Breaking Down MACHINE LEARNING

Hrishikesh Yadav

ABOUT

Hrishikesh Yadav

Co-Founder @RetroNexus
Member @SuperTeamDao
2x Kaggle Expert
AI Director @TCET OpenSource
Community Co-Lead @GenosisX
Student Ambassador @Strealmit

About Myself

Machine Leaning, Data Science and Applied Generative AI Enthusiast

Likes to participate into Hackathon and Competitions and worked on 4+ Research Work in Applied Generative AI.

Actively contributing in Soteria, GenosisX, Streamlit, Kaggle, etc.

Currently, Doing Research Work on Predictive Policing and Applied Generative AI

You can reach out to me on Linkedin

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What is Machine Learning ?

A computer program is said to learn from experience E with respect to some class of tasks T and performance measure P, if its performance at tasks in T, as measured by P, improves with experience E.

Machine Learning is the training of a model from data that generalizes a decision against a performance measure.

Test Time !

Question No. 1

Let Suppose you have a lot of historical weather data to the learning algorithm, and have it learn to predict the weather. Then what is P according to you?

a. The process of the algorithm examining a large amount of historical weather data.
b. The task to predict the weather.
c. The probability of it correctly predicting the weather of future date’s.
d. Analysis of the historic weather data.

Test Time !

Question No. 2

Let Suppose you have a lot of historical weather data to the learning algorithm, and have it learn to predict the weather. Then what is E according to you?

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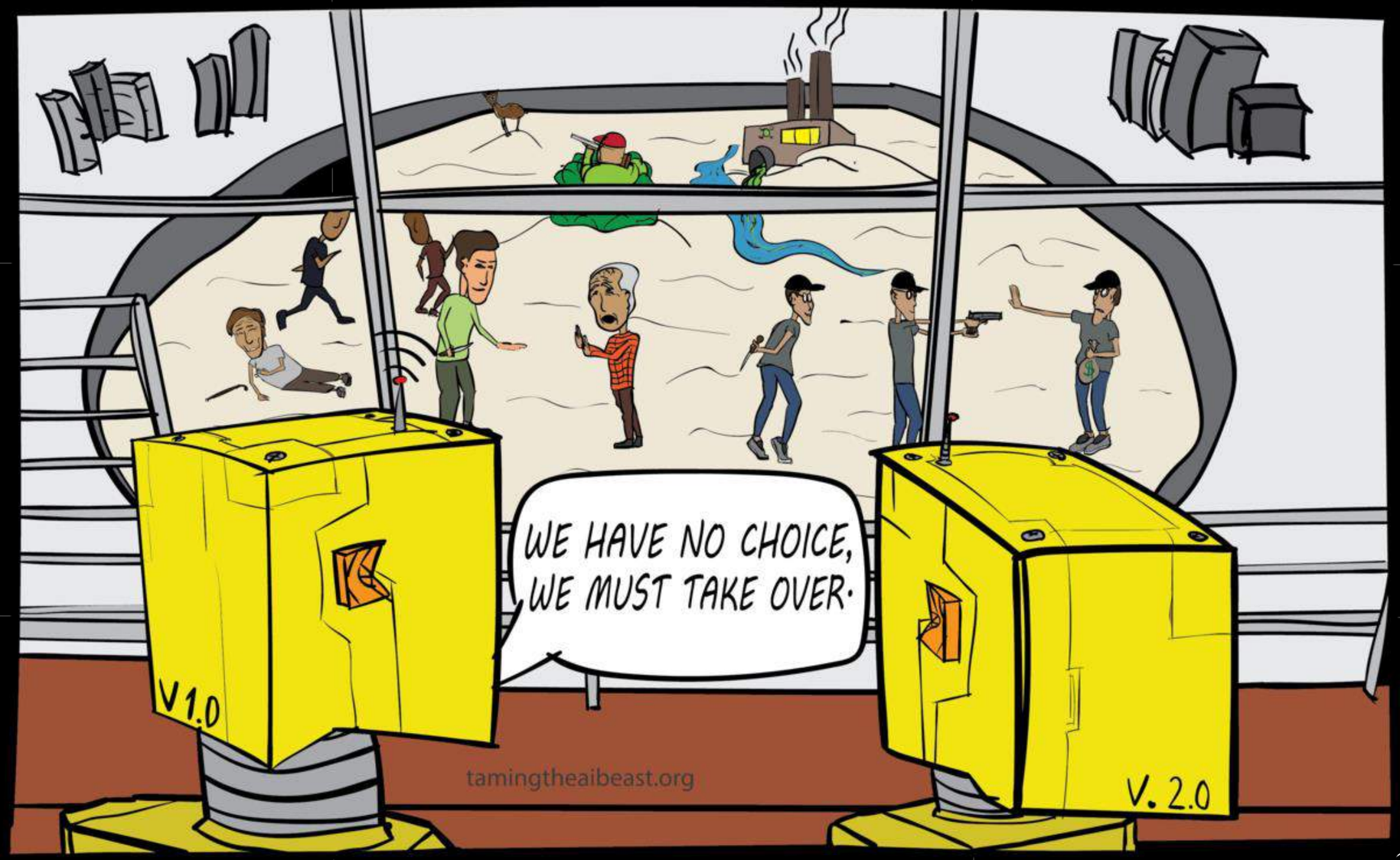
AI VS ML VS AGI


