SLIIT UNI
THE KNOWLEDGE UNIVERSITY

Artificial Intelligence Engineer

Introduction to AI/ML

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SLIIT

SLIIT INDUSTRY ENGAGEMENT UNIT
FACULTY OF COMPUTING

Agenda

- What is Artificial Intelligence, Machine Learning ?
- Programming vs Machine Learning
- Current Applications of AI/ML

ARTIFICIAL INTELLIGENCE

Early artificial intelligence stirs excitement.

MACHINE LEARNING

Machine learning begins to flourish.

DEEP LEARNING

Deep learning breakthroughs drive AI boom.

1950's 1960's 1970's 1980's 1990's 2000's 2010's

ARTIFICIAL INTELLIGENCE

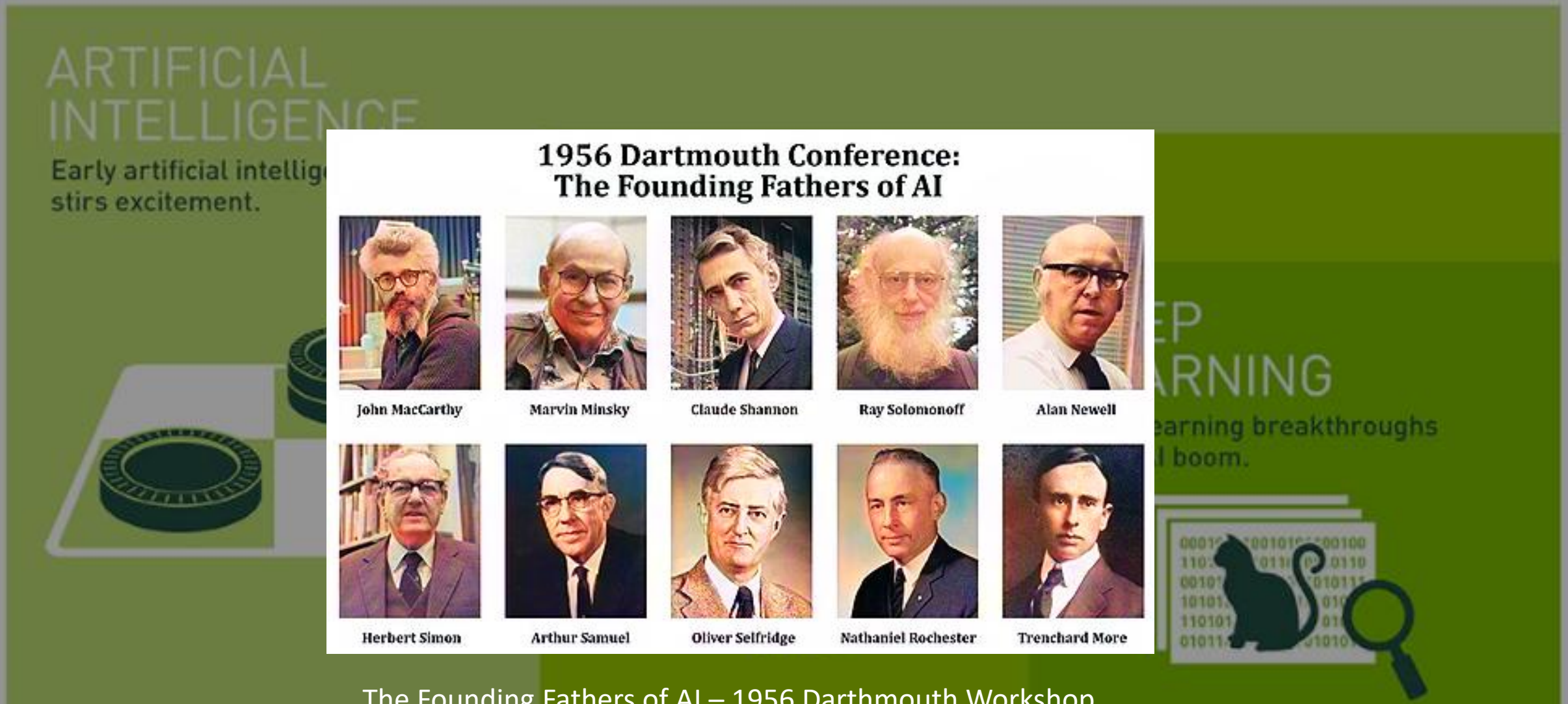
Early artificial intelligence stirs excitement.

EEP
ARNING

learning breakthroughs
AI boom.

