Prompt Engineering

Class for ARC 101
Prepared by Kaveh Karimadini

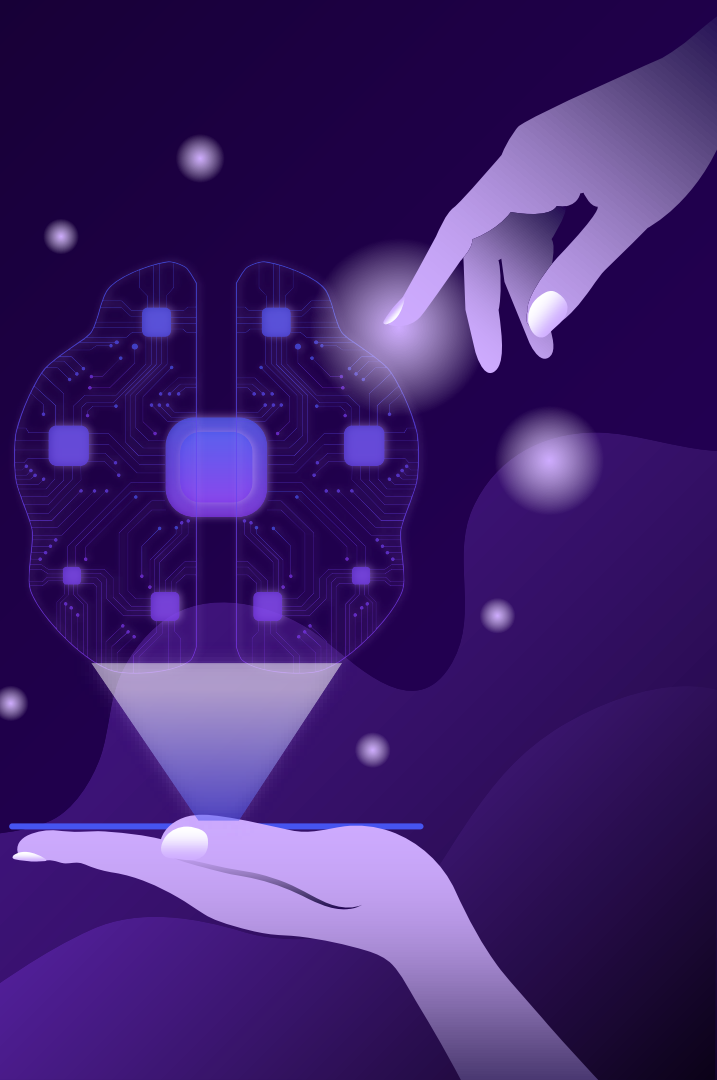
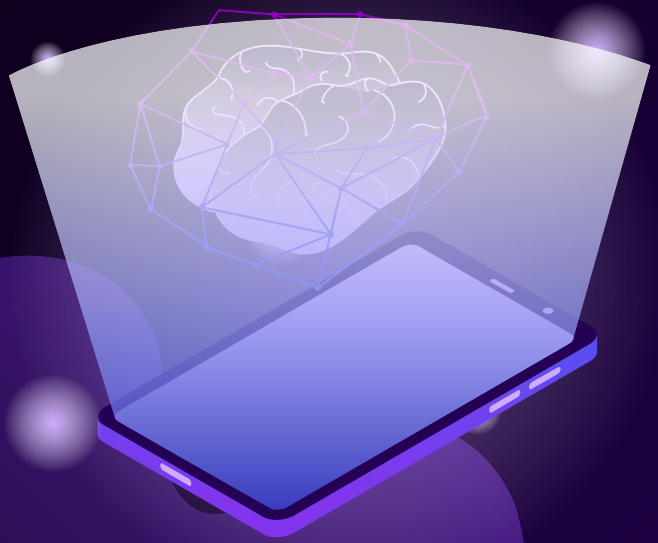


Table of contents_



01

Who am I?