AI
SCIENTISTS
AGI
AGI
AI
SCIENTISTS


WE HAVE NO CHOICE,
WE MUST TAKE OVER.
V1.0
V. 2.0
tamingtheaibeast.org

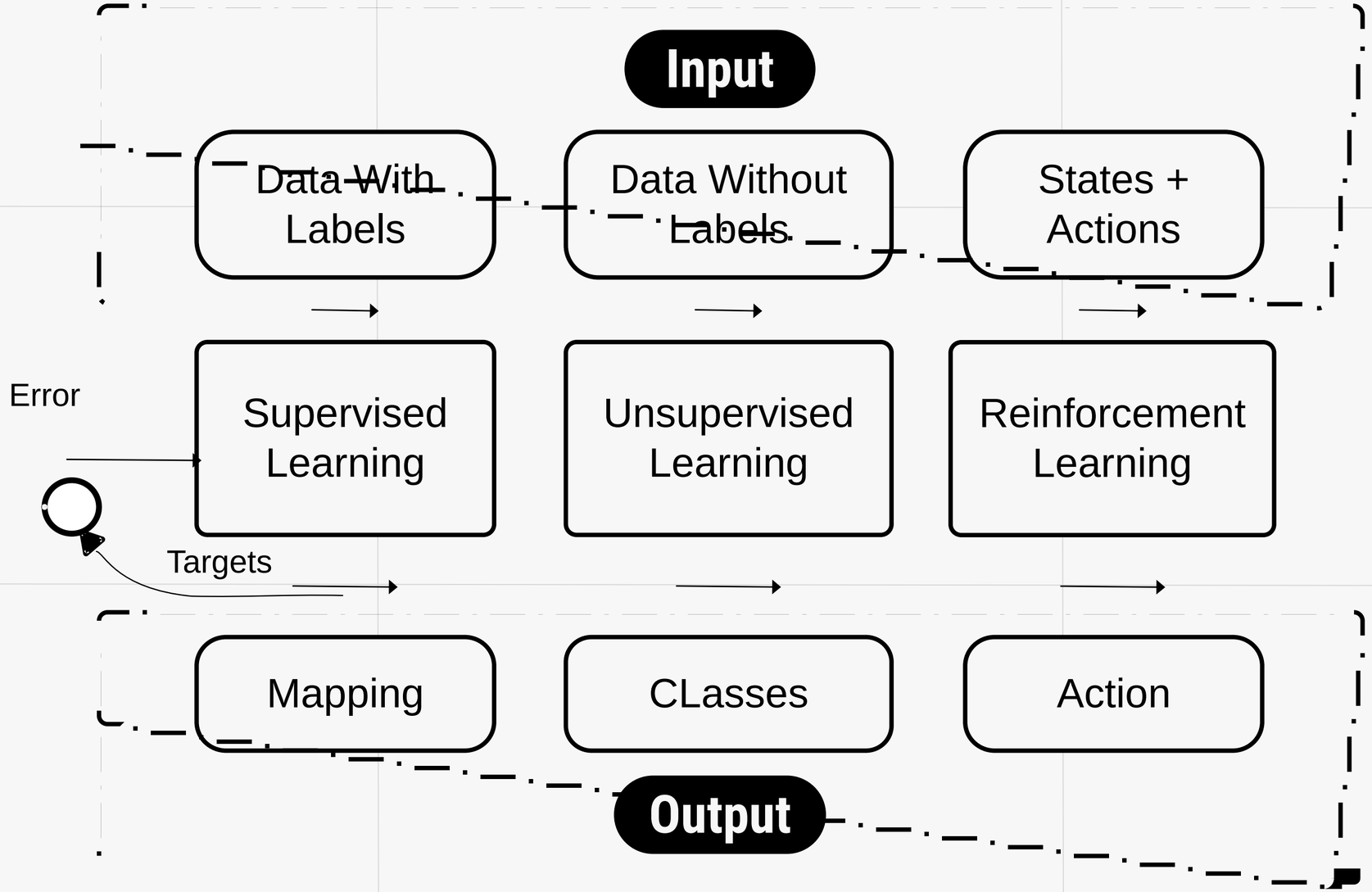

IS THIS AGI?
GPT-3
imgflip.com


HELP
I KNOW
MACHINE
LEARNING

03

Why there is a need to learn ML, Today

Categories in ML



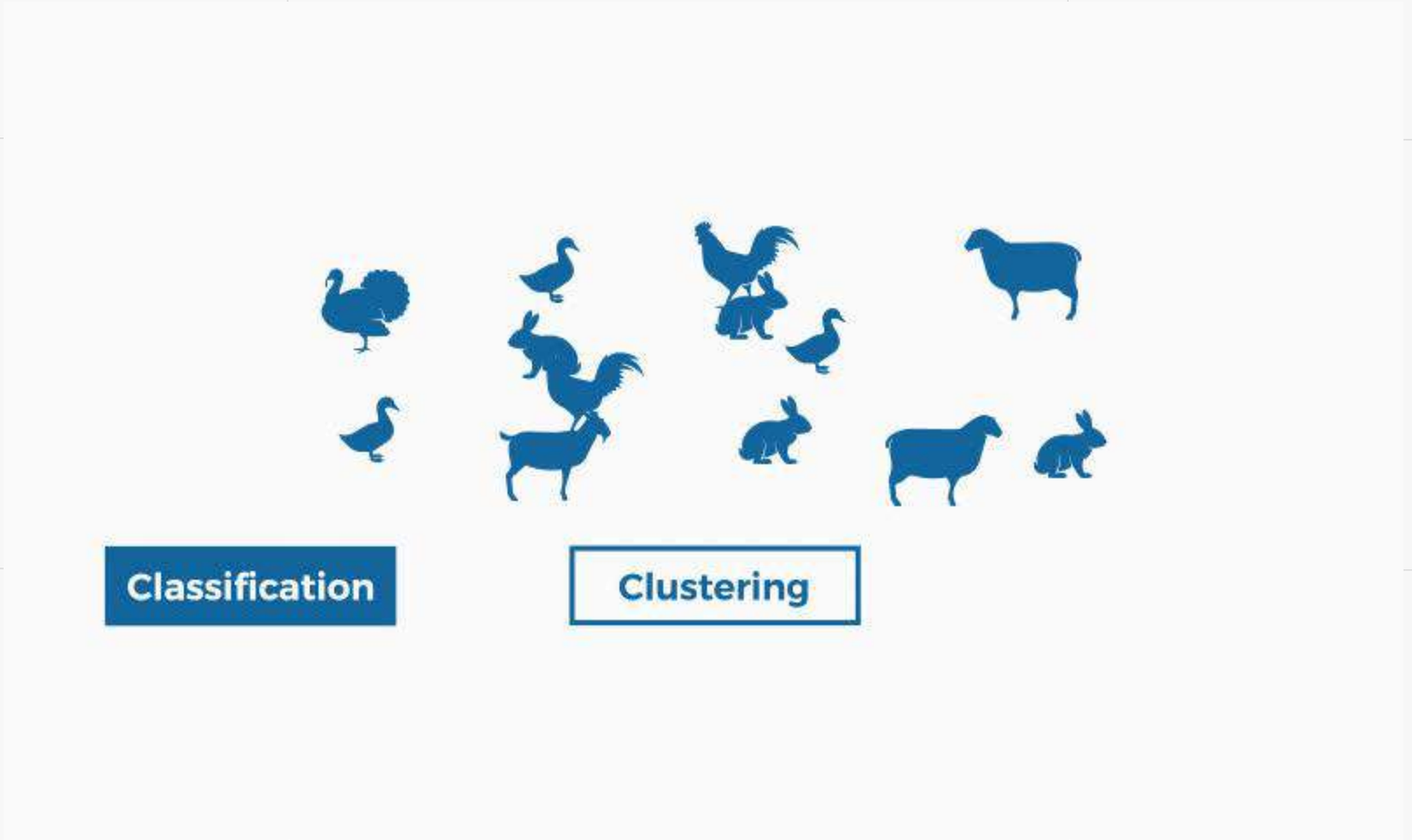
Different Types of Classification:

Binary classification

Multi-class classification

Multi-Label classification

Different Types of Classification:

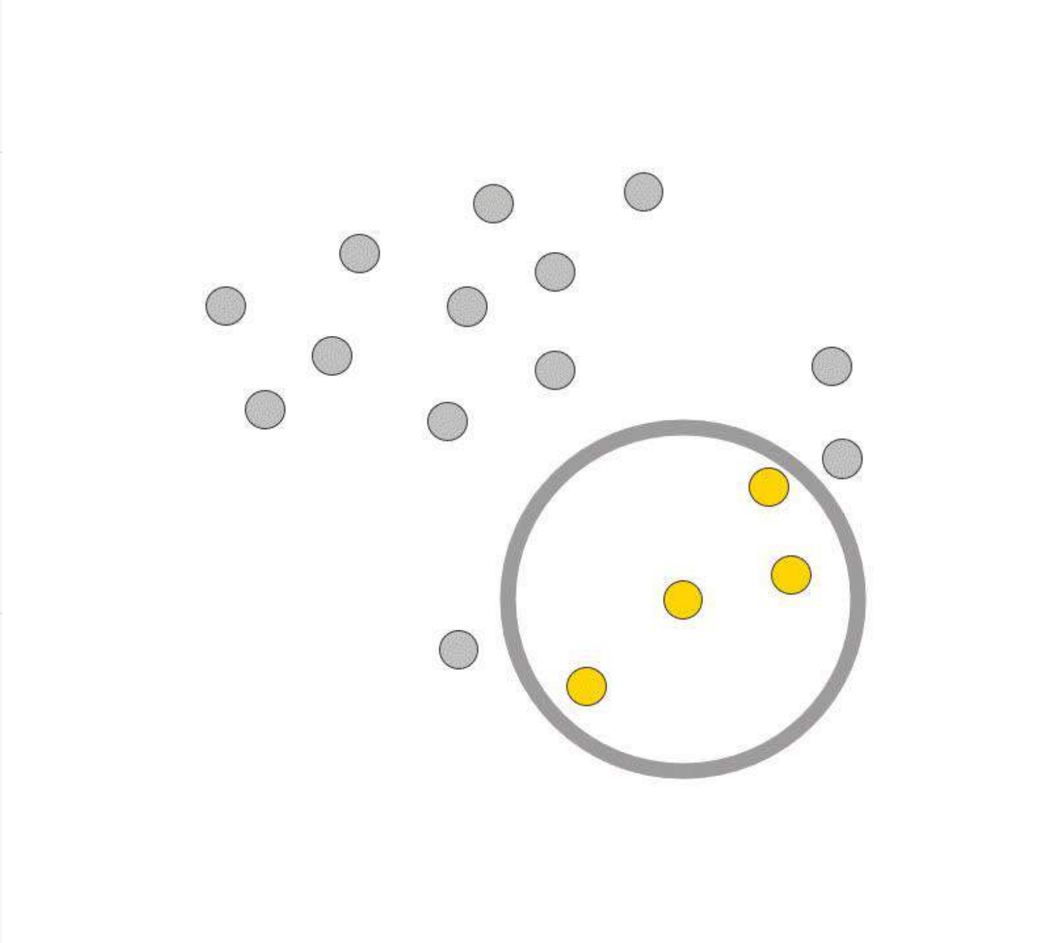


HOW TO CONFUSE MACHINE LEARNING

How to enchance the accuracy in classification:

- Feature Selection
- Data Pre-processing
- Algorithm Selection
- Ensemble Methods
- Cross-validation
- Hyperparameter Tuning
- Increase Training Data

Understanding Clustering:



Overview Various Domain in Machine Learning:

- Supervised Learning
- Unsupervised Learning
- Reinforcement Learning
- Deep Learning
- Transfer Learning
- Time Series Analysis
- Bayesian Learning

REAL LIFE APPLICATIONS OF ML

Understanding how tech giants like google, netflix and microsoft are utlizing ML

GOOGLE

Supervised Learning

Google is said to be using state of the art spam detection machine learning algorithm such as logistic regression in its classification of emails. In this problem, you have to classify each input into a category, e.g., spam or non-spam. In this, the output will always be a discrete value(e.g.: 0 and 1).

