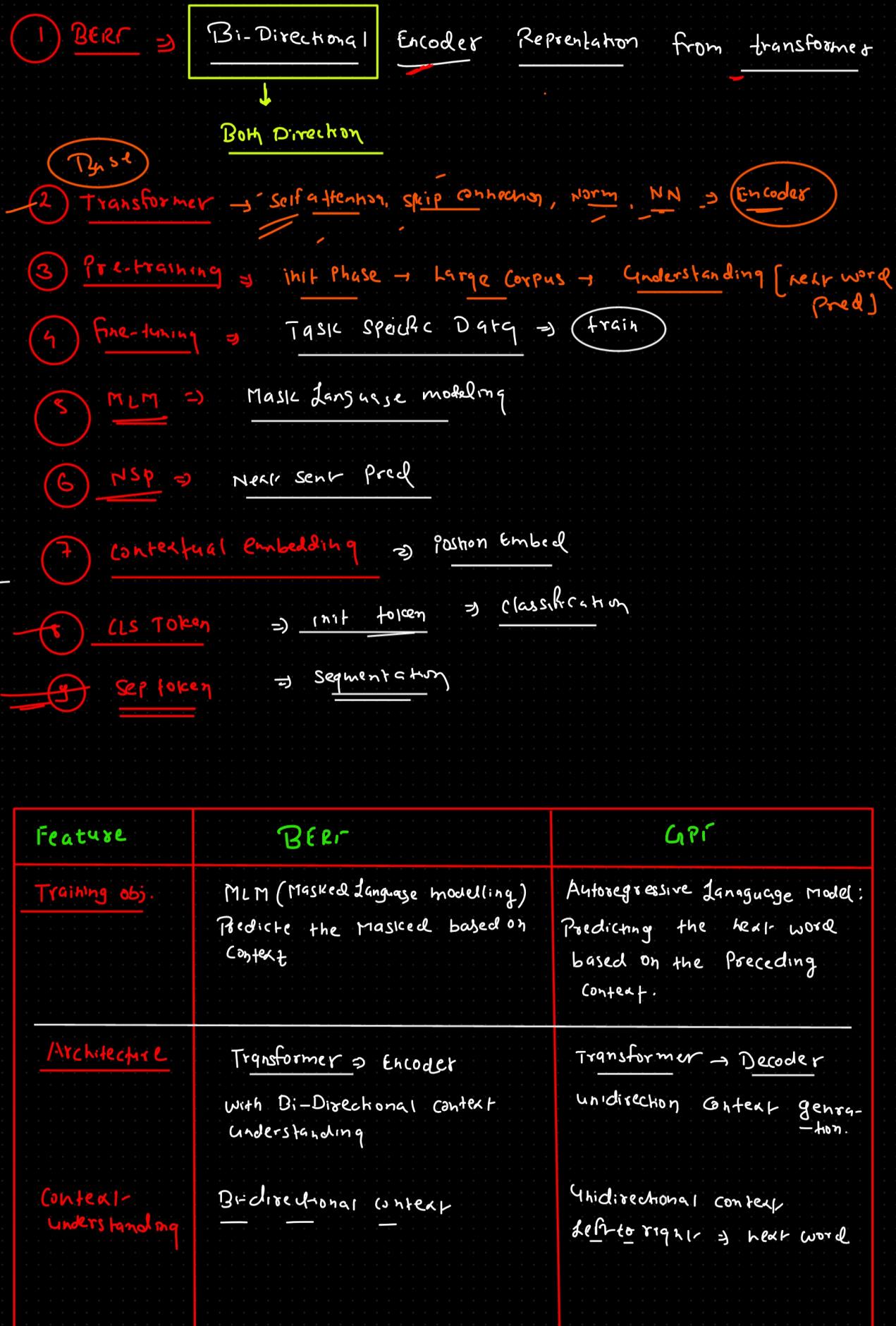


② Fine tuning methodology

① Language modeling ⇒ Pre-training ⇒ {Predicting the next word in sentence}

↓
Understanding of the language

② target - task ⇒ Sentiment classification



Usecase

text classification

NER

QA

→ Powerful

= Pre-training

{ Huge amr }

TEXT generation
Story completion
Code generation

— huge variety of Data \Rightarrow 175B

finetuning

{ Commonly finetuned

for specific task}

it can be fine-tuned

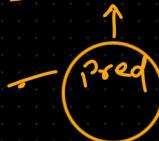
Part

generation

Token masking

Uses mask lang. model

- masking of the token



Does not perform token masking
(Auto-regressive)

Model Size

BERT BASE

BERT Large

GPT-1
GPT-2
GPT-3, 3.5, 3.5+4860
GPT-4
GPT-4V

