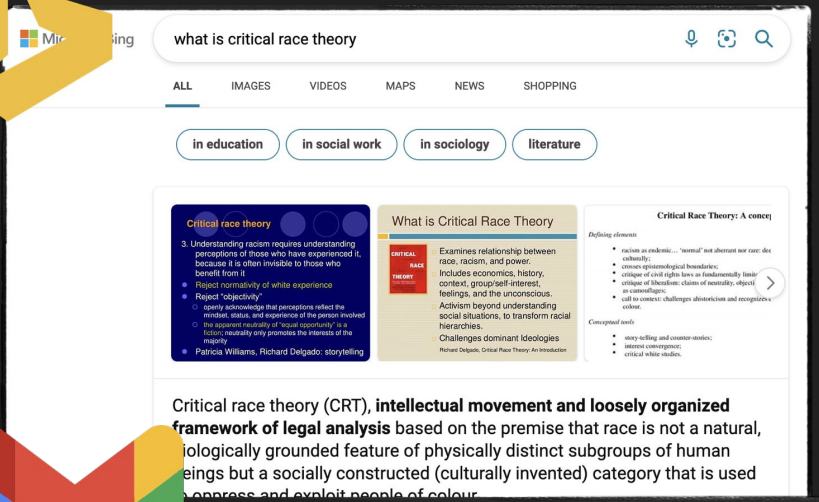
Building AI Applications in Minutes

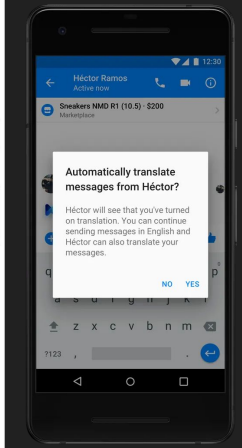
Rajiv Shah

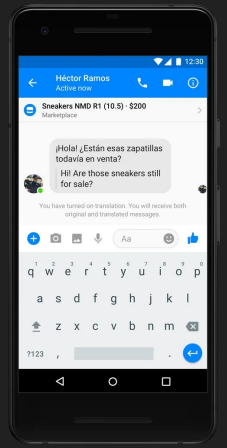
raj@hf.com
@rajistics

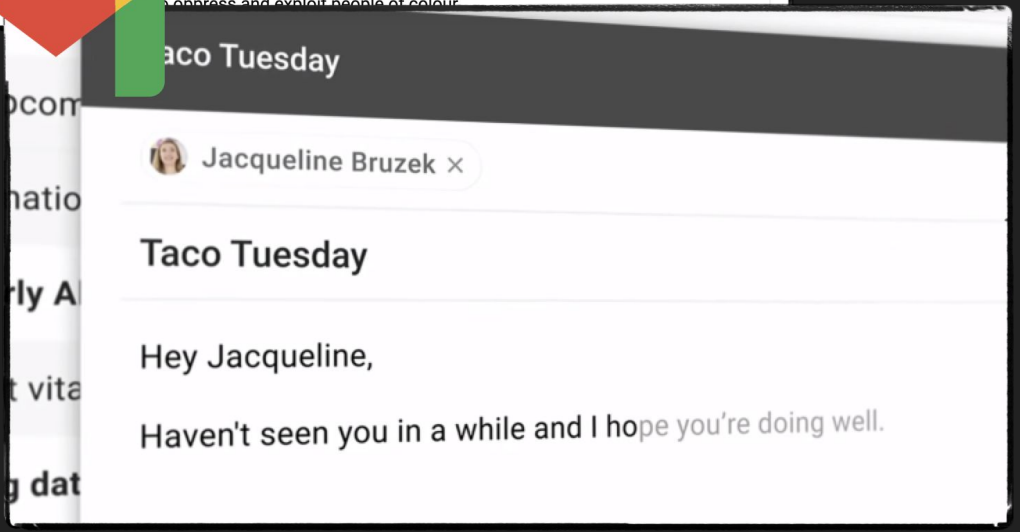
Colab Notebook: https://bit.ly/raj_food

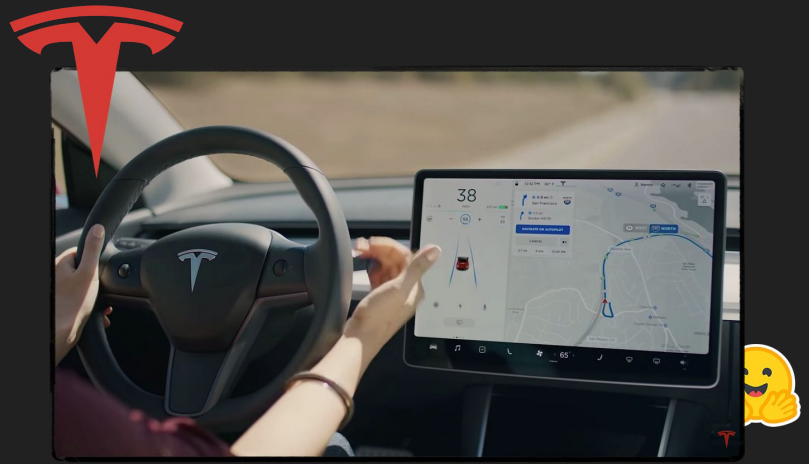

what is critical race theory
ALL
IMAGES
VIDEOS
MAPS
NEWS
SHOPPING
in education
in social work
in sociology
literature
Critical race theory
3. Understanding racism requires understanding perceptions of those who have experienced it, because it is often invisible to those who benefit from it
Reject normativity of white experience
Reject "objectivity"
openly acknowledge that perceptions reflect the mindset, status, and experience of the person involved
the apparent neutrality of "equal opportunity" is a fiction; neutrality only promotes the interests of the majority
Patricia Williams, Richard Delgado: storytelling
What is Critical Race Theory
CRITICAL RACE THEORY
Examines relationship between race, racism, and power.
Includes economics, history, context, group/self-interest, feelings, and the unconscious.
Activism beyond understanding social situations, to transform racial hierarchies.
Challenges dominant Ideologies
Richard Delgado, Critical Race Theory: An Introduction
Critical Race Theory: A concep
Defining elements
racism as endemic… 'normal' not aberrant nor rare; de culturally;
crosses epistemological boundaries;
critique of civil rights laws as fundamentally limit
critique of liberalism: claims of neutrality, objecti as camouflages;
call to context: challenges ahistoricism and recognizes colour.
Conceptual tools
story-telling and counter-stories;
interest convergence;
critical white studies.
Critical race theory (CRT), intellectual movement and loosely organized framework of legal analysis based on the premise that race is not a natural, biologically grounded feature of physically distinct subgroups of human beings but a socially constructed (culturally invented) category that is used to oppress and exploit people of colour.


Héctor Ramos
Active now
Sneakers (10.5) · $200
Marketplace
¡Hola! ¿Están esas zapatillas todavía en venta?
Translate to English


Héctor Ramos
Active now
Sneakers NMD R1 (10.5) · $200
Marketplace
Automatically translate messages from Héctor?
Héctor will see that you've turned on translation. You can continue sending messages in English and Héctor can also translate your messages.
NO
YES


Héctor Ramos
Active now
Sneakers NMD R1 (10.5) · $200
Marketplace
¡Hola! ¿Están esas zapatillas todavía en venta?
Hi! Are those sneakers still for sale?


aco Tuesday
Jacqueline Bruzek
Taco Tuesday
Hey Jacqueline,
Haven't seen you in a while and I hope you're doing well.