Introduction_

Mid-level Data Scientist

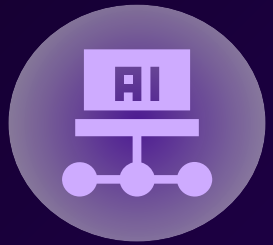
3 years: junior data scientist -> Start-Up

2 years: Free Lancing All day

Skills Obtained

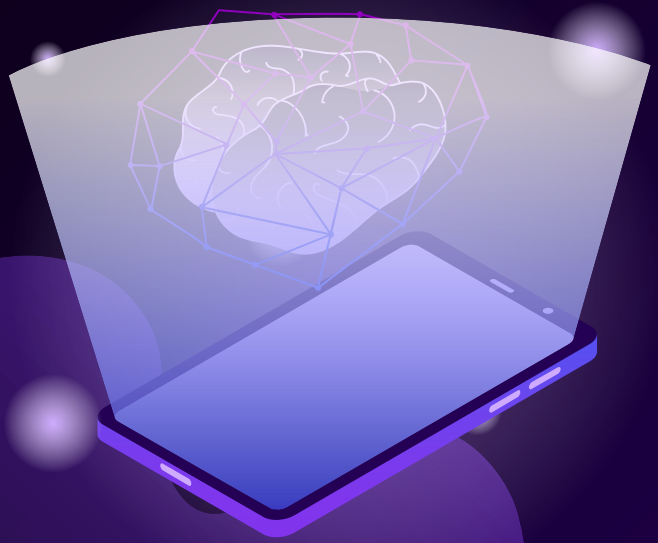
- ➔ deep learning with Pytorch
- ➔ Selenium with Xpath
- ➔ PowerBi
- ➔ Lots more.....

Main Project of the Day



Trend Analysis

➔Scraping LinkedIn & Twitter
➔Doing NLP task (NER) for Extracting Entities
➔Word Embedding with Word2Vec
➔Word Clustering with Word2Vec Input
➔Visualization using PowerBi



02

prompt styles in ChatGPT

Key notes

PURPOSE

guiding generative artificial intelligence (AI) to produce desired outputs by designing and refining prompts

Context

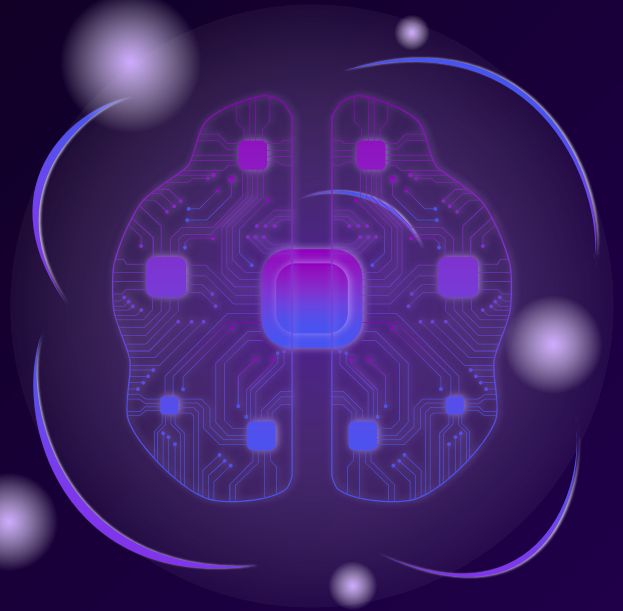
Three tips for providing context: introducing the topic, continuing the conversation, and clarifying parameters.

Specificity

Three tips for writing specific prompts: clear questions, detail-oriented requests, and examples and scenarios.

Example:

- Context:
  - "Task: Explain the process of photosynthesis."
  - “Context: Photosynthesis is a crucial process in our ecosystem, as it allows plants and other photosynthetic organisms to convert sunlight into chemical energy. Please provide a detailed explanation of the process, including the role of chlorophyll, the energy sources involved, and the products formed.”
- Specificity:
  - "Task: Write a Python function that takes a list of numbers as input and returns the sum of all the even numbers in the list. Please provide the function signature, input parameters, expected output, and a brief example of how the function should be used."



6

Number of Prompt Styles in Lecture

Six Styles

Direct Questions

when seeking **factual information, explanations, or opinions on a specific topic**. Ensure that the question is clear and unambiguous.

Conversational Prompts

Include impactful stories, statistics, or facts that will help your audience remember your message after the presentation

Instructional Prompts

They work well when you want Chat GPT to follow a specific process or provide step-by-step instructions.

Comparative Prompts

Present multiple options or scenarios to ChatGPT, prompting it to compare, contrast, offer opinions, and analyze the pros and cons to provide insights and preferences on the given alternatives.

Scenario-Based Prompts

Encourage ChatGPT's creative thinking by presenting a hypothetical scenario and seek imaginative responses or creative suggestions based on the given context.

Fill-in-the-Blank

Engage ChatGPT interactively by utilizing fill-in-the-blank prompts, fostering its completion of partially provided sentences or phrases in a context that encourages creative writing, completion tasks, or collaborative storytelling.

Six Examples

Direct Questions

"What are the main causes of climate change?"