ENIAC –Worlds first general purpose Electronic Computer (1946)

1950's 1960's 1970's 1980's 1990's 2000's 2010's



1956 Dartmouth Conference: The Founding Fathers of AI

The Founding Fathers of AI – 1956 Darthmouth Workshop

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VICE News | HBO

Programming vs Machine Learning

Traditional Programming:

Rules + Data → Desired Output

Machine Learning:

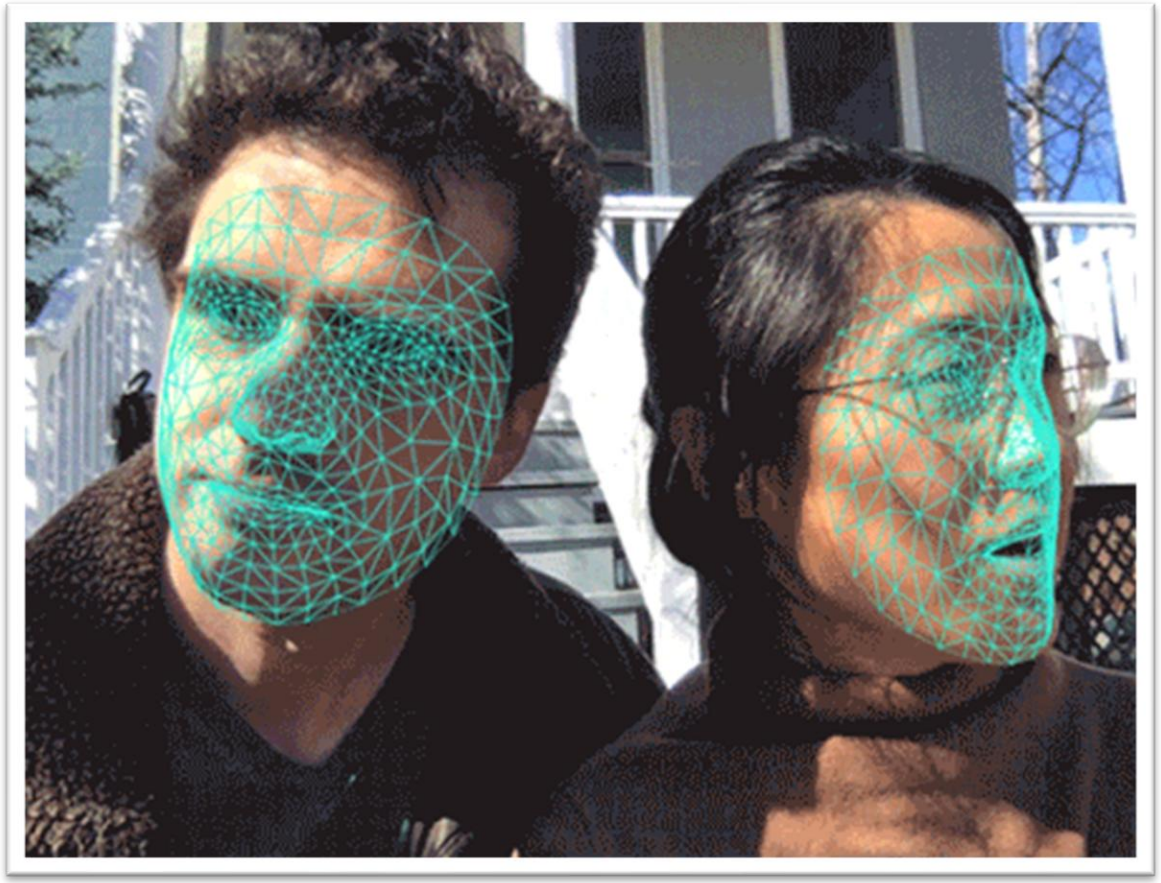
Desired Output + Data → Rules

Types of Deep Learning Models and their uses

- Convolutional Neural Networks
  - Computer Vision, Image Classifications
- Recurrent Neural Networks
  - Process Sequences, e.g. Text, Speech, Audio
- Reinforcment Learning
  - Well known in Games, used in Robotics
- Generative Adversarial Networks
  - Generating new artificats e.g. photos, videos, music

Recent Demos of What Deep Learning can do

Facemesh Package



Handpose Package

Which image is the computer generated one?