38

Anyone Can use these Technologies!

Let me show you how!!

Build AI App!

What kind of food is this image?

Translate the kind of food into Arabic

https://www.freepik.com/premium-photo/portrait-young-indian-woman-thinking-looking-up-confused-about-idea_3610570.htm

https://www.geeksforgeeks.org/how-to-become-data-scientist-a-complete-roadmap/

Data Scientist

Roadmap

Mathematics

- Linear Algebra
- Analytics Geometry
- Matrix
- Vector Calculus
- Optimization
- Regression
- Dimensionality Reduction
- Density Estimation
- Classification

Probability

- Discrete Distribution
  - *Binomial*
  - *Bernouli*
  - *Geometric etc*
- Continuos Distribution
  - *Uniform*
  - *Exponential*
  - *Gamma*
- Normal Distribution
- Introduction to Probability
- 1D Random Variable
- Function of One Random Variable
- Joint Probability Distribution

Statistics

- Introduction to Statistics
- Data Description
- Random Samples
- Sampling Distribution
- Parameter Estimation
- Hypotheses Testing
- ANOVA
- Reliability Engineering
- Stochastic Process
- Computer Simulation
- Design of Experiments
- Simple Linear Regression
- Correlation
- Multiple Regression
- Nonparametric Statistics
  - *Sign Test*
  - *The Wilcoxon Signed-Rank Test*
  - *The Wilcoxon Rank Sum Test*
  - *The Kruskal-Walls Test*
- Statistical Quality Control
- Basic of Graphs

Programming

Python

- Python Basics
  - *List*
  - *Set*
  - *Tuples*
  - *Dictionary*
  - *Function, etc.*
- NumPy
- Pandas
- Matplotlib/Seaborn, etc.

R

- R Basic
  - *Vector*
  - *List*
  - *Data Frame*
  - *Matrix*
  - *Array, etc*
- dplyr
- ggplot2
- Tidyr
- Shiny, etc.

DataBase

- SQL
- MongoDB

Other

- Data Structure
  - *Array, etc*
- Web Scraping
- Linux
- Git

Machine Learning

Introduction

- How Model Works
- Basic Data Exploration
- First ML Model
- Model Validation
- Underfitting & Overfitting
- Random Forests
- scikit-learn

Intermediate

- Handling Missing Values
- Handling Categorical Variables
- Pipelines
- Cross-Validation
- XGBoost
- Data Leakage

Deep Learning

- Artificial Neural Network
- Convolutional Neural Network
- Recurrent Neural Network
- Keras
- PyTorch
- TensorFlow
- A Single Neuron
- Deep Neural Network
- Stochastic Gradient Descent
- Overfitting and Underfitting
- Dropout Batch Normalization
- Binary Classification

Feature Engineering

- Baseline Model
- Categorical Encodings
- Feature Generation
- Feature Selection

Natural language Processing

- Text Classification
- Word Vectors

Data Visualization Tools

- Excel VBA
- Bi (Business Intelligence)
  - *Tableau*
  - *Power BI*
  - *Qlik View*
  - *Qlik Sense*

Deployment

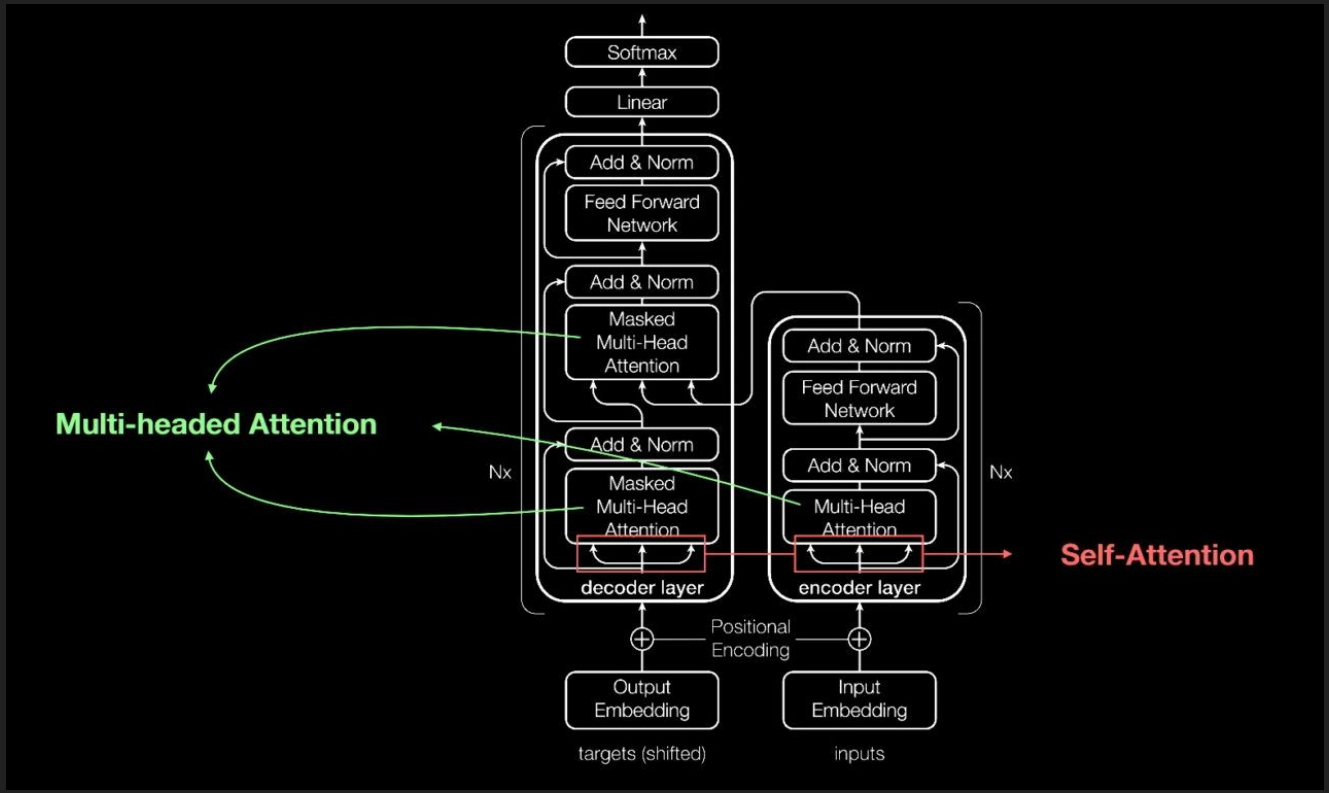
- Microsoft Azure
- Heroku
- Google Cloud Platform
- Flask
- Django