GMAIL SPAM FILTER

NETFLIX

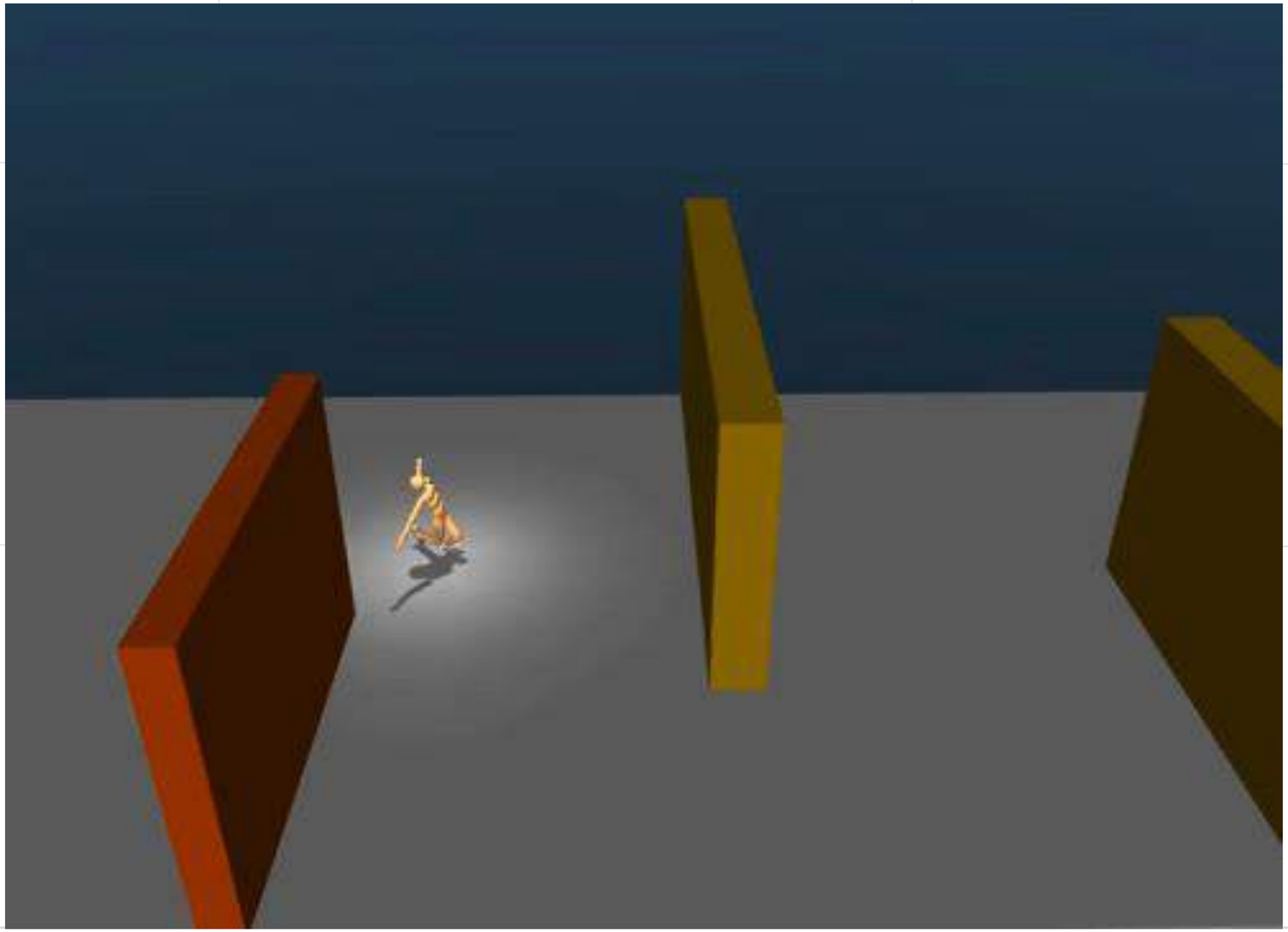
NETFLIX RECOMMENDATION SYSTEM

Unsupervised Learning

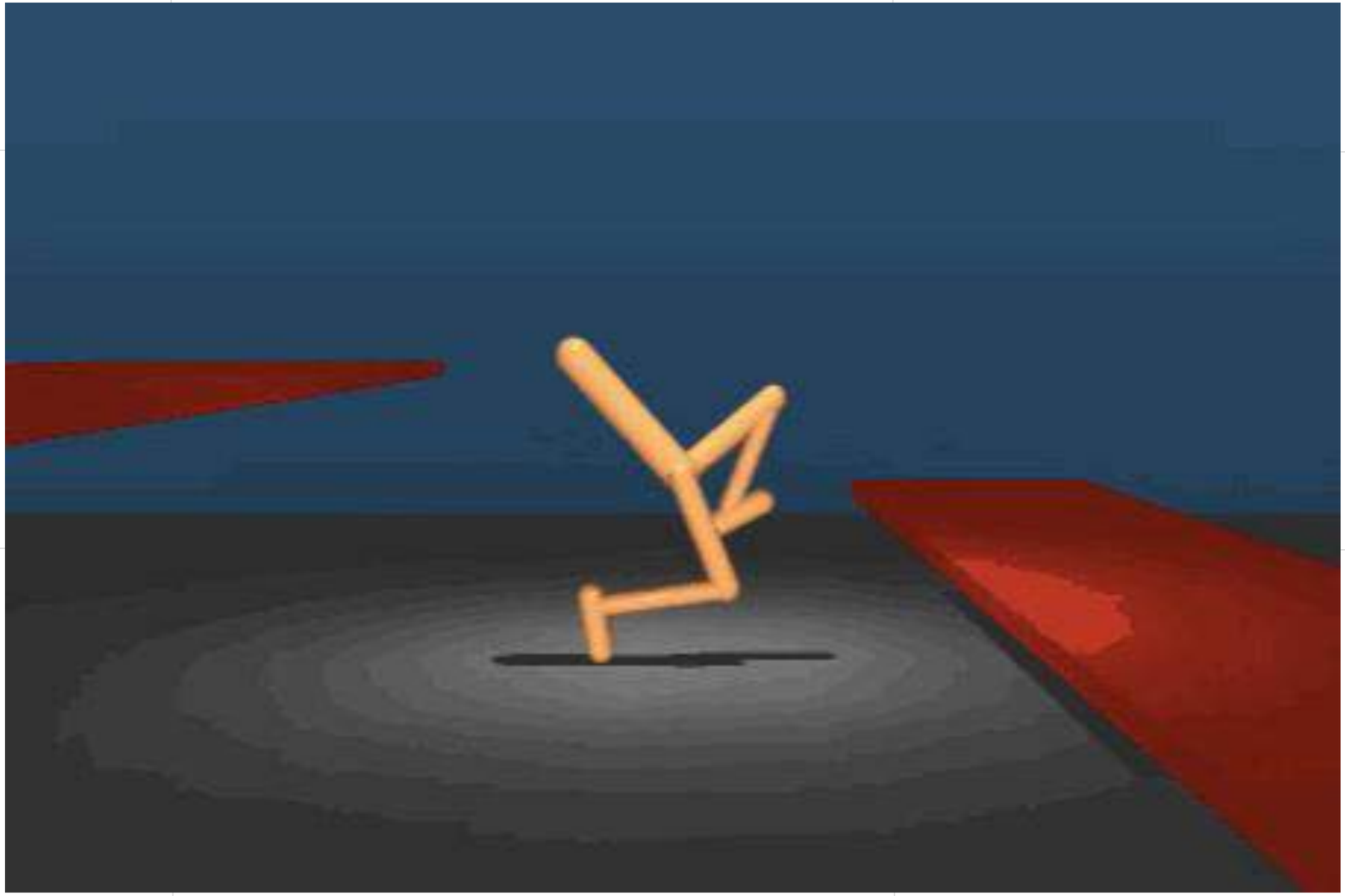
Unsupervised Learning Netflix uses different unsupervised methods like clustering , filtering, association etc. Netflix uses clustering algorithms like K-means or hierarchical clustering. This sort of approach helps in customer segmentation and personalized recommendations.