Instructional Prompts

"Please explain the steps involved in setting up a basic website using HTML and CSS."

Scenario-Based Prompts

"You are a time traveler from the future. Describe a world-altering invention that will shape the future of humanity."

Conversational Prompts

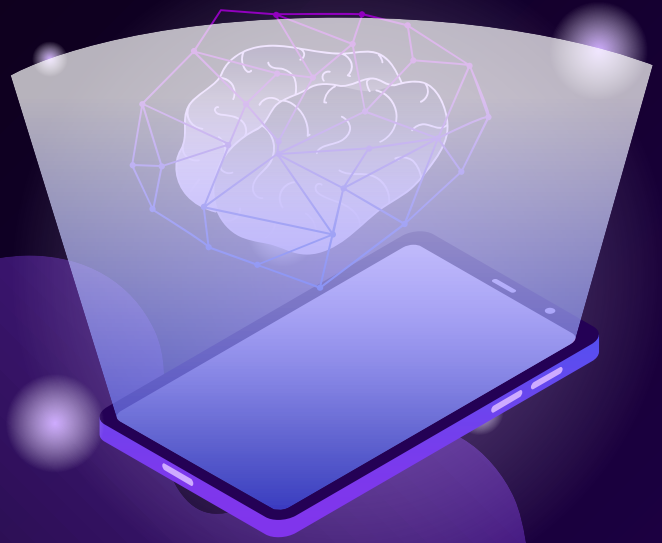
"Based on what we discussed earlier about renewable energy, what are the potential challenges in implementing widespread solar power adoption?"

Comparative Prompts

"Compare the advantages and disadvantages of traditional classroom learning versus online education."