Other Points

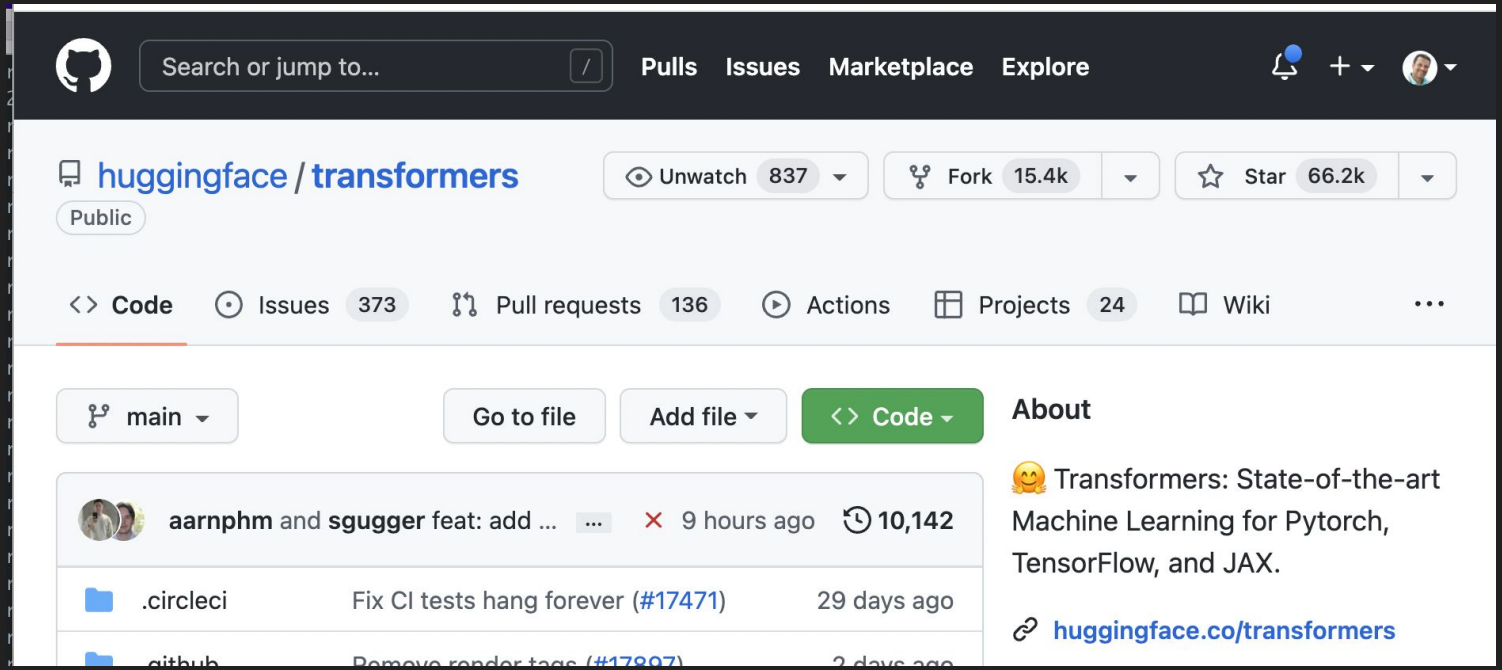
- Domain Knowledge
- Communication Skill
- Reinforcement Learning
- Case Studies
  - *Data Science at Netflix*
  - *Data Science at Flipkart*
  - *Project on Credit Card Fraud Detection*
  - *Project on Movie Recommendation , etc.*

