



- Branches, fruit and seeds
- intro to RoboFlow , YOLO and Colab.
- Hands On avtivity Start Training your model in 10 min .
- Bonus: Visulasing CNN
- Hands On avtivity Test and demos
- Bonus: self Study

YOLOv8

AN INTORUCTION
TO ULTRALYTICS YOLO

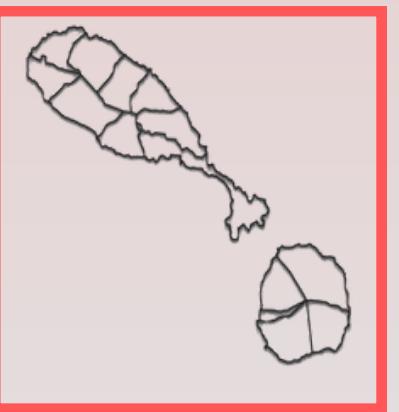
By Hamze

About Me

originally: from Syria

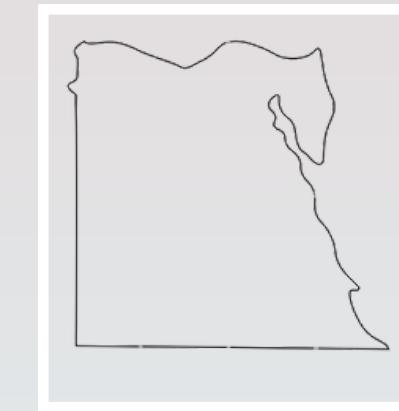


second nationality: Saint Kitts and Nevis



Lived in:

Syria (11 years), Egypt (9 years)



UK (4 years), UAE (1 year - present)



Work experience:

Embedded system and Machine learning engineer



Vee tech, Egypt, (9 month)

Teaching Assistant



Heriot-Watt University, UAE, (Present)



Education:

BEng Computer Systems Engineering (Hons), UOE, UK

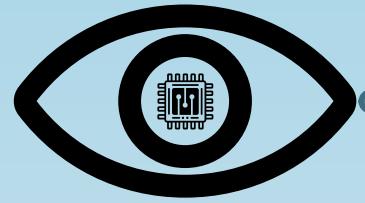


MSc Robotics, HWU, UAE



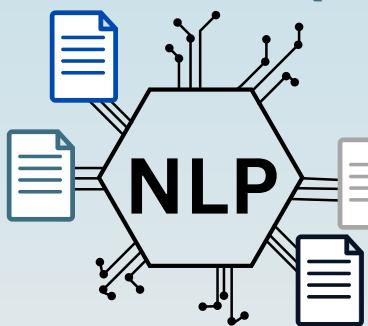
University of Essex

COMPUTER VISION (CV)



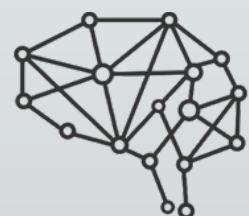
COMPUTER VISION IS A BRANCH OF AI THAT CREATES SMART ALGORITHMS TO INTERPRET IMAGES AND VIDEOS.

NATURAL LANGUAGE PROCESSING (NLP)



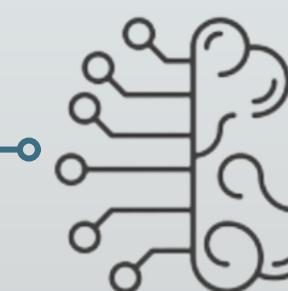
NATURAL LANGUAGE PROCESSING (NLP) IS A BRANCH OF AI THAT ENABLES COMPUTERS TO UNDERSTAND AND RESPOND TO HUMAN LANGUAGE.

DEEP LEARNING



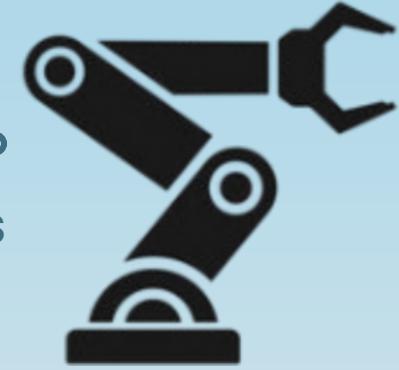
DEEP LEARNING IS A SUBFIELD OF MACHINE LEARNING THAT USES NEURAL NETWORKS WITH MANY LAYERS TO ANALYZE DATA

MACHINE LEARNING (ML)



MACHINE LEARNING (ML) IS A BRANCH OF AI THAT ENABLES COMPUTERS TO LEARN FROM DATA AND IMPROVE OVER TIME.

ROBOTICS



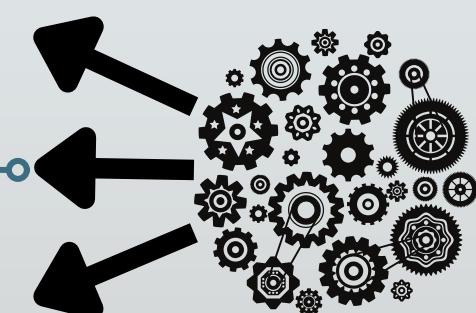
ROBOTICS IS A BRANCH OF ENGINEERING THAT DESIGNS AND BUILDS ROBOTS TO PERFORM TASKS.