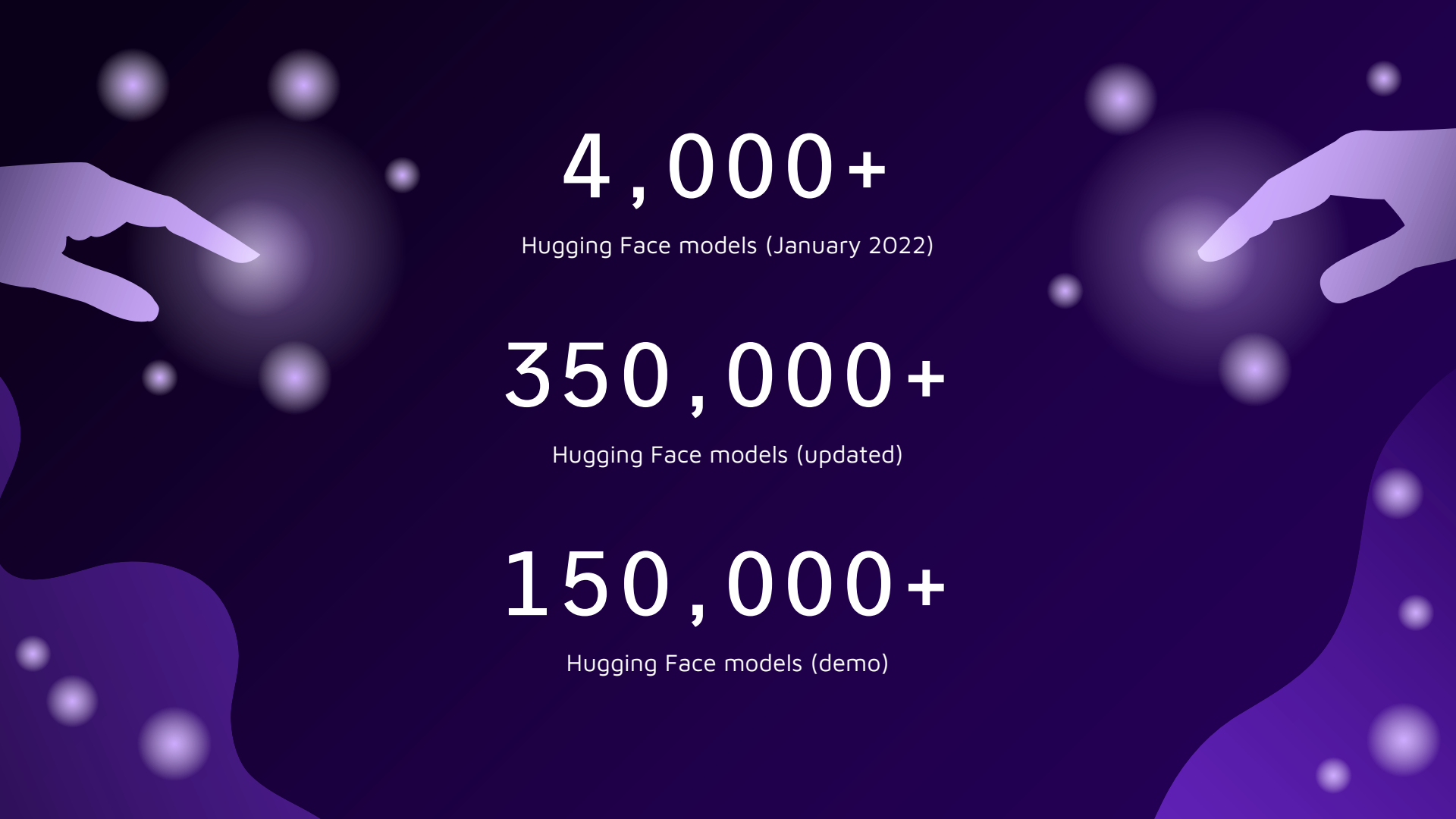
Fill-in-the-Blank

"The key to success is _____."

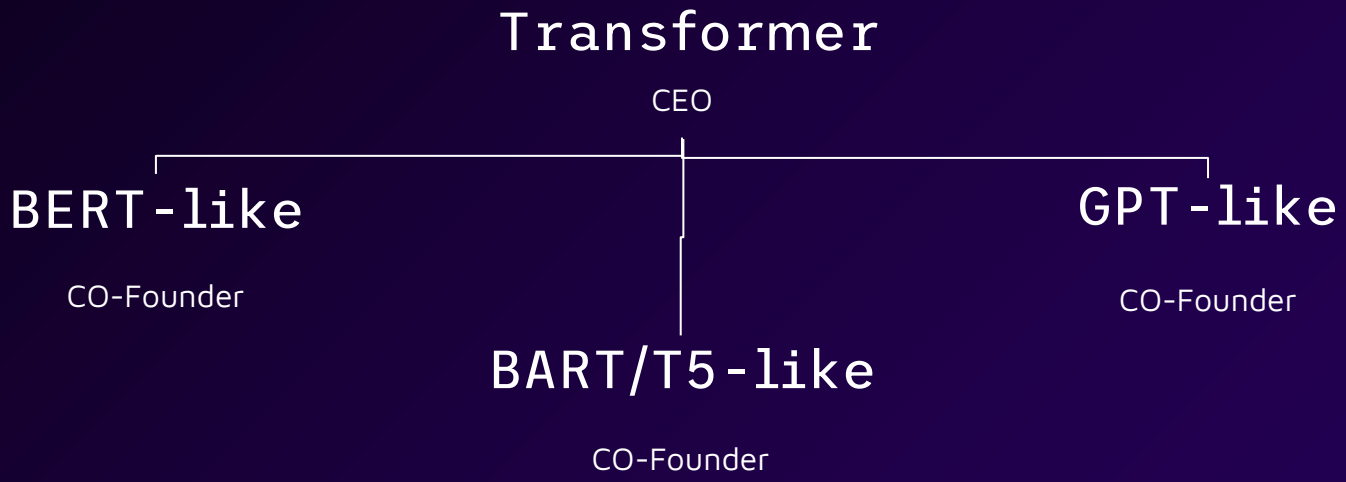


03

LLM (Large language models)


4,000+
Hugging Face models (January 2022)
350,000+
Hugging Face models (updated)
150,000+
Hugging Face models (demo)