Keep Practicing

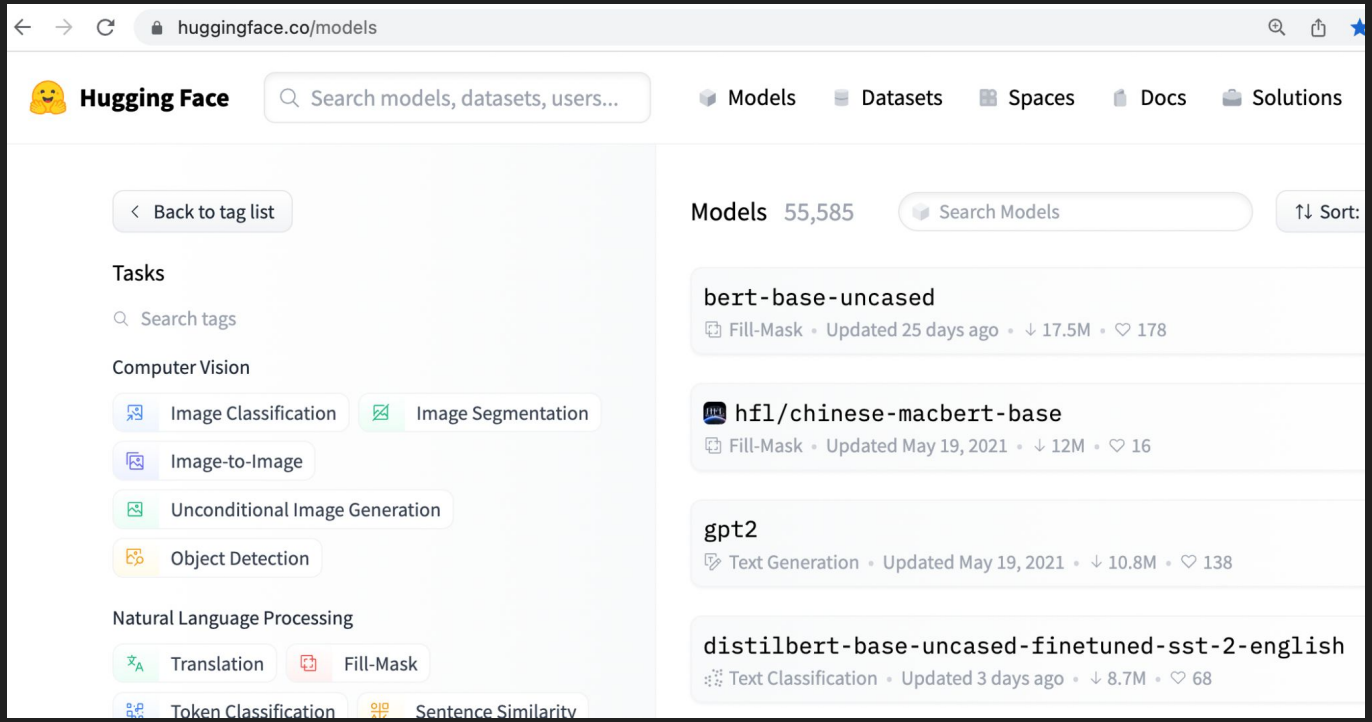
Transformer Models



Transformer Library



Hugging Face Public Hub



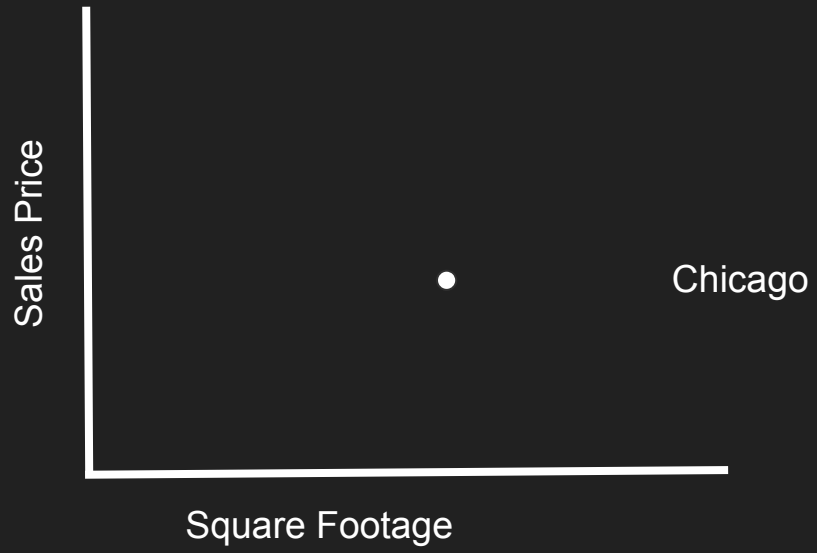
Indian Food Detector

Image Classifier → Text

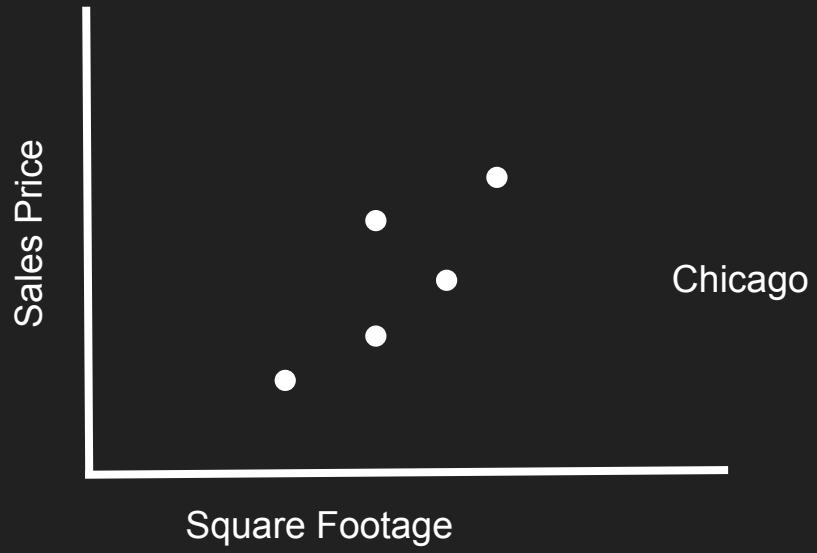
Text → Translator

The conventional path . . .

Machine Learning

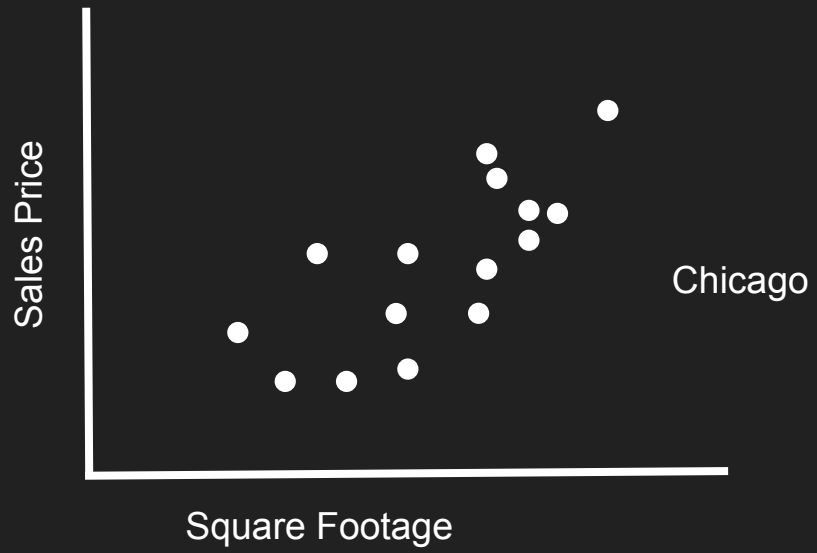


Machine Learning



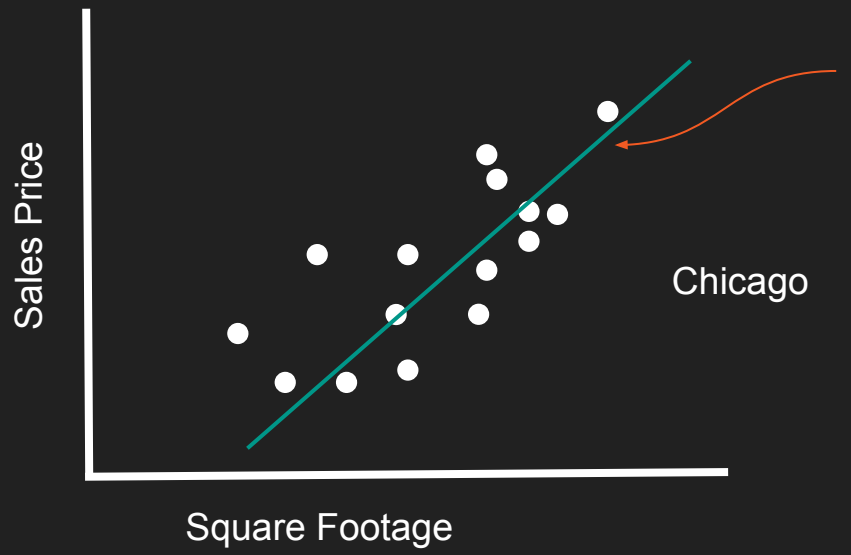
Every point is **an example**

Machine Learning



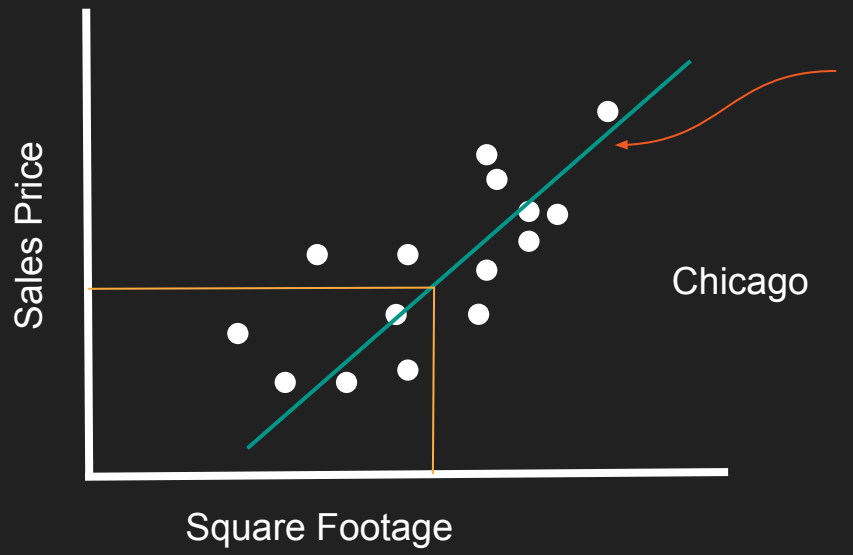
Every point is **an example** that the machine learns from

Machine Learning



The line is a model.
If you tell the model a square footage, it will make a prediction.

Machine Learning



The line is a model.
If you tell the model a square footage, it will make a prediction.