Reinforcement Learning

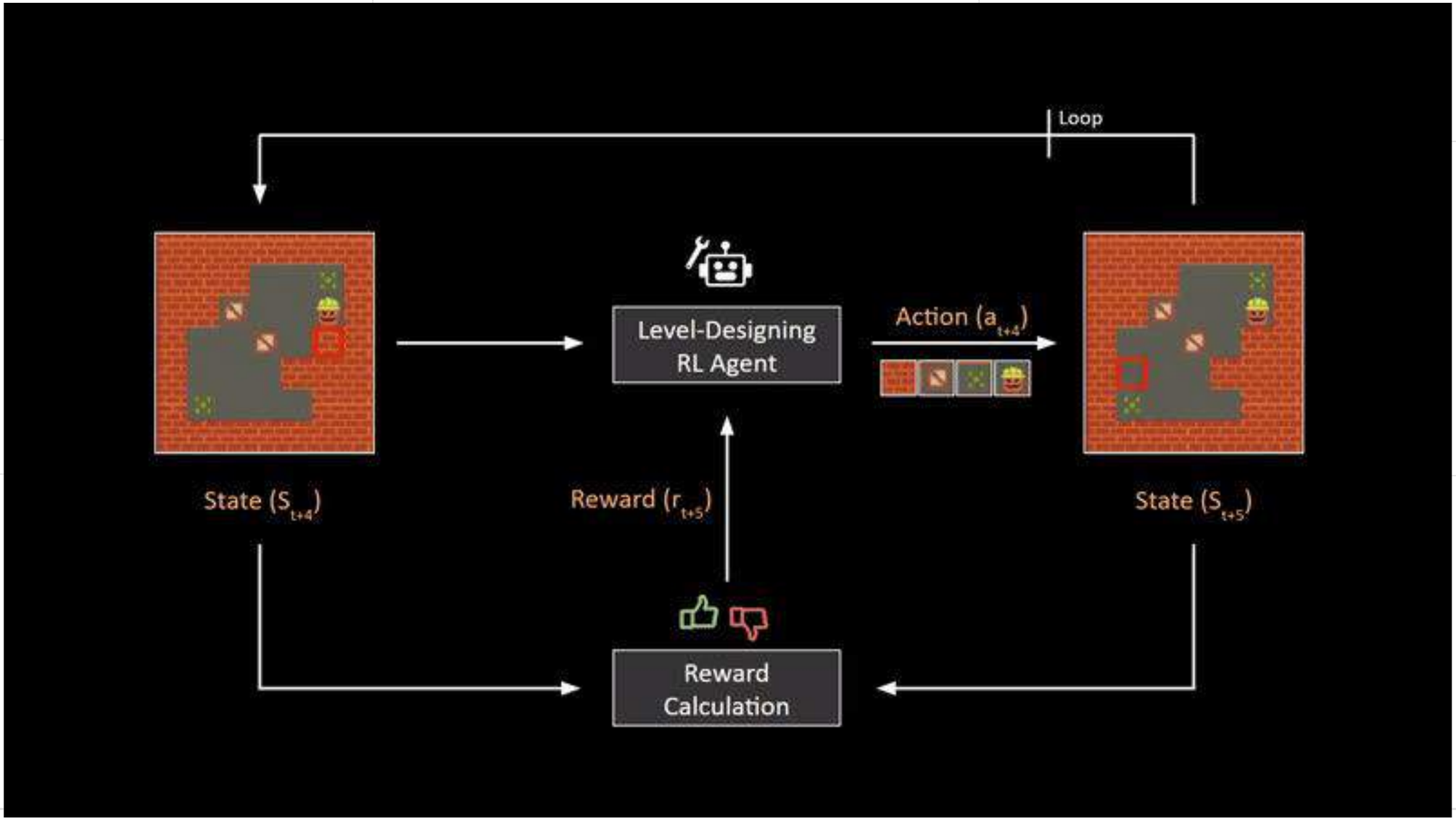
Reinforcement Learning



PlaNet



Reinforcement Learning



MICROSOFT

Reinforcement Learning

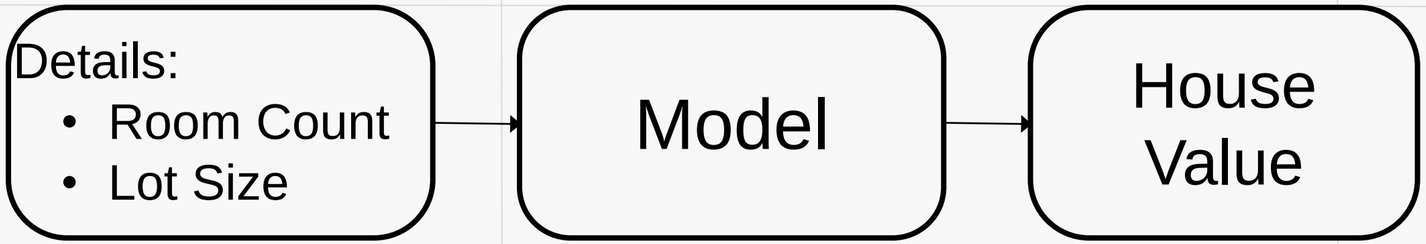
Reinforcement Learning Microsoft has used Reinforcement Learning on their Azure AI platform. These models can learn from environmental cues, expert feedbacks or customer behavior in real time. They use this method internally across windows, edge. teams and Xbox. This has resulted in an overall growth.

MICROSOFT TEAMS`


I will train my supervised model!!!
You don’t have labeled data.

Test Time !

Question No. 3



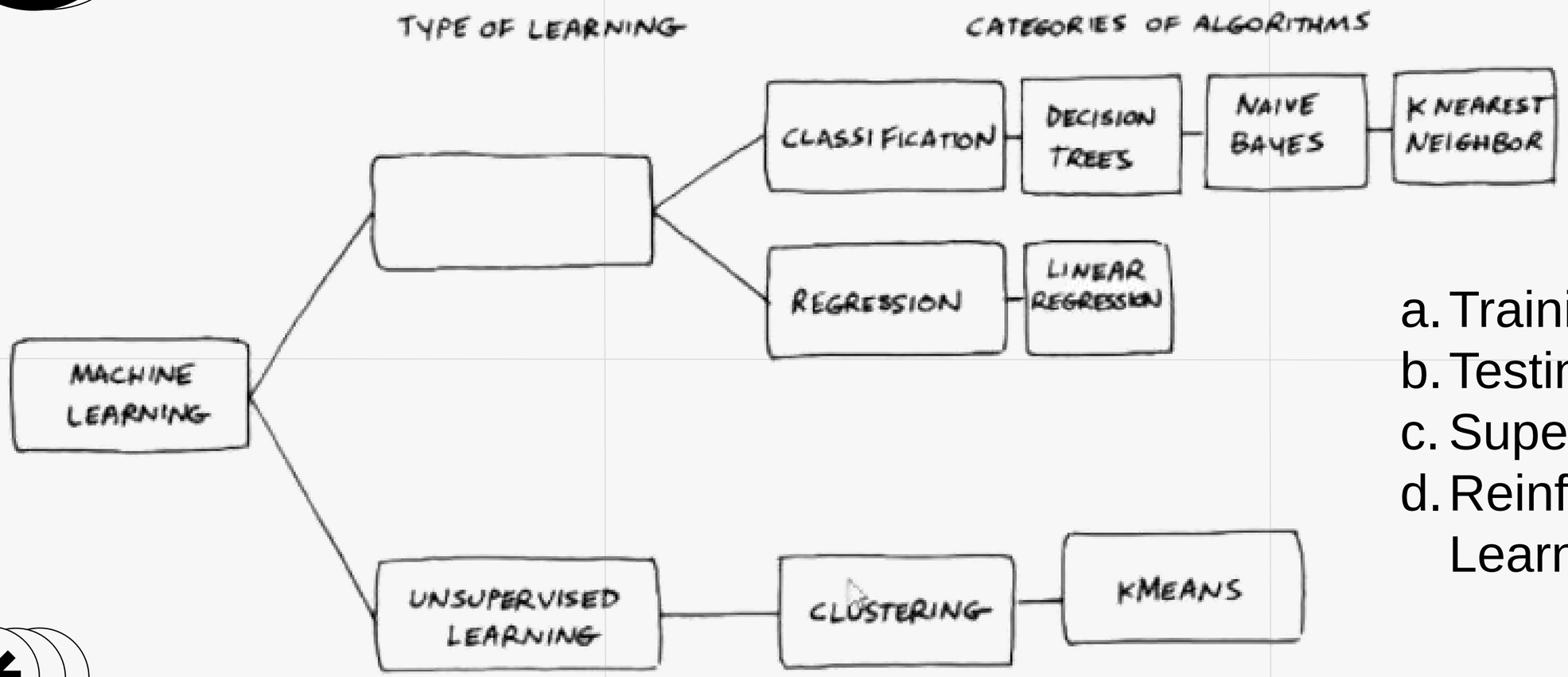
What approach should be followed?

a. Regression Task
b. Classification Task
c. Reinforcement Task
d. Clustering Task

Test Time !

Question No. 4

Fill in the Box:



a. Training Set
b. Testing Set
c. Supervised Learning
d. Reinforcement Learning

Test Time !

Question No. 5

Assume, you are working on the prediction of the temperature of future date’s on the basis of different features. So you will consider which type of task it lies in?

a. Regression Task
b. Classification Task
c. Reinforcement Task
d. Clustering Task

Test Time !

Question No. 6

Assume, you are working on the project of weather forecasting and you need to predict whether there will be rainfall or not on Monday. So you will consider which type of task it lies in?