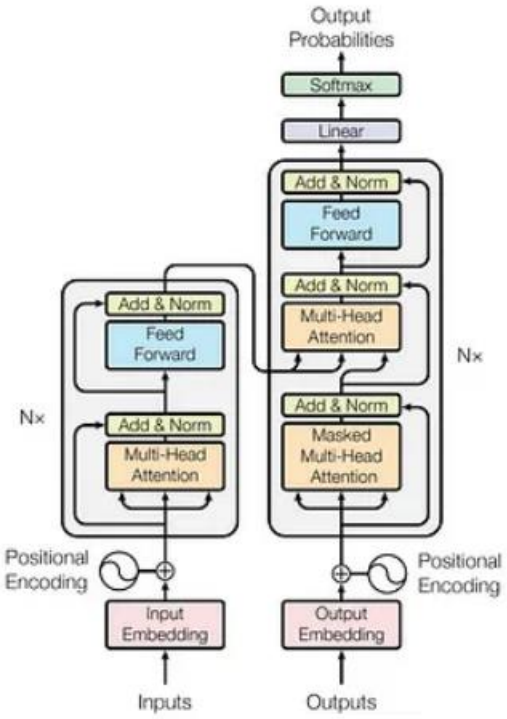
LLM Tree Map


Transformer
CEO
BERT-like
CO-Founder
BART/T5-like
CO-Founder
GPT-like
CO-Founder

BERT VS GPT

BERT

Encoder

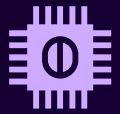


GPT

Decoder

Compare All 3

Model	Examples	Tasks
Encoder	ALBERT, BERT, DistilBERT, ELECTRA, RoBERTa	Sentence classification, named entity recognition, extractive question answering
Decoder	CTRL, GPT, GPT-2, Transformer XL	Text generation
Encoder-decoder	BART, T5, Marian, mBART	Summarization, translation, generative question answering

