# Intro Hugging Face and Python

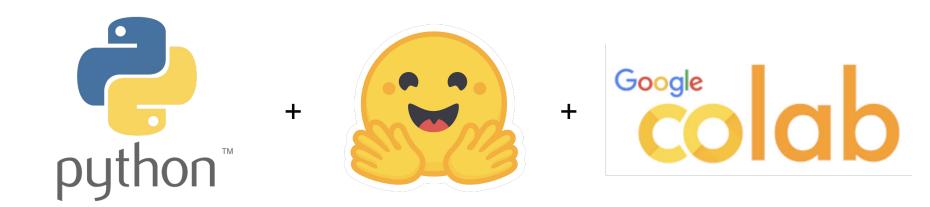
Dirk Wulff & Zak Hussain



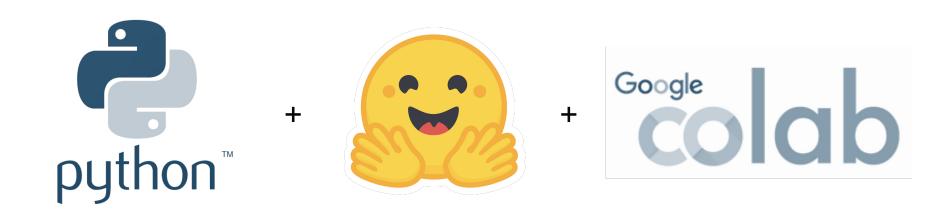




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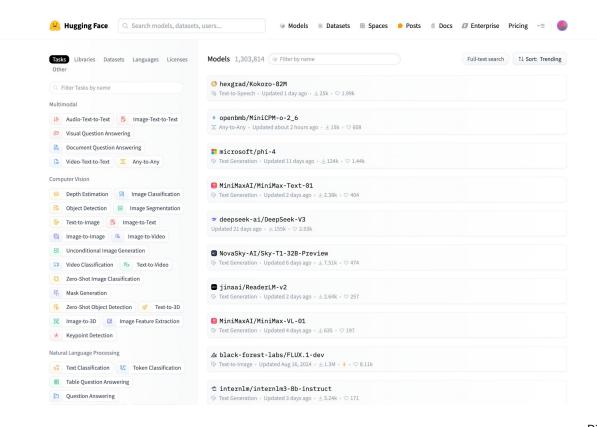
#### Traditional language modelling pipeline:

- Find out the model architecture
- Implement the model architecture in code with deep learning libraries (e.g PyTorch/Tensorflow).
- 3. Load the pretrained weights (if available) from a server.
- 4. Process the inputs (using the correct tokenizer for the model)
- 5. Implement data loaders
- 6. Define a loss function
- Stick a task-specific "head" on the model

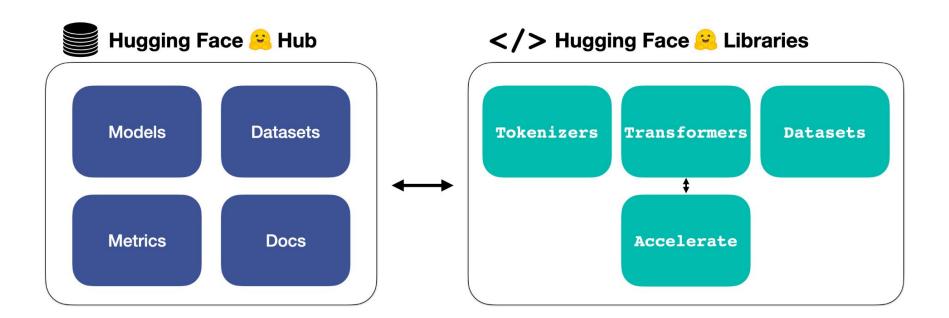
#### HUGGING FACE PIPELINES

```
Import pipeline
                    from transformers import pipeline
       Initialise
                    pipe = pipeline('text-generation', model='gpt2')
       pipeline
                    prompt = """
                    Once upon a time in a land far far away, there was a young prince named
   Load model
                    John. He was known for his bravery and courage. One day, he decided to go on
          input
                    an adventure to explore the unknown lands.
                    11 11 11
    Feed input
                    output = pipe(prompt, max length=100)
     the model
                    print(output)
```

#### HUGGING FACE



### THE HUGGING FACE ECOSYSTEM



#### HUGGING FACE DOCUMENTATION

#### Documentations

Q Search across all docs

Hub

Host Git-based models, datasets and Spaces on the Hugging Face Hub.

Hub Python Library

Client library for the HF Hub: manage repositories from your Python runtime.