A

B

C

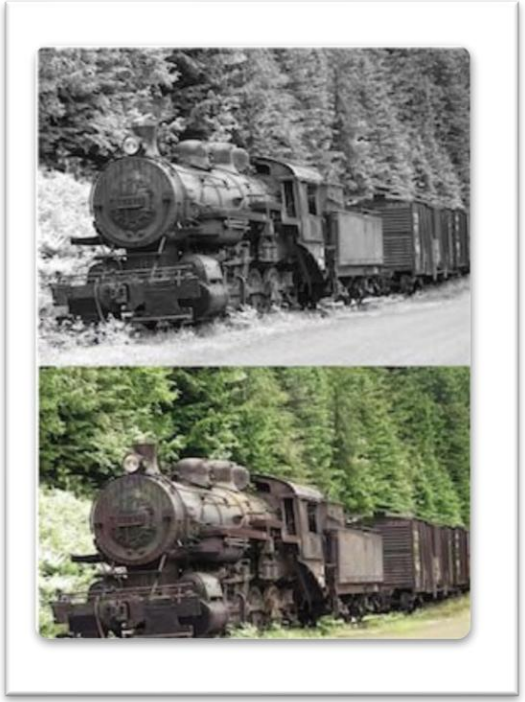
Applications Out there

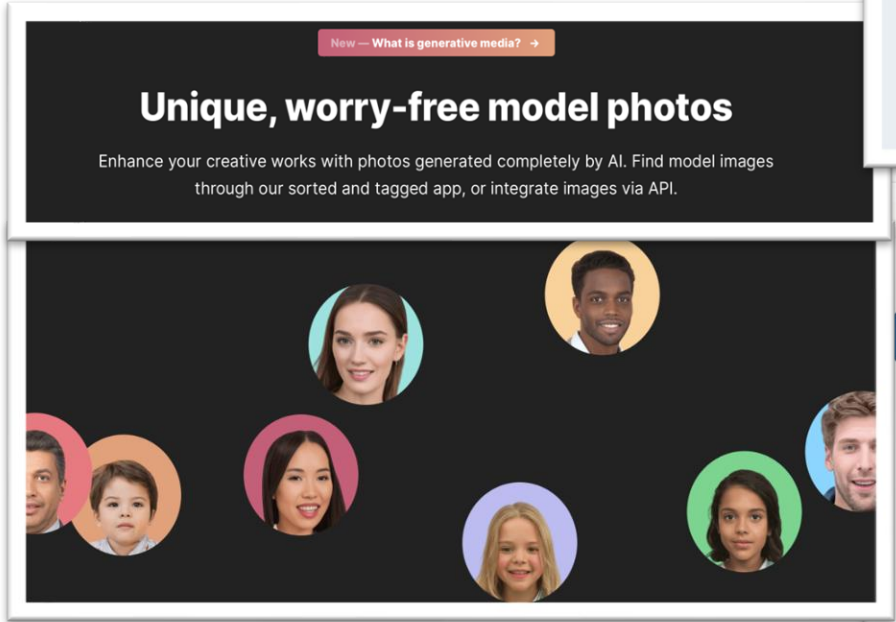
https://deepai.org/machine-learning-model/colorizer