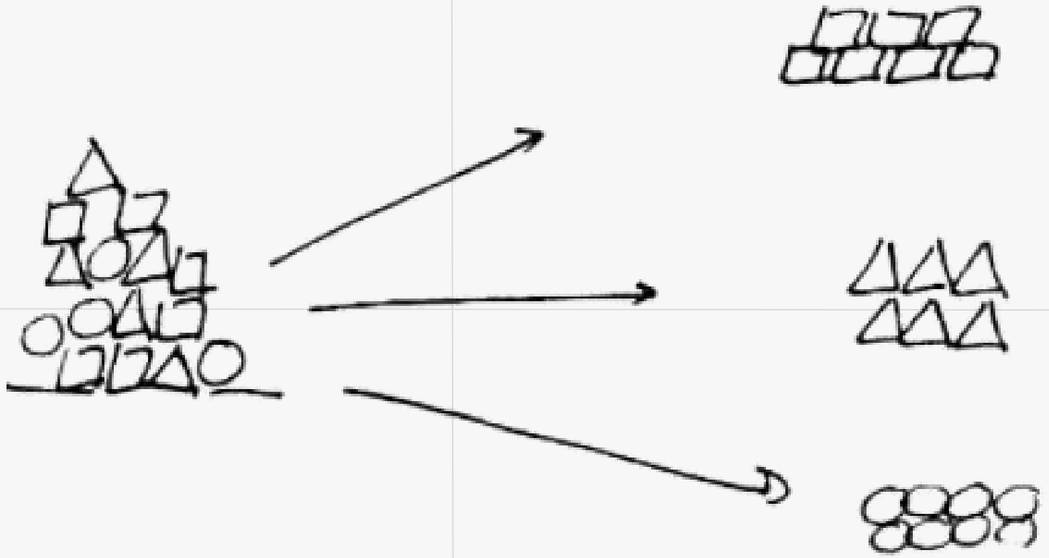
a. Regression Task
b. Classification Task
c. Reinforcement Task
d. Clustering Task

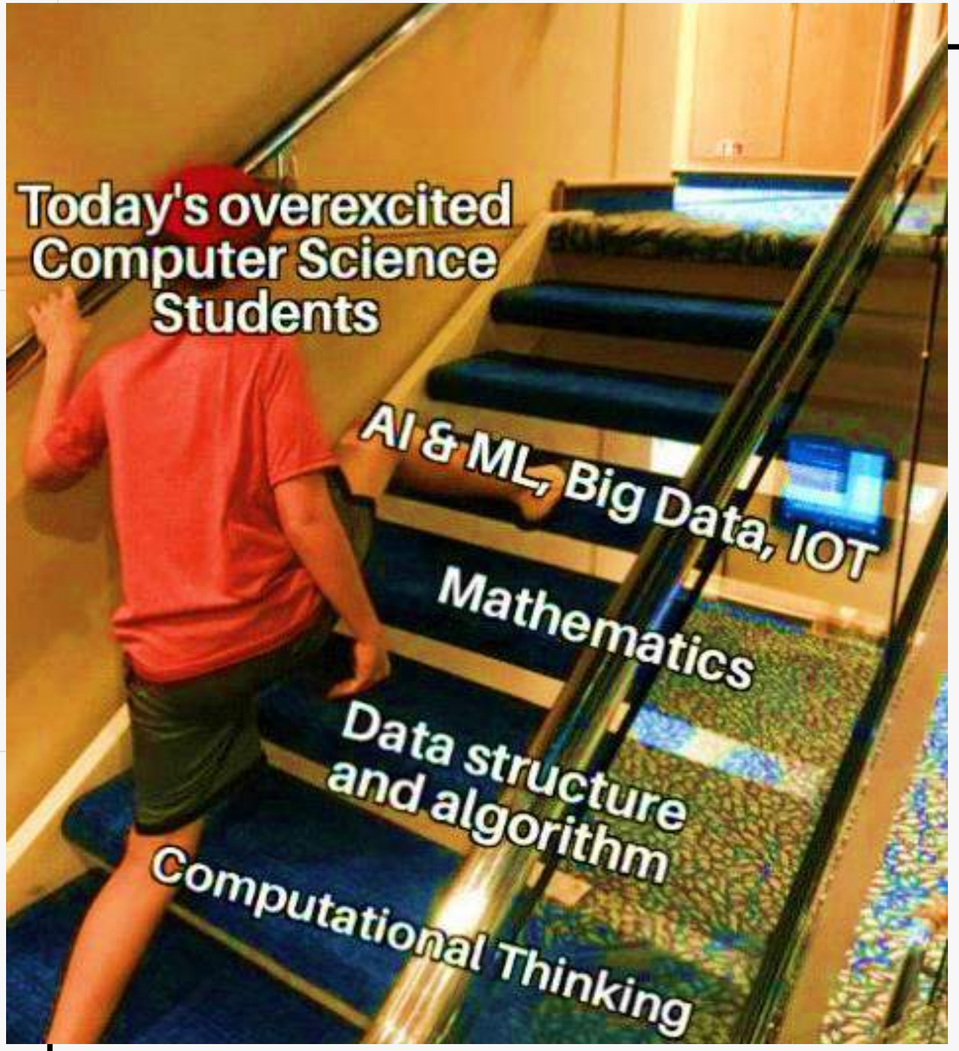
Test Time !

Question No. 7

Which Type of Classification Task is performed below:

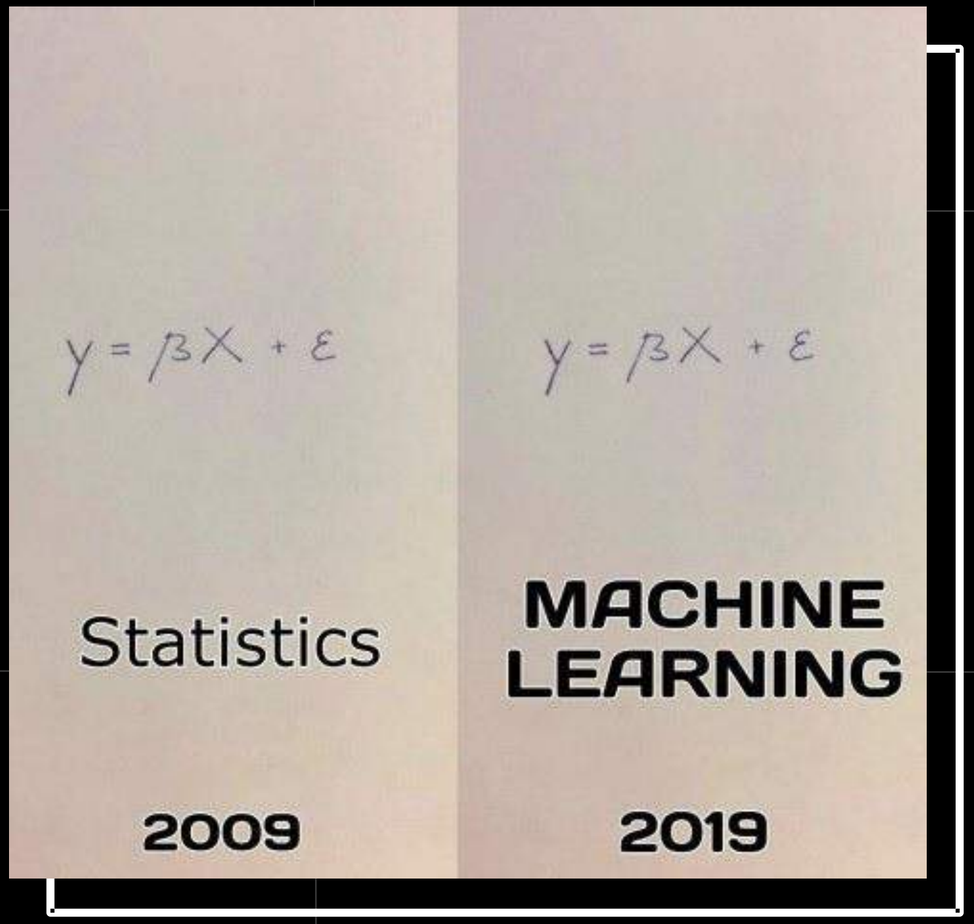
a. Binary Classification
b. Multi Binary Classification
c. Multi Class Classification
d. Reinforcement Classification




Today's overexcited
Computer Science
Students
AI & ML, Big Data, IOT
Mathematics
Data structure
and algorithm
Computational Thinking

“Fancy frameworks (e.g. PyTorch, TensorFlow) are for the present, but math and statistics are for eternity!”

- Code Basics



Importance of Mathematics in Machine Learning

Mathematics in Machine Learning Resources

- MIT OpenCourseWare
- Mathematics for Machine Learning (Coursera)
- Machine Learning Crash Course (Google)
- Data Science Mathematics
- Machine Learning Mastery

STAGES TO FOLLOW FOR MACHINE LEARNING

Programming Language

Mathematics

Data Analysis

Data Preprocessing & Feature Selection

Machine Learning Models

COURSES


These series are lit to watch
GAME OF THRONES
THE POSTER COLLECTION
Breaking Bad
Machine Learning
by Andrew Ng
Machine Learning
NARCOS

Best ML Resource:

YOUTUBE RESOURCES

CodeBasics

Krish Naik

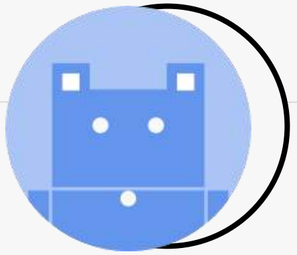
Steve Bruton

DeepLearning.AI

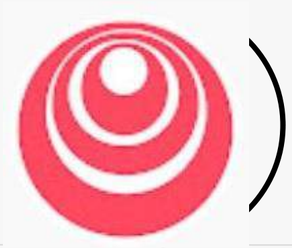
3blue1brown

Having some Bookmarks is Good!