Inference API

Use more than 50k models through our public inference API, with scalability built-in.

Transformers

State-of-the-art ML for Pytorch, TensorFlow, and JAX.

Datasets

Access and share datasets for computer vision, audio, and NLP tasks.

Huggingface.js

A collection of JS libraries to interact with Hugging Face, with TS types included.

Inference Endpoints

Easily deploy your model to production on dedicated, fully managed infrastructure.

Diffusers

State-of-the-art diffusion models for image and audio generation in PyTorch.

Gradio

Build machine learning demos and other web apps, in just a few lines of Python.

Transformers.js

Community library to run pretrained models from Transformers in your browser.

PEFT

Parameter efficient finetuning methods for large models

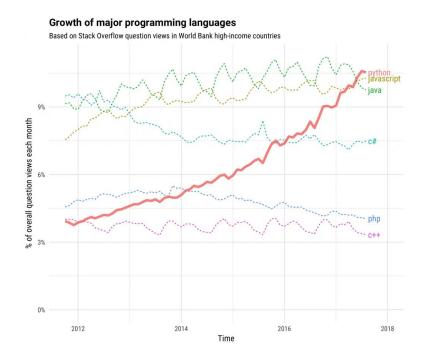
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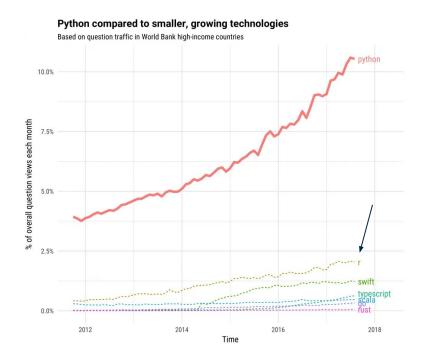


- A high-level programming language known for its simplicity and readability.
- Used in various domains such as web development, data analysis, artificial intelligence, and scientific computing.





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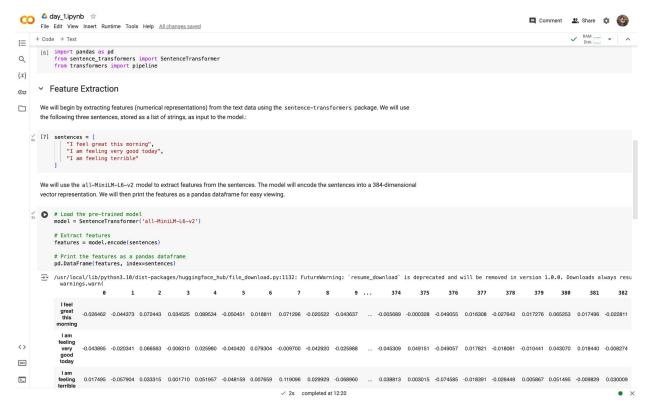


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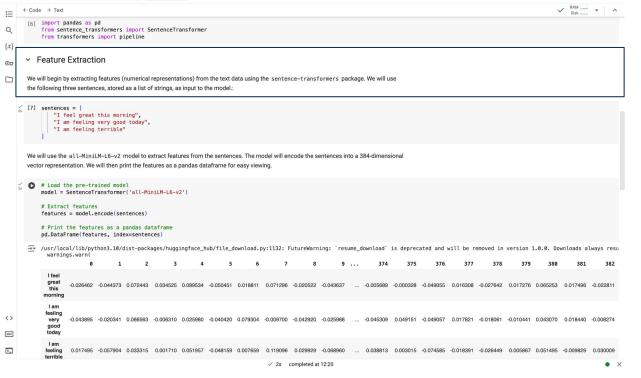