Data Prep | Labeling | Feature Engineering | Training | Test Prediction

Pre-trained Models

Data Prep

Labeling

Feature Engineering

Training

Test Prediction

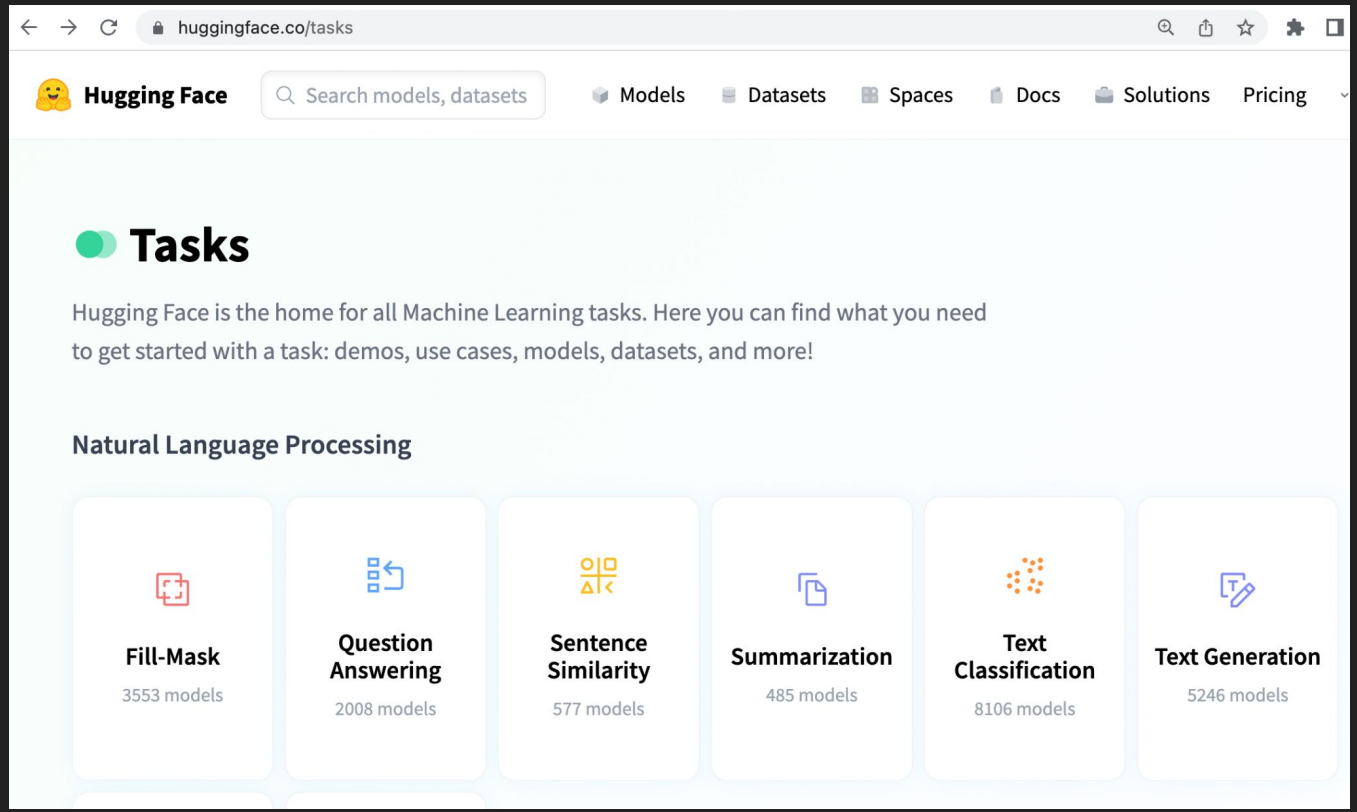
Pretrained Models

Test Prediction

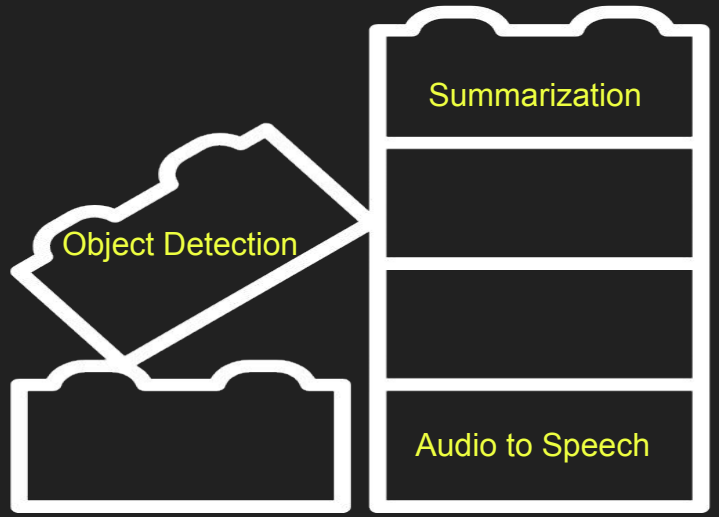
Pre-trained Models

- Trained on enormous datasets
- Contain million to billions of parameters
- Even take months to train