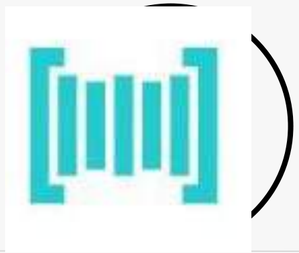
DataMahadev



Sky Towner



The Batch



Paper with Code

Analytics Vidhya

Towards Science

Medium

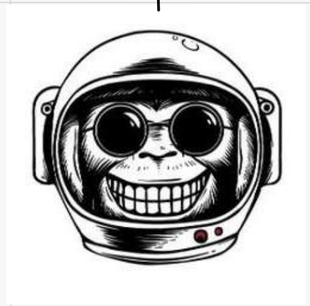
KDnuggets

Special Repository Mentions:

Applied ML

Websites for Competition

Vidhya Analytics
(DataHack)



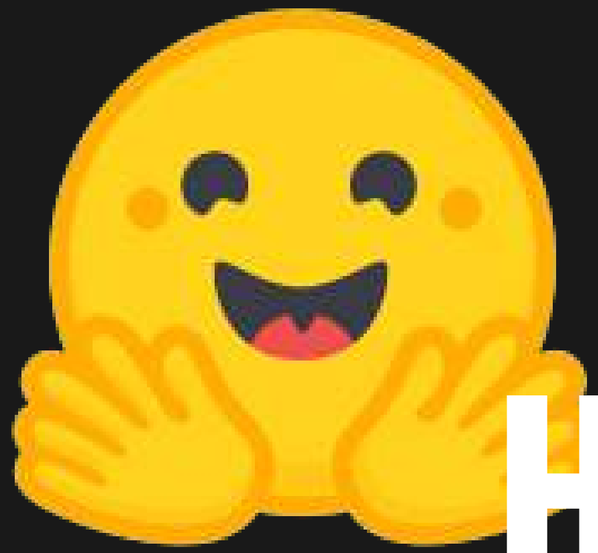
Machine Hack

Kaggle

DPhi

SCAN ME

Thank You



Exploring HUGGINGFACE

WHAT IS  ?

Hugging Face is an open source ML & DS community platform. It provides various tools to build, train and deploy ML model. On Hugging Face, ML Engineers and Data Scientist get support and contribute to the open source of machine learning.