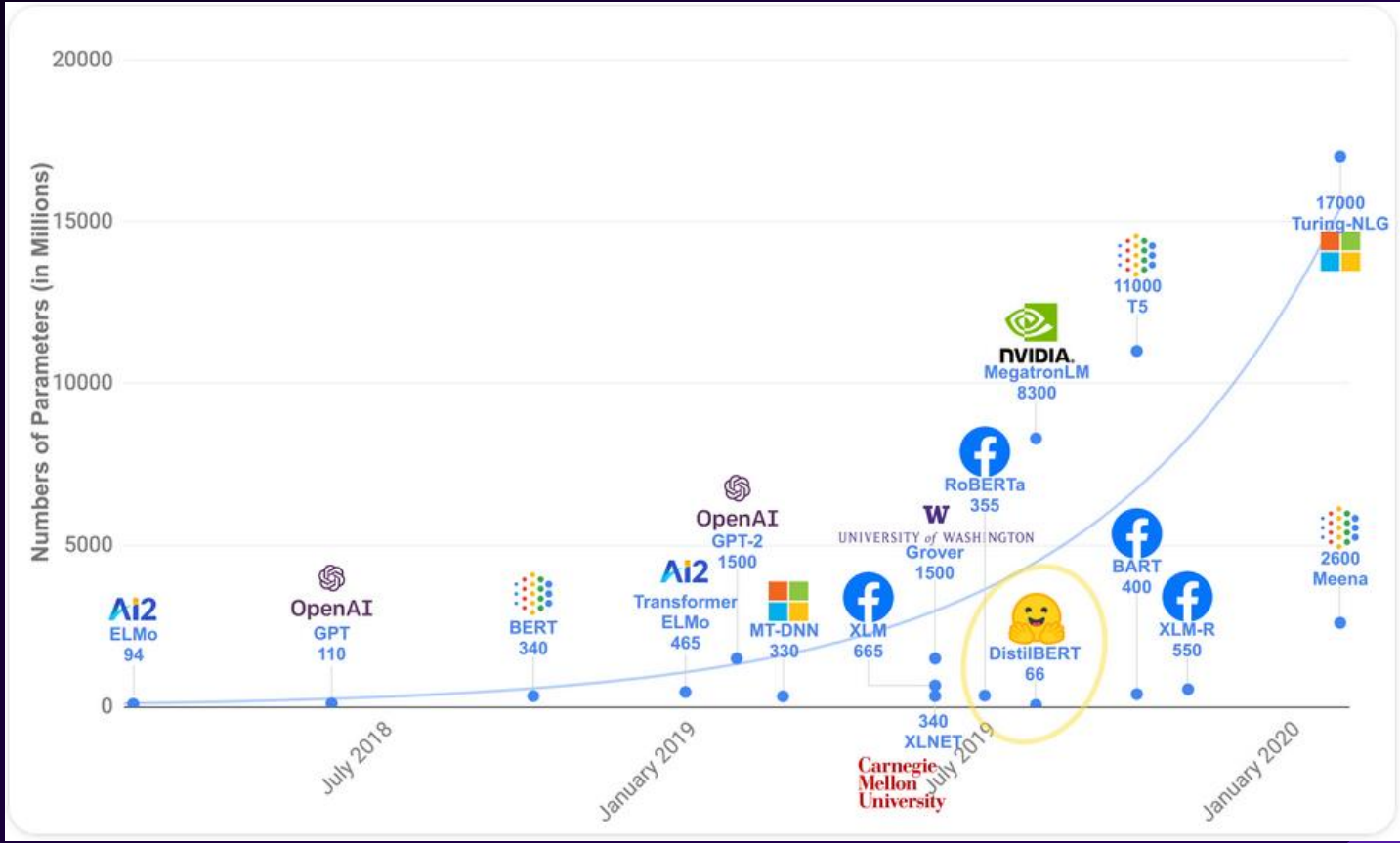


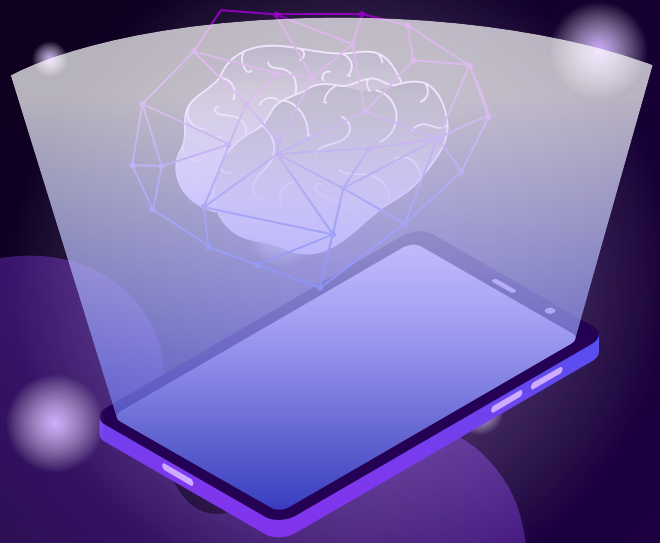
The Encoder-decoder-style model's output **heavily** relies on the input

Google’s 2017 Attention is All You Need

The Original 

A little Evolution





04

Hugging Face🤗

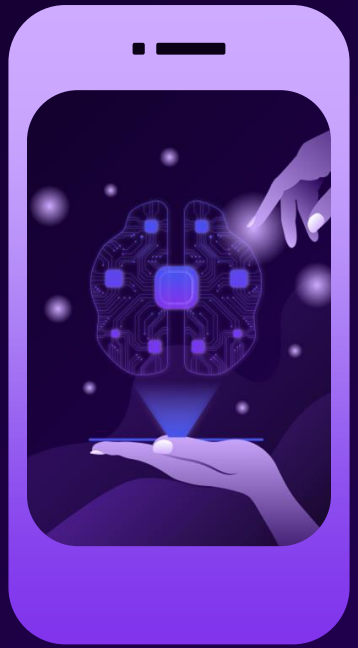
Why Hugging-face?

Tranfer Learning

Pre-trained models, such as BERT and GPT, that can be fine-tuned for specific tasks

Simplicity

A pipeline architecture that simplifies the process of building and fine-tuning models