Let’s explore some pretrained models at hf.co/tasks

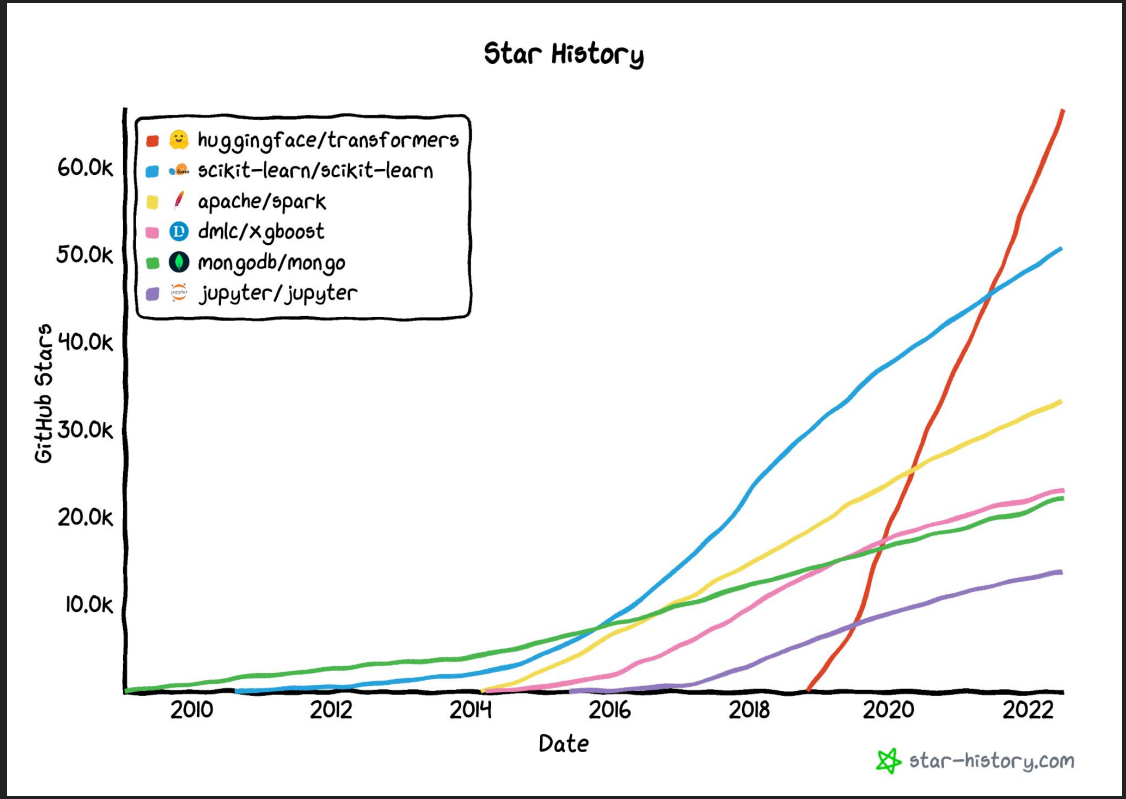


Tasks - Modern Building Blocks of AI



Let’s Code with Pre-Trained Models

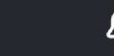
Rise of Transformers



https://star-history.com/

Search or jump to... /

Pulls Issues Marketplace Explore



huggingface / transformers

Public

Unwatch 837 Fork 15.4k Star 66.2k

Code Issues 373 Pull requests 136 Actions Projects 24 Wiki

main Go to file Add file Code

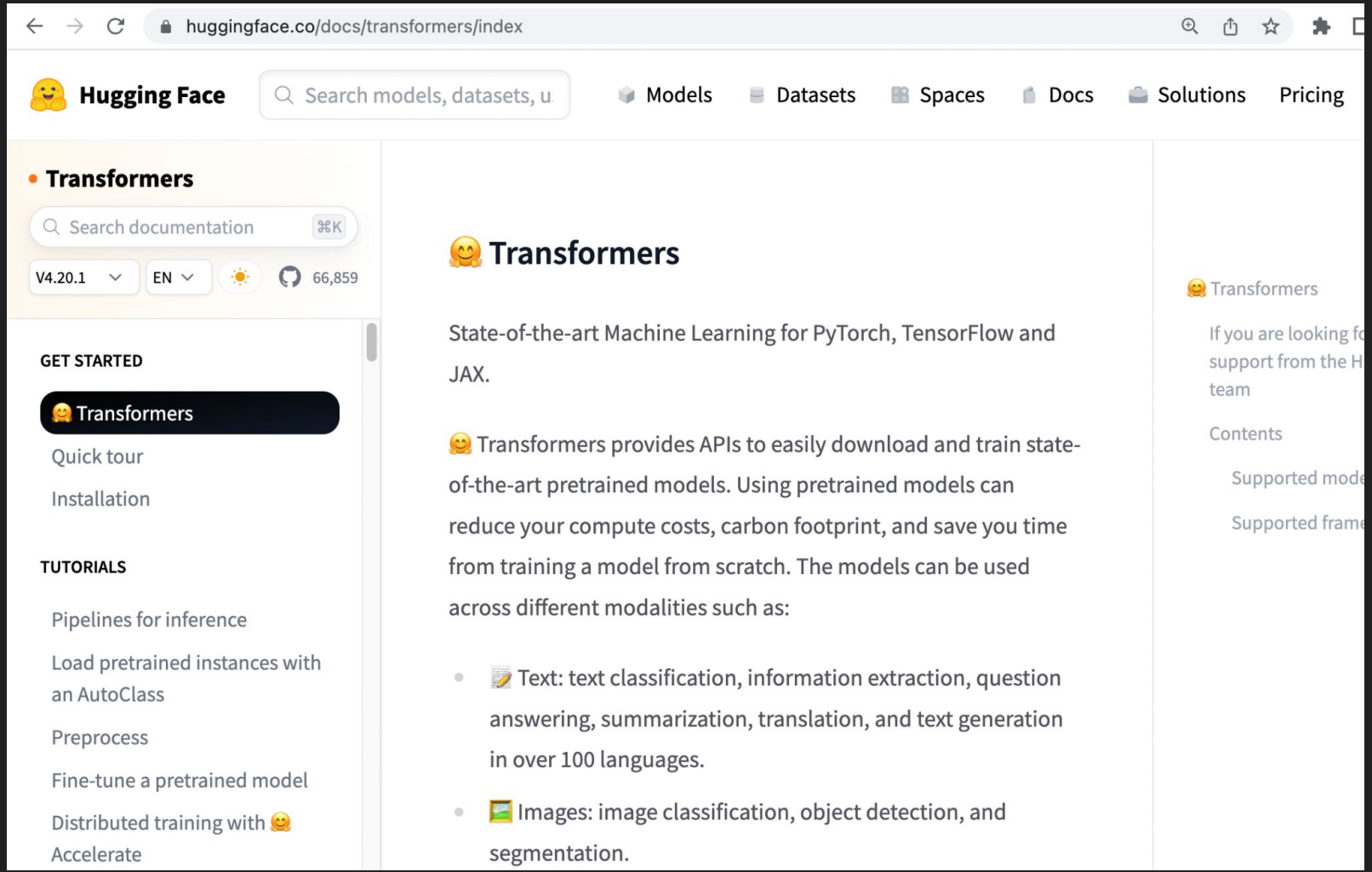
aarnphm and sgugger feat: add ... 9 hours ago 10,142

.circleci	Fix CI tests hang forever (#17471)	29 days ago
.github	Remove render_tags (#17897)	2 days ago

About

🤗 Transformers: State-of-the-art Machine Learning for Pytorch, TensorFlow, and JAX.