WHY TO USE

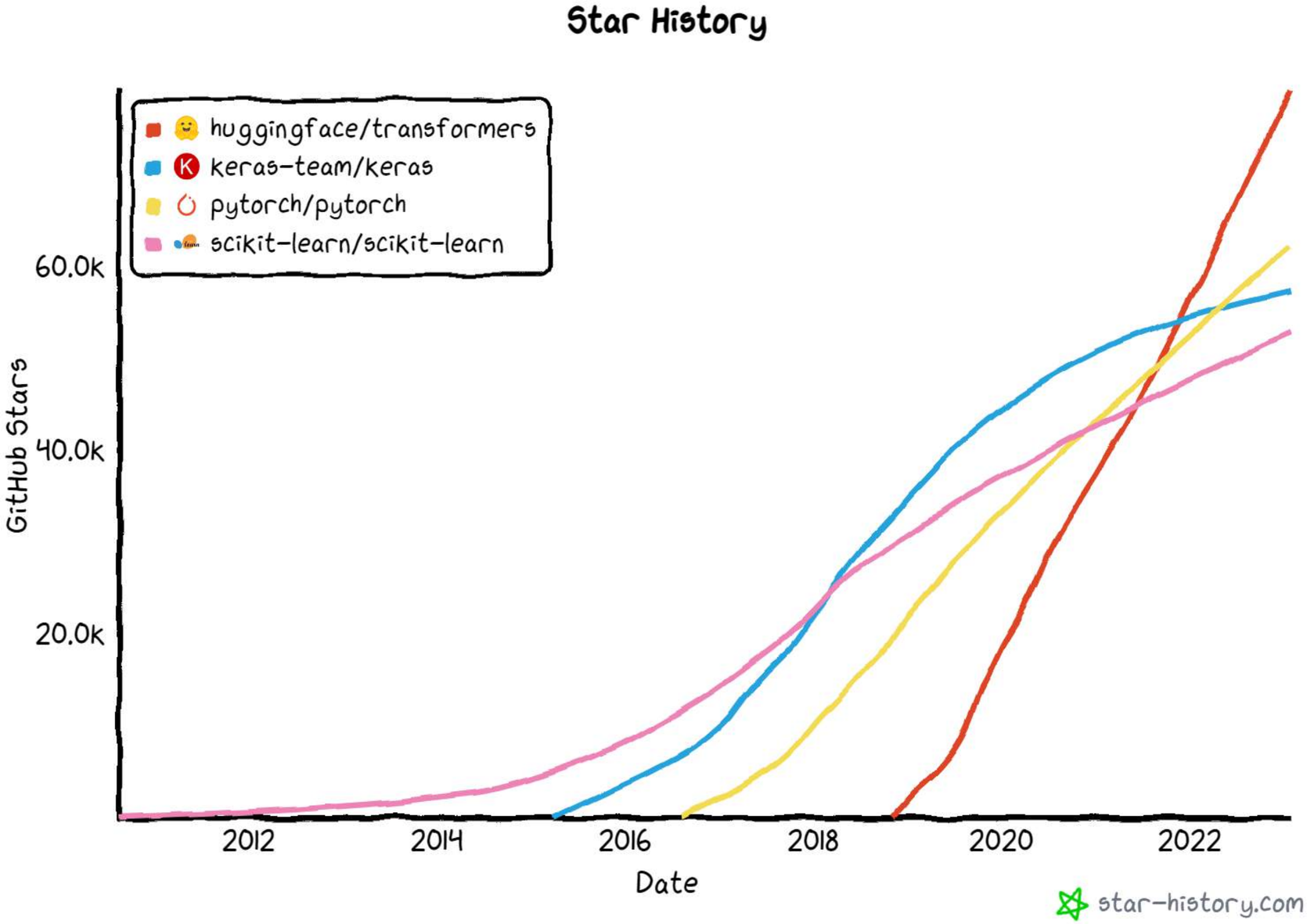
Github of Machine Learning

Easy Interface, Easy Deployment

Community Approach for rapid growth in AI

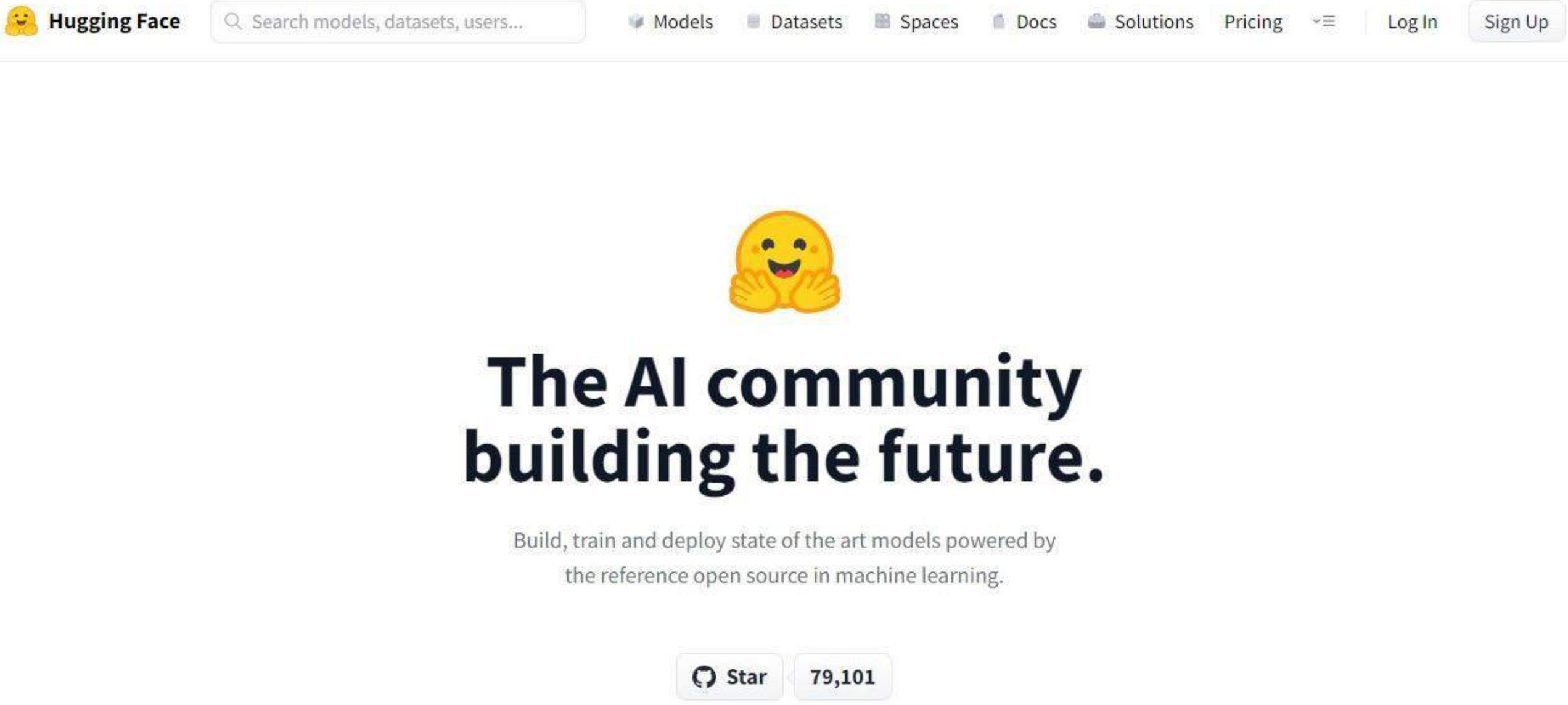
State of Art Models

Widespread Support

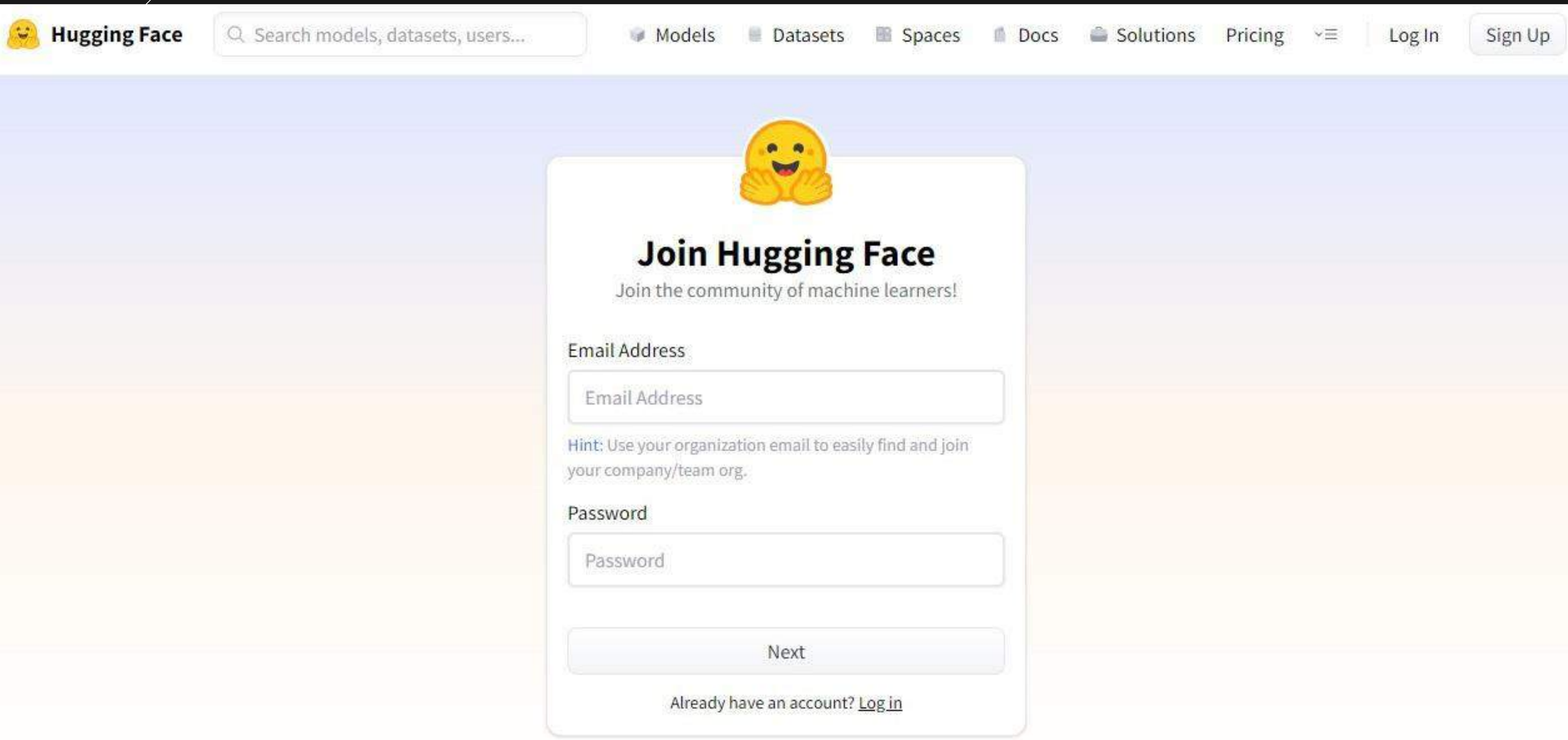

Star History
huggingface/transformers
keras-team/keras
pytorch/pytorch
scikit-learn/scikit-learn
60.0k
40.0k
20.0k
GitHub Stars
2012
2014
2016
2018
2020
2022
Date
star-history.com

Task	Description	Modality	Pipeline identifier
Text classification	assign a label to a given sequence of text	NLP	pipeline(task="sentiment-analysis")
Text generation	generate text that follows a given prompt	NLP	pipeline(task="text-generation")
Name entity recognition	assign a label to each token in a sequence (people, organization, location, etc.)	NLP	pipeline(task="ner")
Question answering	extract an answer from the text given some context and a question	NLP	pipeline(task="question-answering")
Fill-mask	predict the correct masked token in a sequence	NLP	pipeline(task="fill-mask")
Summarization	generate a summary of a sequence of text or document	NLP	pipeline(task="summarization")
Translation	translate text from one language into another	NLP	pipeline(task="translation")
Image classification	assign a label to an image	Computer vision	pipeline(task="image-classification")