https://generated.photos/#

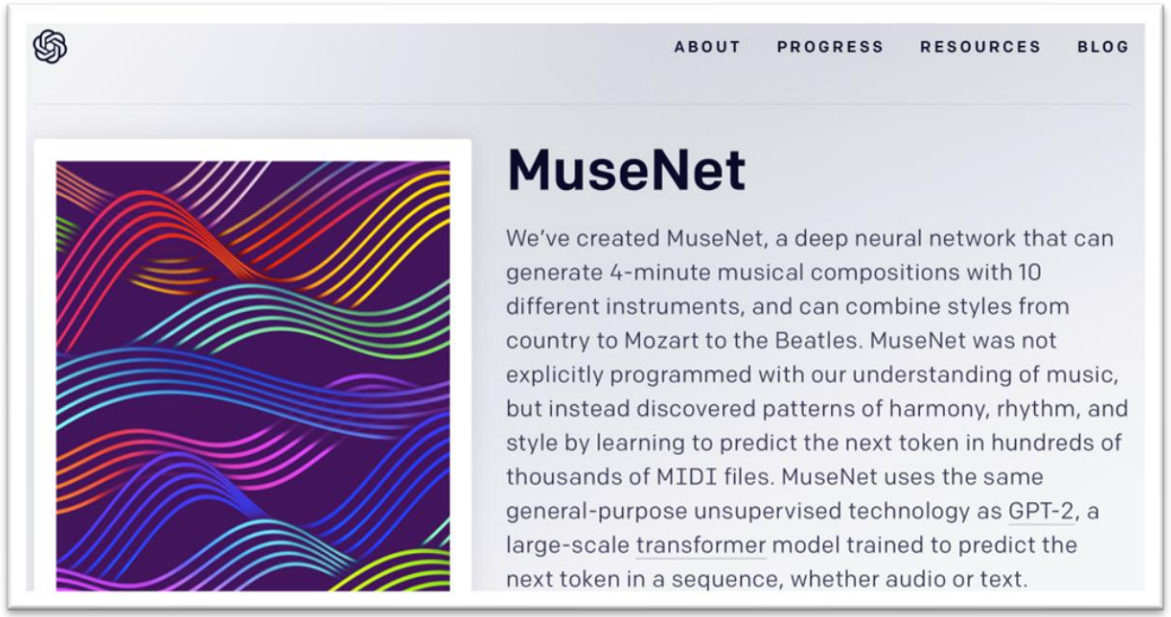
https://artbreeder.com

https://deepart.io





Applications Out there

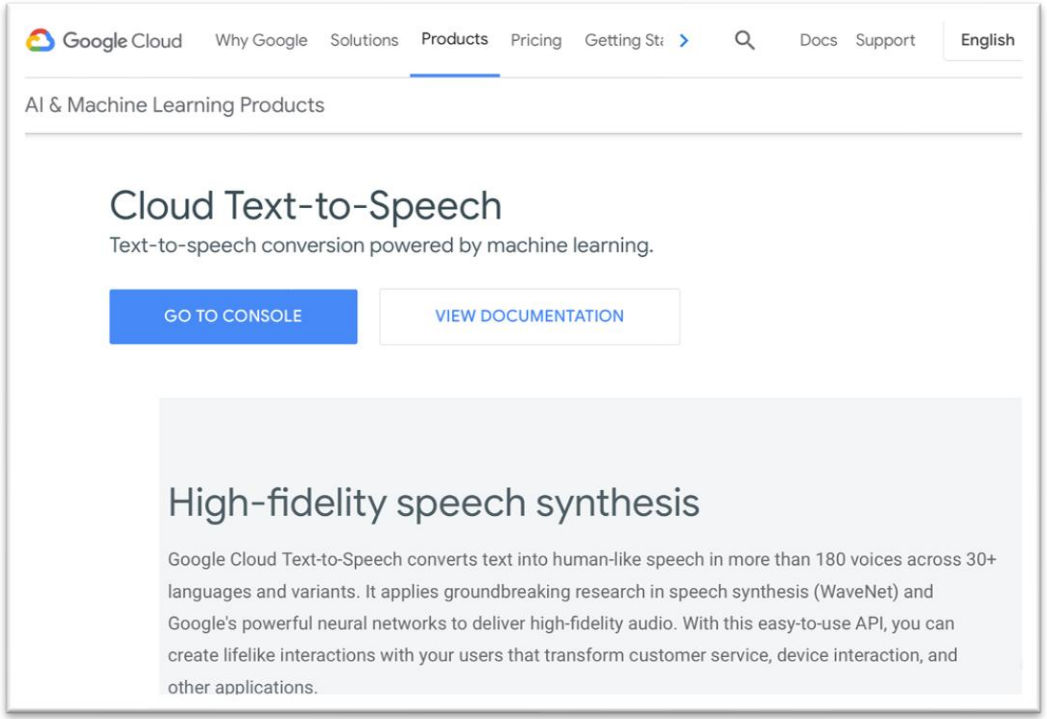


MuseNet

https://openai.com/blog/musenet/

WaveNet

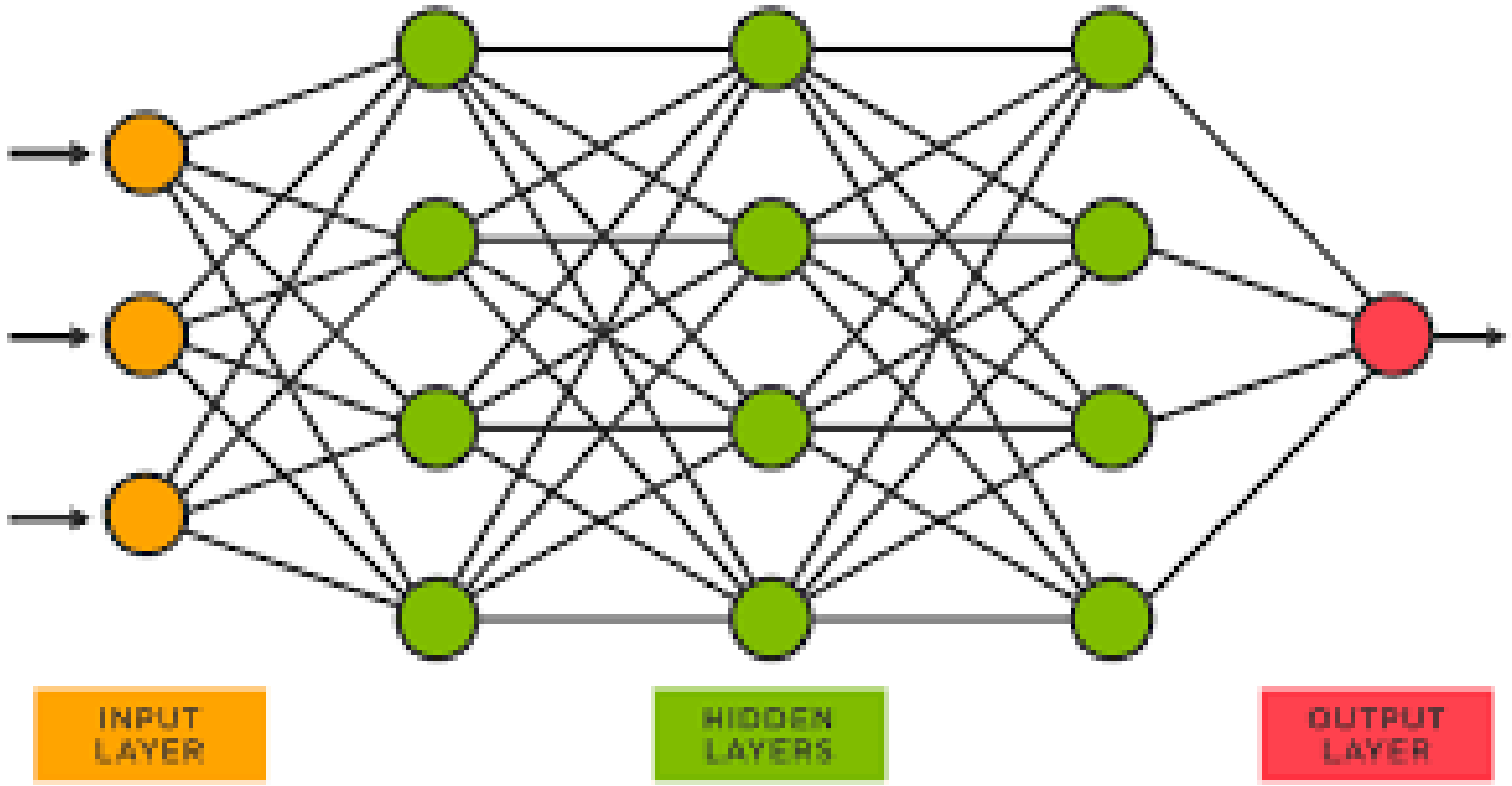
https://cloud.google.com/text-to-speech

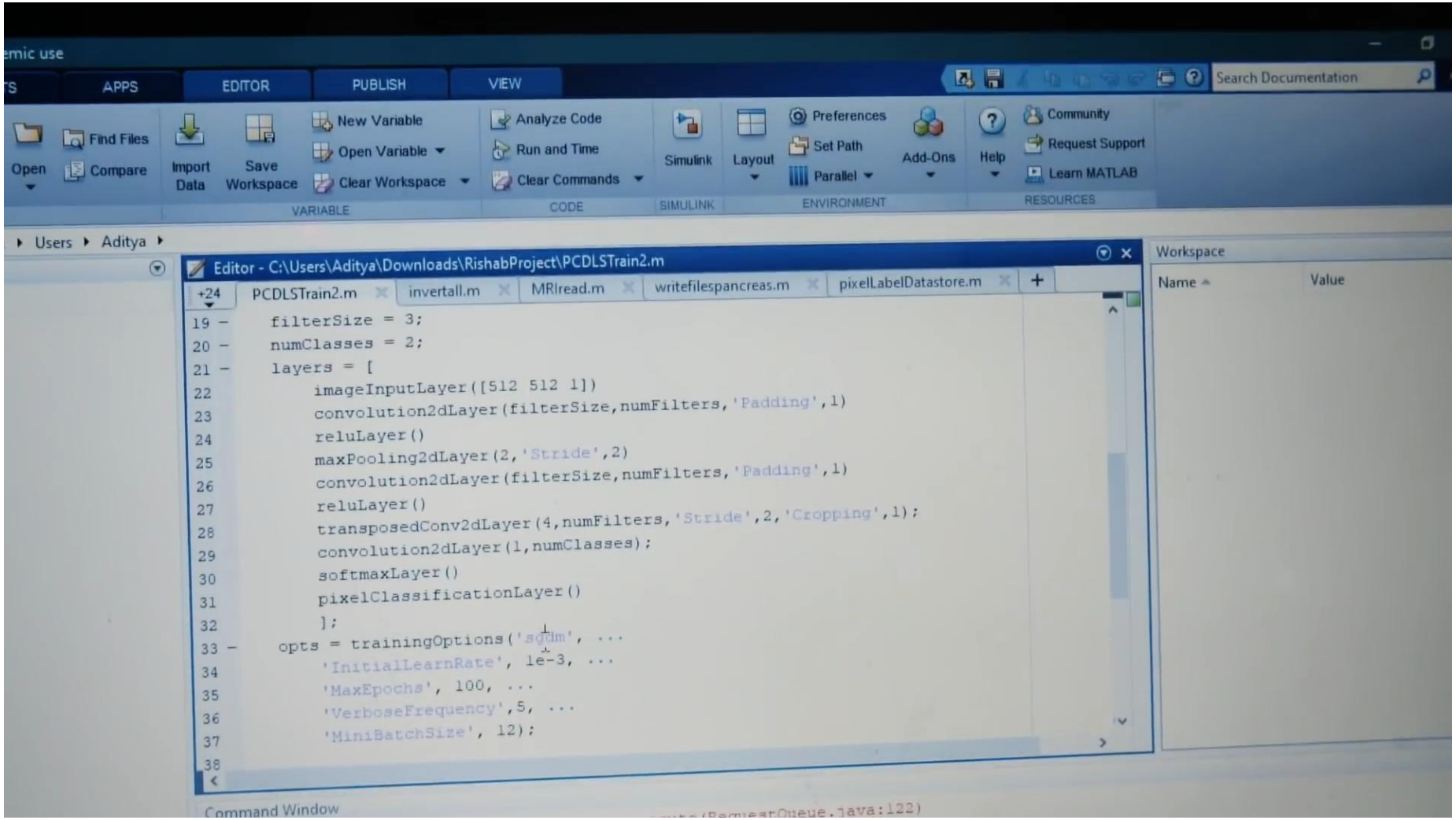


Current AI/ML solutions

- Recommendation Systems
- Computer Vision
- Natural Language Processing
- Language Translation
- Clustering
- Forcasting
- Reinforcement Learning
- General Adverserial Networks

A Neural Network




APPS
EDITOR
PUBLISH
VIEW
Search Documentation