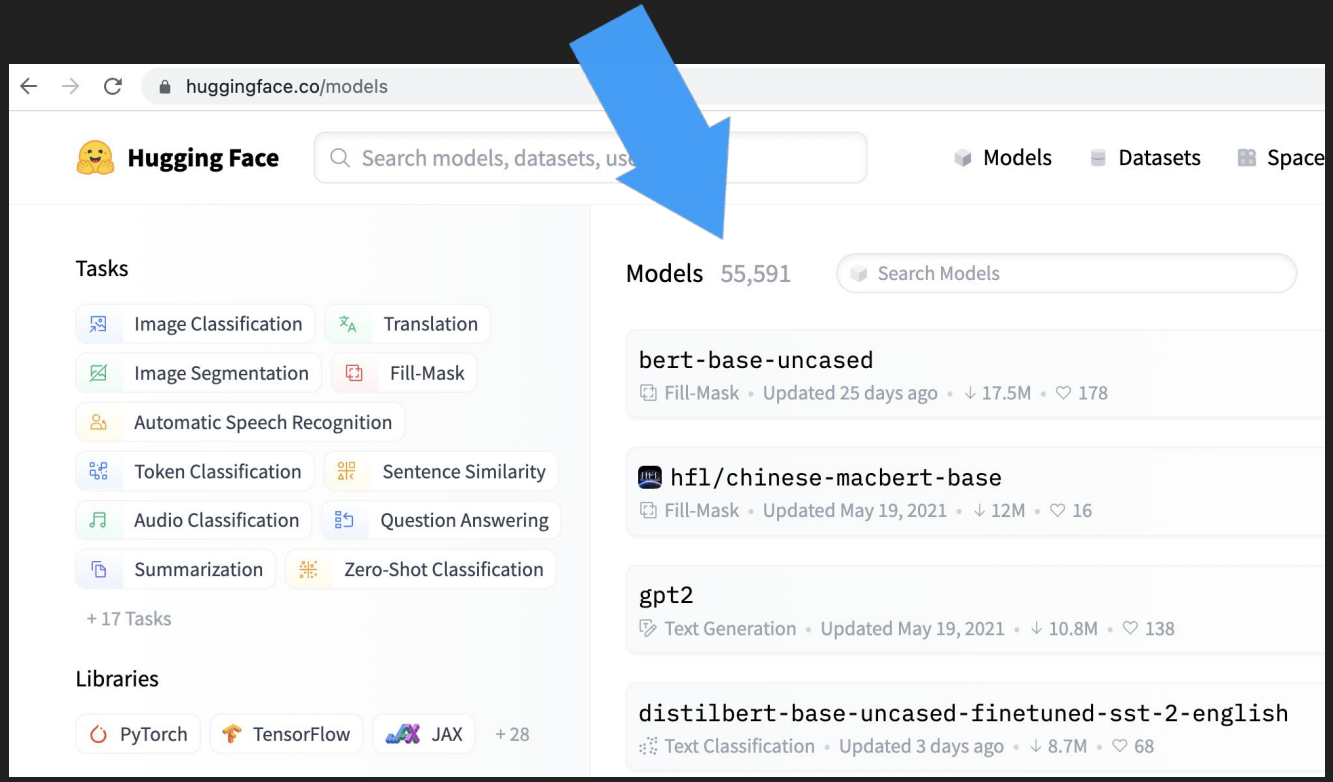
huggingface.co/transformers


huggingface.co/docs/transformers/index
Hugging Face
Search models, datasets, u
Models
Datasets
Spaces
Docs
Solutions
Pricing
Transformers
Search documentation
⌘K
V4.20.1
EN
66,859
GET STARTED
Transformers
Quick tour
Installation
TUTORIALS
Pipelines for inference
Load pretrained instances with an AutoClass
Preprocess
Fine-tune a pretrained model
Distributed training with Accelerate
Transformers
State-of-the-art Machine Learning for PyTorch, TensorFlow and JAX.
Transformers provides APIs to easily download and train state-of-the-art pretrained models. Using pretrained models can reduce your compute costs, carbon footprint, and save you time from training a model from scratch. The models can be used across different modalities such as:
Text: text classification, information extraction, question answering, summarization, translation, and text generation in over 100 languages.
Images: image classification, object detection, and segmentation.
Transformers
If you are looking fo
support from the H
team
Contents
Supported mode
Supported frame

Let’s use the transformer’s library in the Colab Notebook

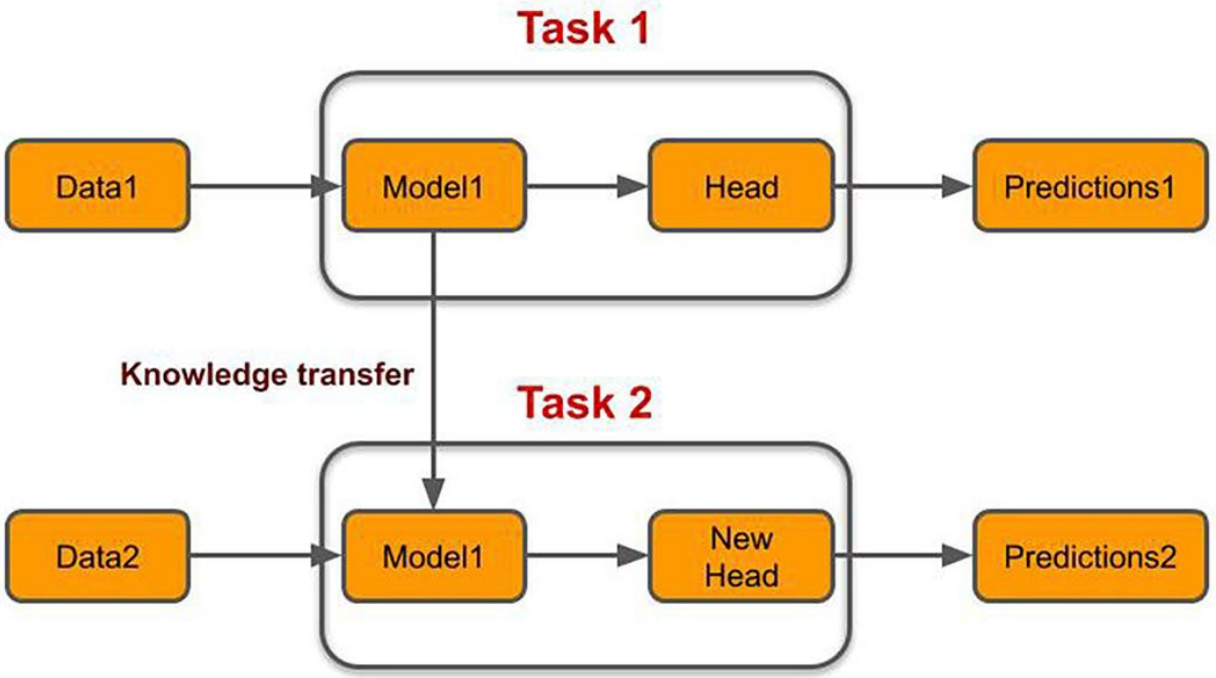
Colab Notebook: https://bit.ly/raj_food

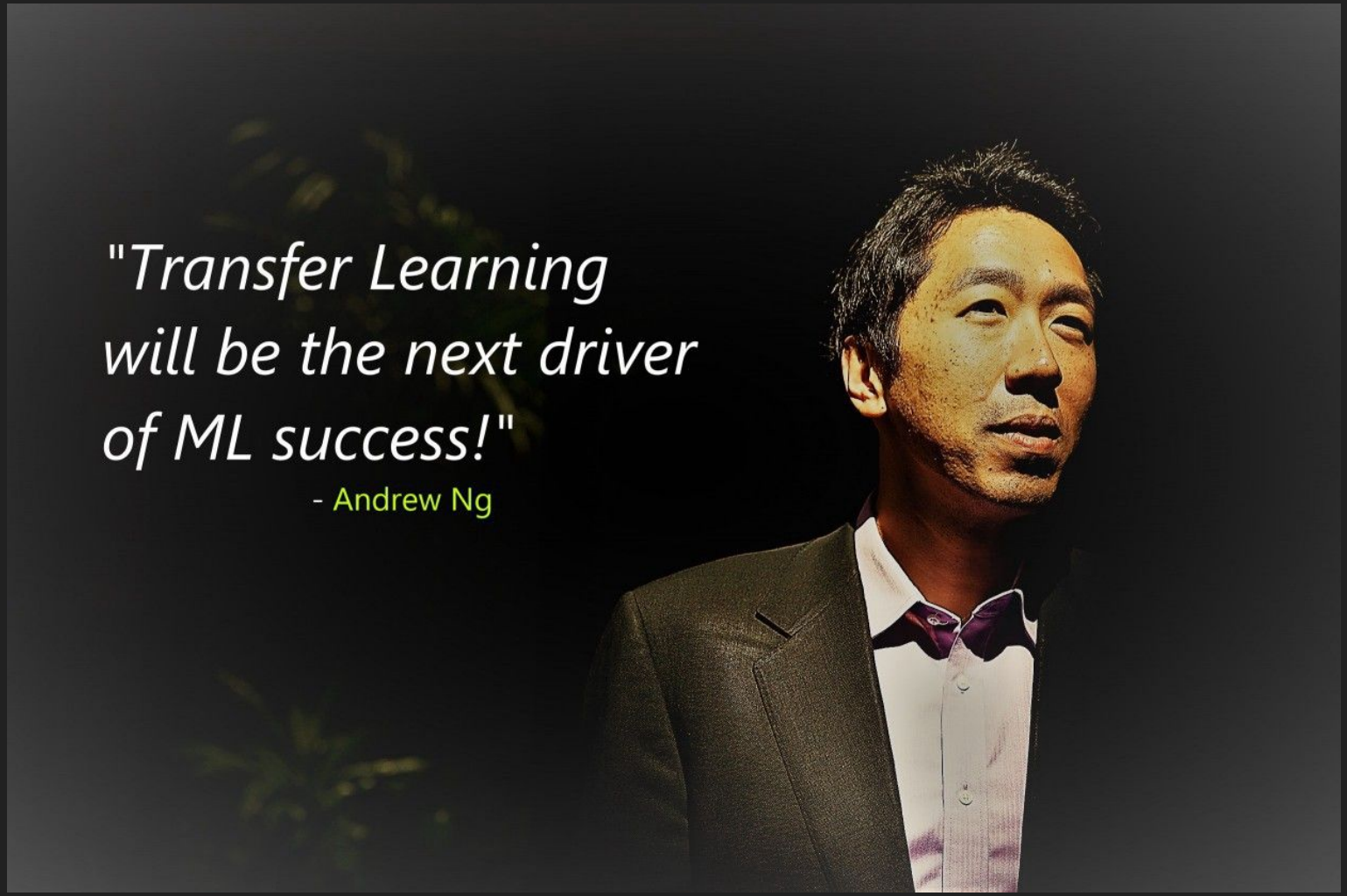
Why so many models?