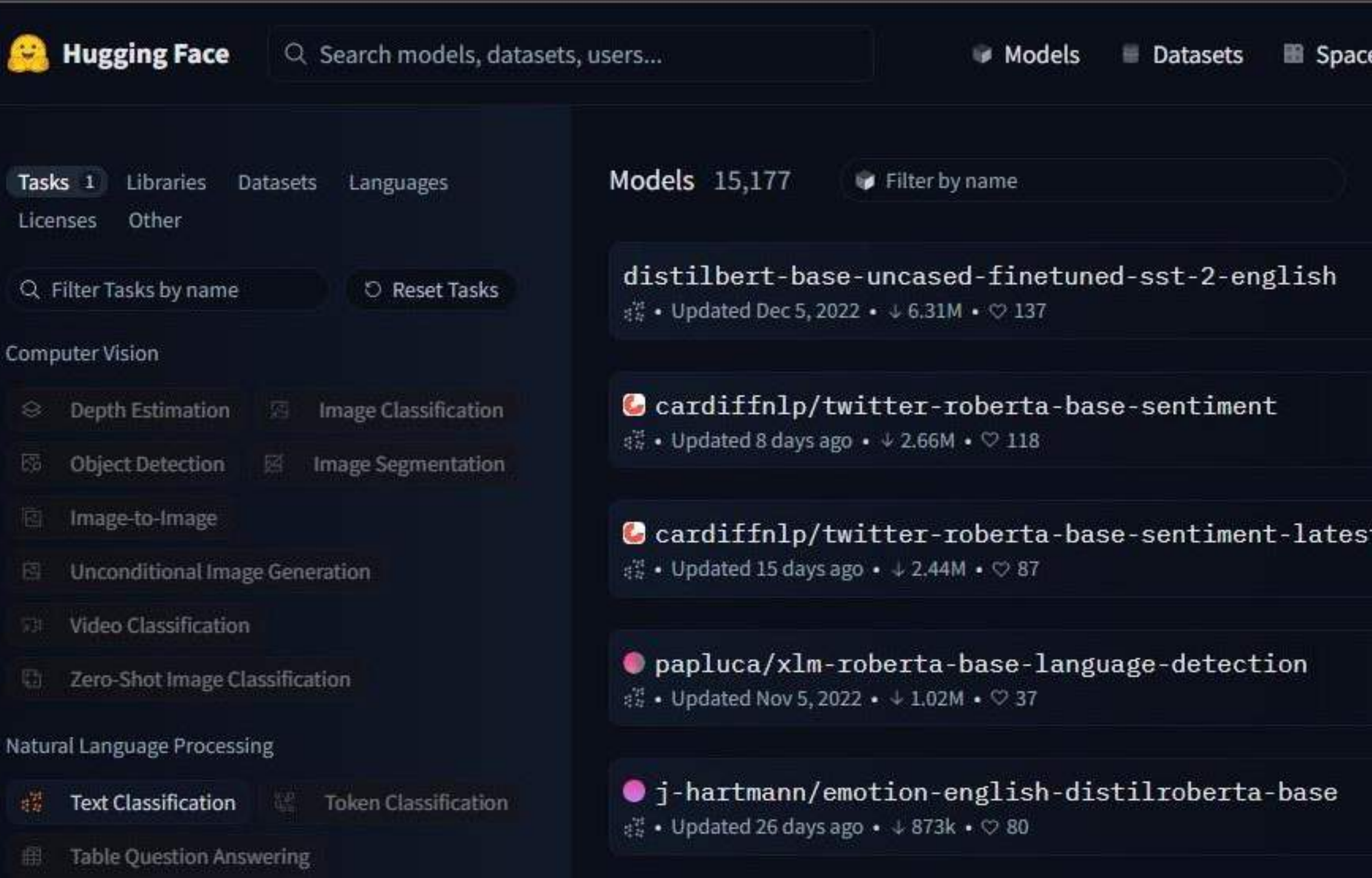
https://huggingface.co/



https://huggingface.co/join

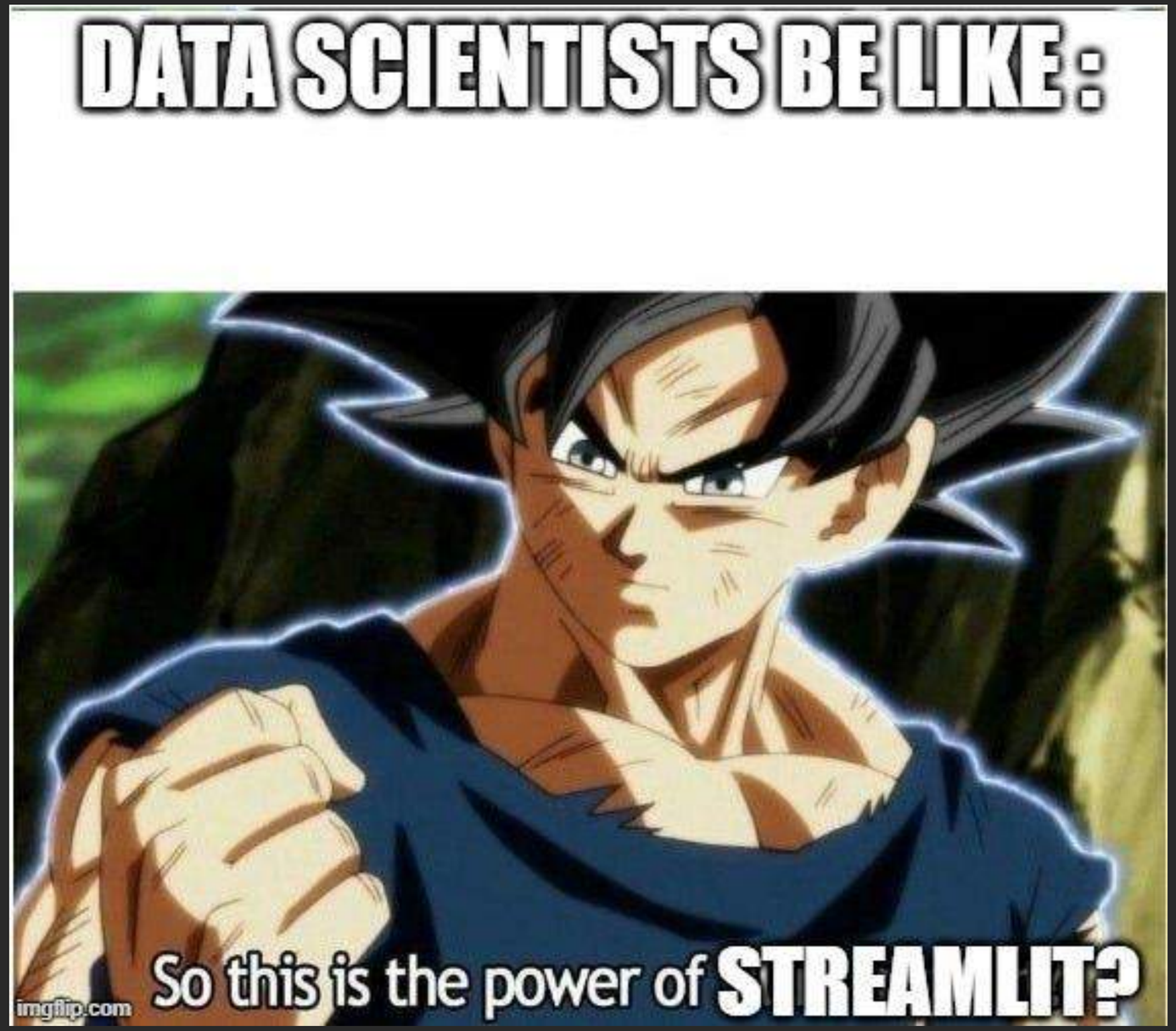


LET'S EXPLORE

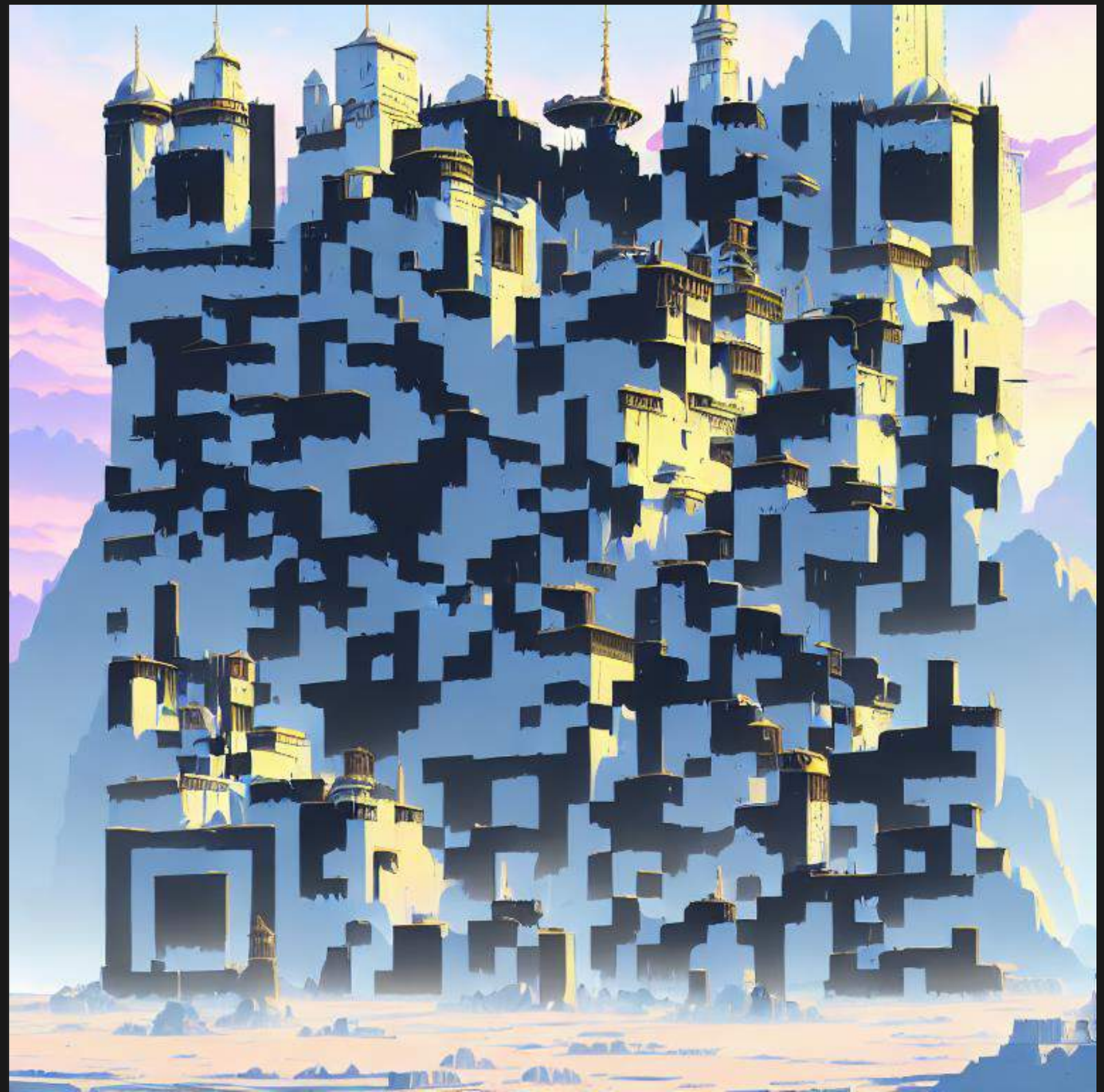


LET'S BUILD USING HUGGINGFACE

WHAT IS STREAMLIT LIB HOLDS



git commit & chill



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