Find Files
Compare
Open
Import Data
Save Workspace
New Variable
Open Variable
Clear Workspace
Analyze Code
Run and Time
Clear Commands
Simulink
Layout
Preferences
Set Path
Parallel
Add-Ons
Help
Community
Request Support
Learn MATLAB
VARIABLE
CODE
SIMULINK
ENVIRONMENT
RESOURCES
Users
Aditya
Editor - C:\Users\Aditya\Downloads\RishabProject\PCDLSTrain2.m
PCDLSTrain2.m
invertall.m
MRIread.m
writefilespancreas.m
pixelLabelDatastore.m
filterSize = 3;
numClasses = 2;
layers = [
imageInputLayer([512 512 1])
convolution2dLayer(filterSize,numFilters,'Padding',1)
reluLayer()
maxPooling2dLayer(2,'Stride',2)
convolution2dLayer(filterSize,numFilters,'Padding',1)
reluLayer()
transposedConv2dLayer(4,numFilters,'Stride',2,'Cropping',1);
convolution2dLayer(1,numClasses);
softmaxLayer()
pixelClassificationLayer()
];
opts = trainingOptions('sgdm', ...
'InitialLearnRate', 1e-3, ...
'MaxEpochs', 100, ...
'VerboseFrequency',5, ...
'MiniBatchSize', 12);
Workspace
Name
Value
Command Window

Resources

- AI for Oceans – code.org
- Learn about AI – code.org
- https://experiments.withgoogle.com/collection/ai
- https://www.microsoft.com/en-us/ai
- https://ai.google

Resources - Videos

- The Age of AI – YouTube Originals
- Machine Learning: Living in the Age of AI | A Wired Film