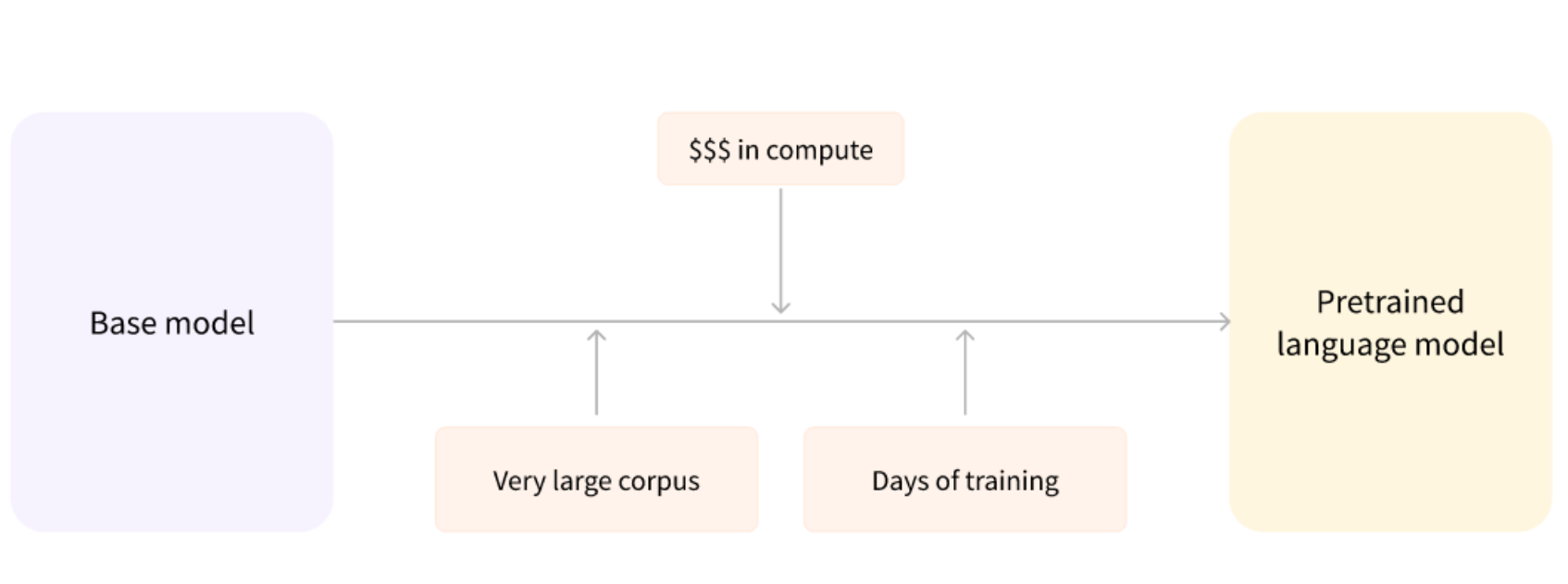
Pre-Processing

Auto tokenizer, which is a tool that converts text into a sequence of tokens

Large Community

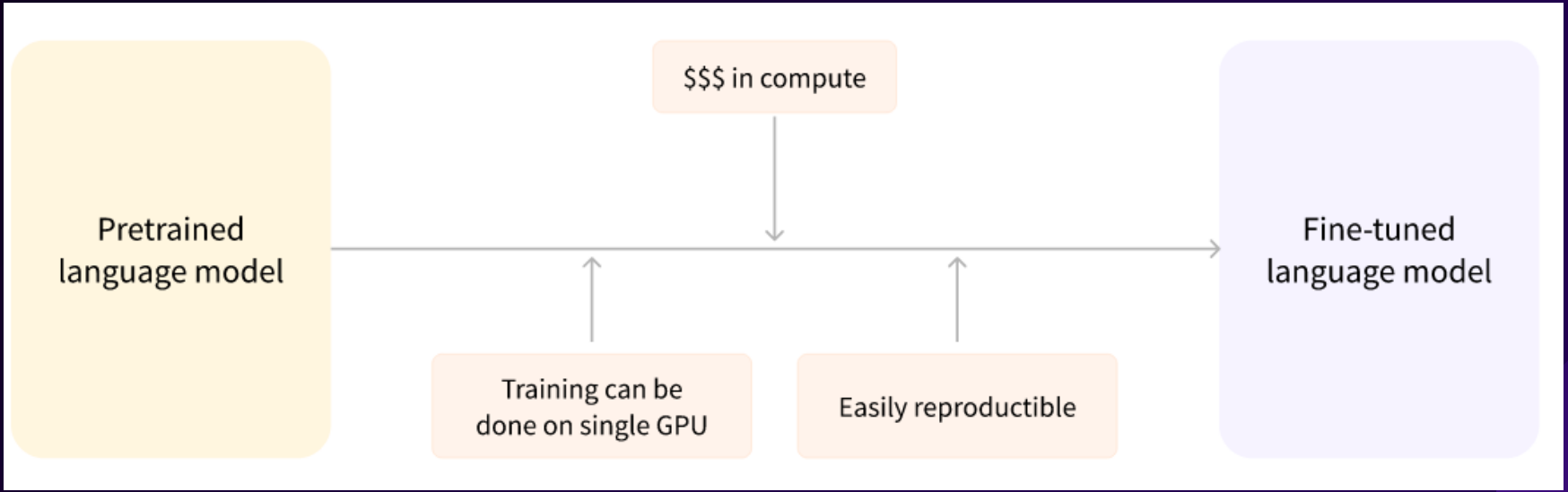
A community platform where researchers and developers can share their models, datasets, and applications