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#### 1. Markdown





#### 1. Markdown

2. Code

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+ Code + Text

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#### [6] import pandas as pd Q from sentence\_transformers import SentenceTransformer from transformers import pipeline Feature Extraction We will begin by extracting features (numerical representations) from the text data using the sentence-transformers package. We will use the following three sentences, stored as a list of strings, as input to the model.: [7] sentences = [ "I feel great this morning", "I am feeling very good today", "I am feeling terrible" We will use the all-MiniLM-L6-v2 model to extract features from the sentences. The model will encode the sentences into a 384-dimensional vector representation. We will then print the features as a pandas dataframe for easy viewing. # Load the pre-trained model model = SentenceTransformer('all-MiniLM-L6-v2') # Extract features features = model.encode(sentences) # Print the features as a pandas dataframe pd.DataFrame(features, index=sentences) warnings.warn( 375 377 382 379 I feel great -0.026462 -0.044373 0.072443 0.034525 0.089534 -0.050451 0.018811 0.071296 -0.020522 -0.043637 ... -0.005689 -0.000328 -0.049055 0.016308 -0.027642 0.017276 0.065253 0.017496 -0.022811this morning I am feeling <> very $-0.043895 \quad -0.020341 \quad 0.066563 \quad -0.006310 \quad 0.025980 \quad -0.040420 \quad 0.079304 \quad -0.009700 \quad -0.042920 \quad -0.025988 \qquad \dots \quad -0.045309 \quad 0.049151 \quad -0.049057 \quad 0.017821 \quad -0.018061 \quad -0.010441 \quad 0.043070 \quad 0.018440 \quad -0.008274 \quad -0.018410 \quad -0.0184$ good today >\_ $0.017495 \quad -0.057904 \quad 0.033315 \quad 0.001710 \quad 0.051957 \quad -0.048159 \quad 0.007659 \quad 0.119096 \quad 0.029929 \quad -0.068960 \quad \dots \quad 0.038813 \quad 0.003015 \quad -0.074585 \quad -0.018391 \quad -0.026449 \quad 0.005867 \quad 0.051495 \quad -0.009829 \quad 0.030009 \quad 0.0051495 \quad -0.0051495 \quad -0.00$ feeling terrible ✓ 2s completed at 12:20 ×



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feeling terrible

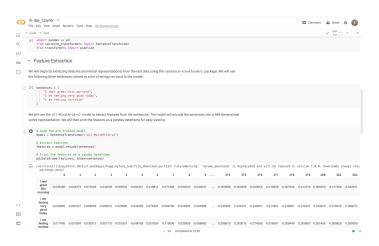
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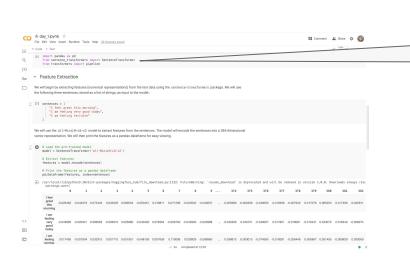
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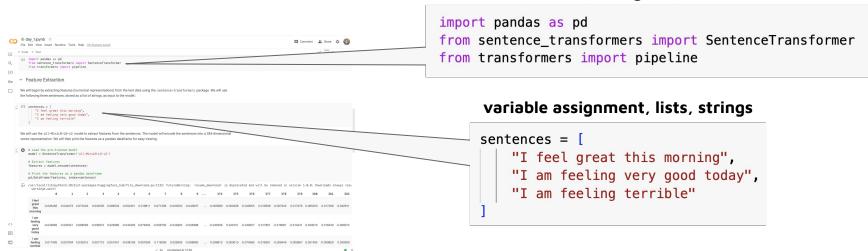
#### package imports



import pandas as pd
from sentence\_transformers import SentenceTransformer
from transformers import pipeline

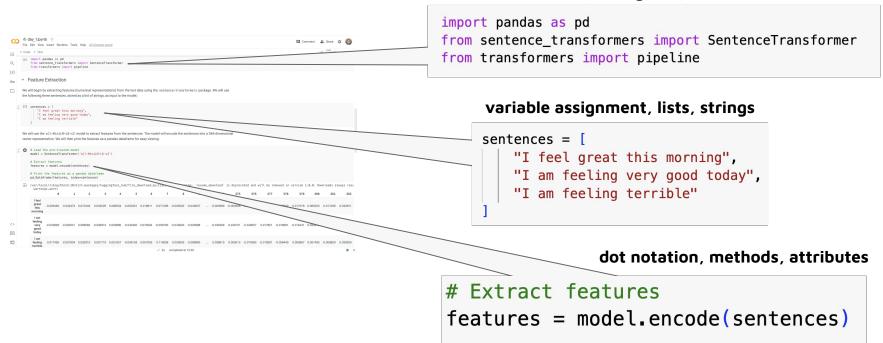


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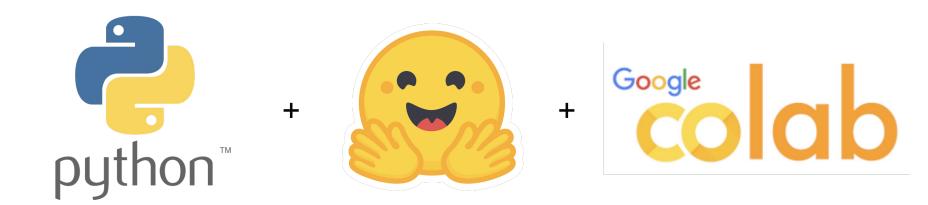




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package imports

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# Time to install our stack...