Ensemble Transfer Learning Framework for Vessel Size Estimation from 2D Images - Scientific Figure on ResearchGate. Available from: https://www.researchgate.net/figure/Ensemble-transfer-learning-using-pretrained-CNN-model-initialized-with-weights-trained-on_fig4_333619654 [accessed 17 Jun, 2022]

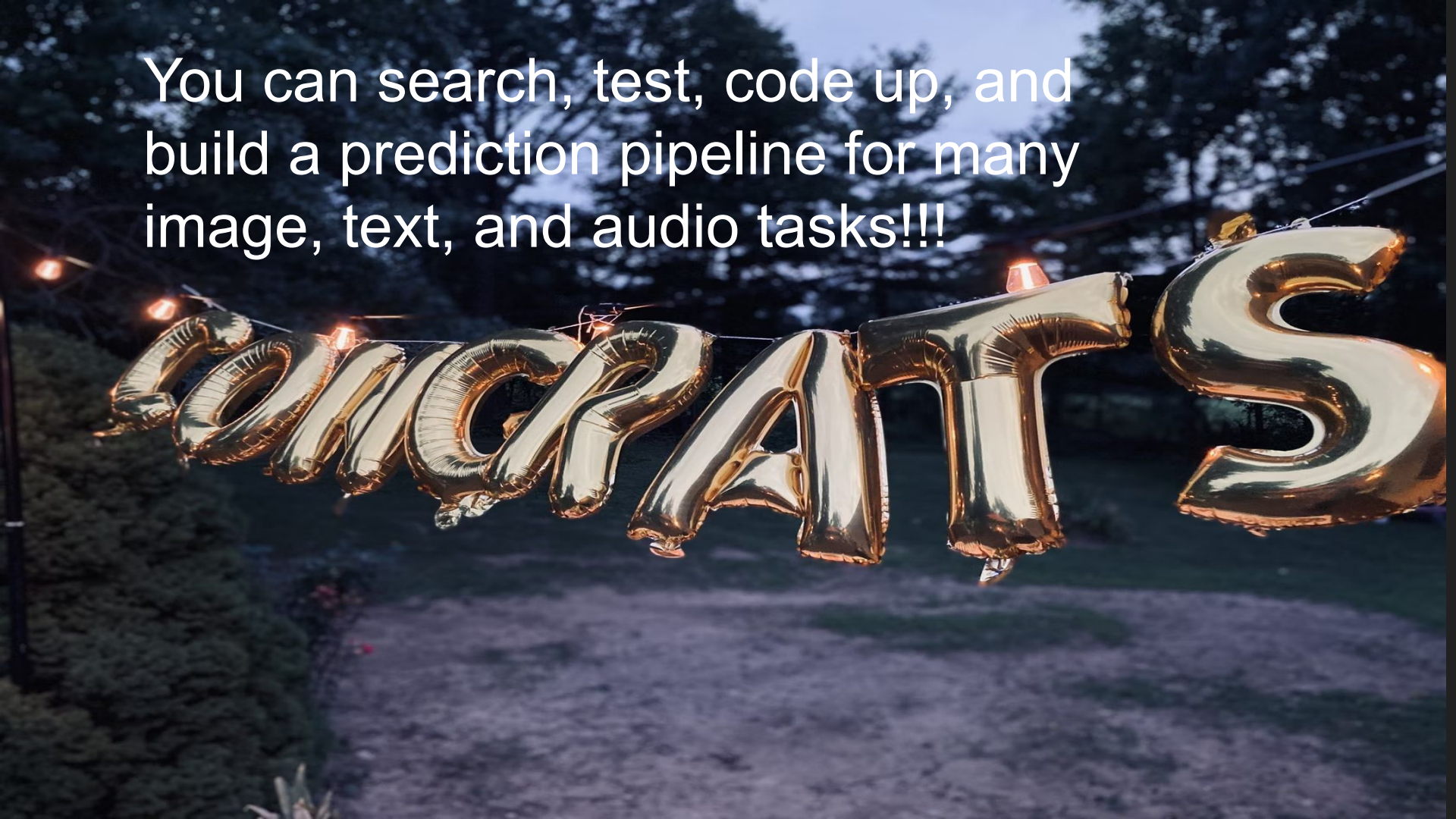
Transfer Learning




"Transfer Learning
will be the next driver
of ML success!"
- Andrew Ng

Show an example of a fine tuned model

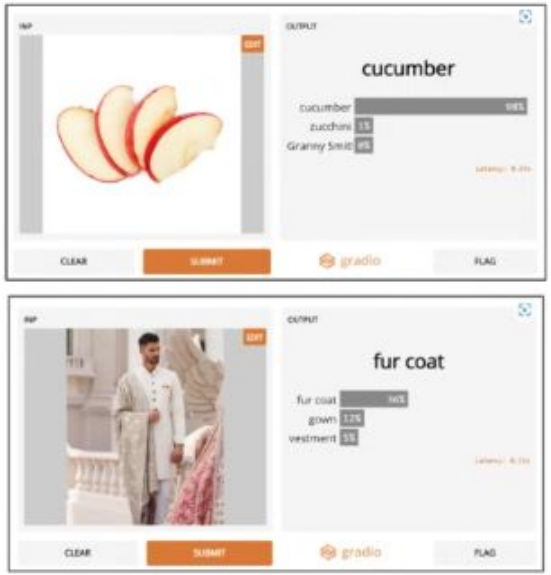
Finbert Forward Looking Statements: https://huggingface.co/yiyanghkust/finbert-fls


You can search, test, code up, and build a prediction pipeline for many image, text, and audio tasks!!!
CONGRATS

Web Apps for AI

Reasons You Should Build a ML Demo

1. Accessibility: get your models used
2. Understand real-world limitations of your model
3. It's easy! (👉 gradio.dev)



Let’s build a web app in the colab notebook

Colab Notebook: https://bit.ly/raj_food

Spaces/App:
https://huggingface.co/spaces/rajistics/Indian_food_translator

Accomplished

- Use pretrained models in AI web apps
- Notebook is at: https://bit.ly/raj_food
- Please share feedback with me 🙏

Rajiv Shah

raj@hf.com

@rajistics (LinkedIn, Tik Tok, Twitter, Medium)