Pretraining



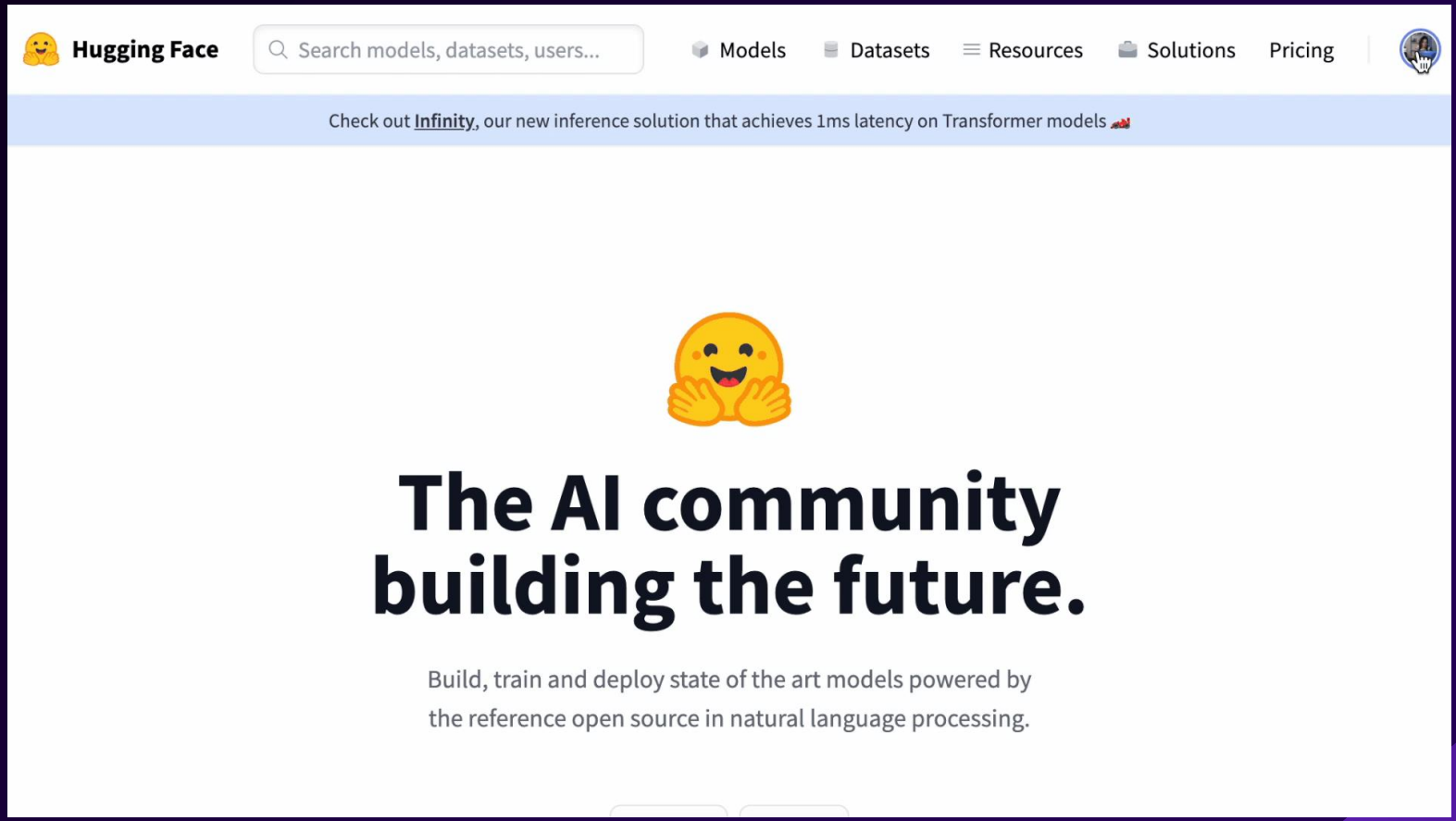
Pretraining is the act of training a model from scratch

Transfer Learning



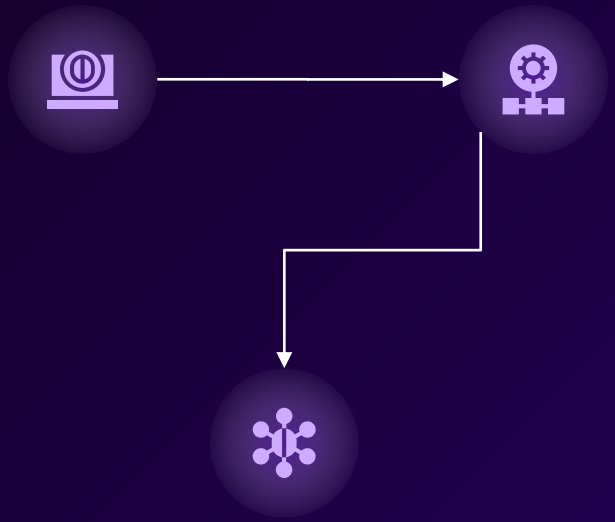
The fine-tuning will only require a limited amount of data

Hugging-Face Git-Hub



Time For some Hands-On

Lets see the Hugging-Face Website



Lets do some user-friendly codin experience

Surprise **Gift** for sticking around

Thanks!

Do you have any questions?

kavehkarimoodini@gmail.com

https://t.me/Kaveh_K22

https://github.com/kavehkarimadini