FUZZY LOGIC

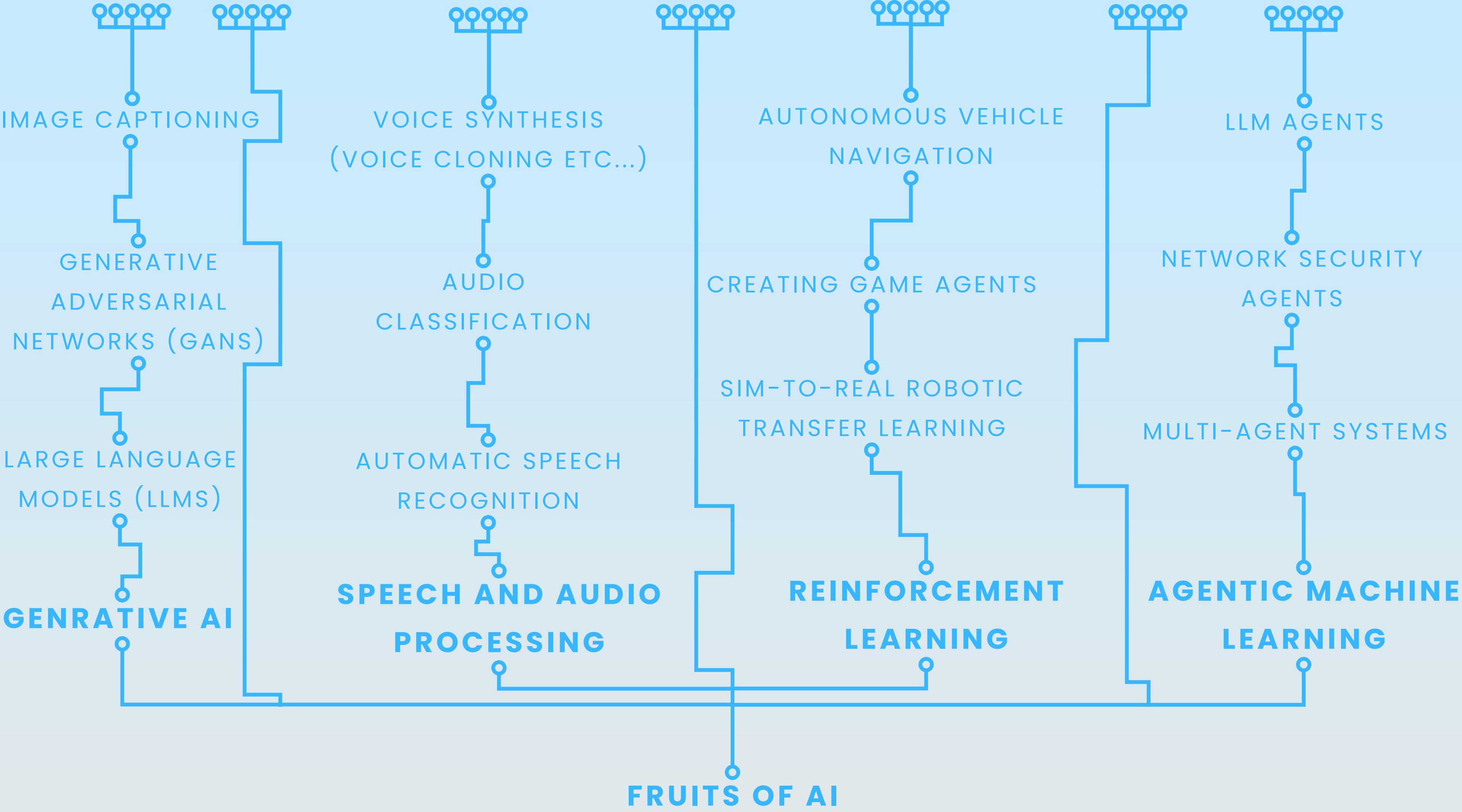


FUZZY LOGIC IS A BRANCH OF AI THAT DEALS WITH REASONING THAT IS APPROXIMATE RATHER THAN FIXED AND EXACT.

EXPERT SYSTEMS



EXPERT SYSTEMS ARE A BRANCH OF AI THAT USE A DATABASE OF EXPERT KNOWLEDGE TO MAKE DECISIONS.



ARTIFICIAL GENERAL INTELLIGENCE (AGI)

The Concept Of
Creating An AI that can
actually have an
understanding and logic

(AGI)

Creating an AI that can
think and understand
like a human.

ORGANOID INTELLIGENCE (OI)

the Concept of Creating
biological computations
(like a processing unit)
from human brain cells

(OI)

Combining living brain
cells with AI to make
smart systems.

COGNITIVE ARCHITECTURES (CA)

concept of creating an
ai architecture of the
human mind in terms on
computations

(CA)

Designing AI that works
like the human brain to
solve problems.

ARTIFICIAL SUPER INTELLIGENCE (ASI)

The Concept Of Creating
An AI structure that can
surpass the gifted
human mind

(ASI)

Building an AI that is
smarter than humans in
every way.

OR IN SIMPLER TERMS

Start Training Object Detection model in 10 minutes:

Use Roboflow Universe to Search for Dataset



introduce Google Colab and deploy/retrieve data without download



Ultralytics on colab and train with YOLOv8



Hands on activity

Task1 find the dataset:

option 1 Use the same dataset (RPS)

option 2 (recommended) Browse a desired dataset for your own unique detection model

Creating a roboflow is required for this option

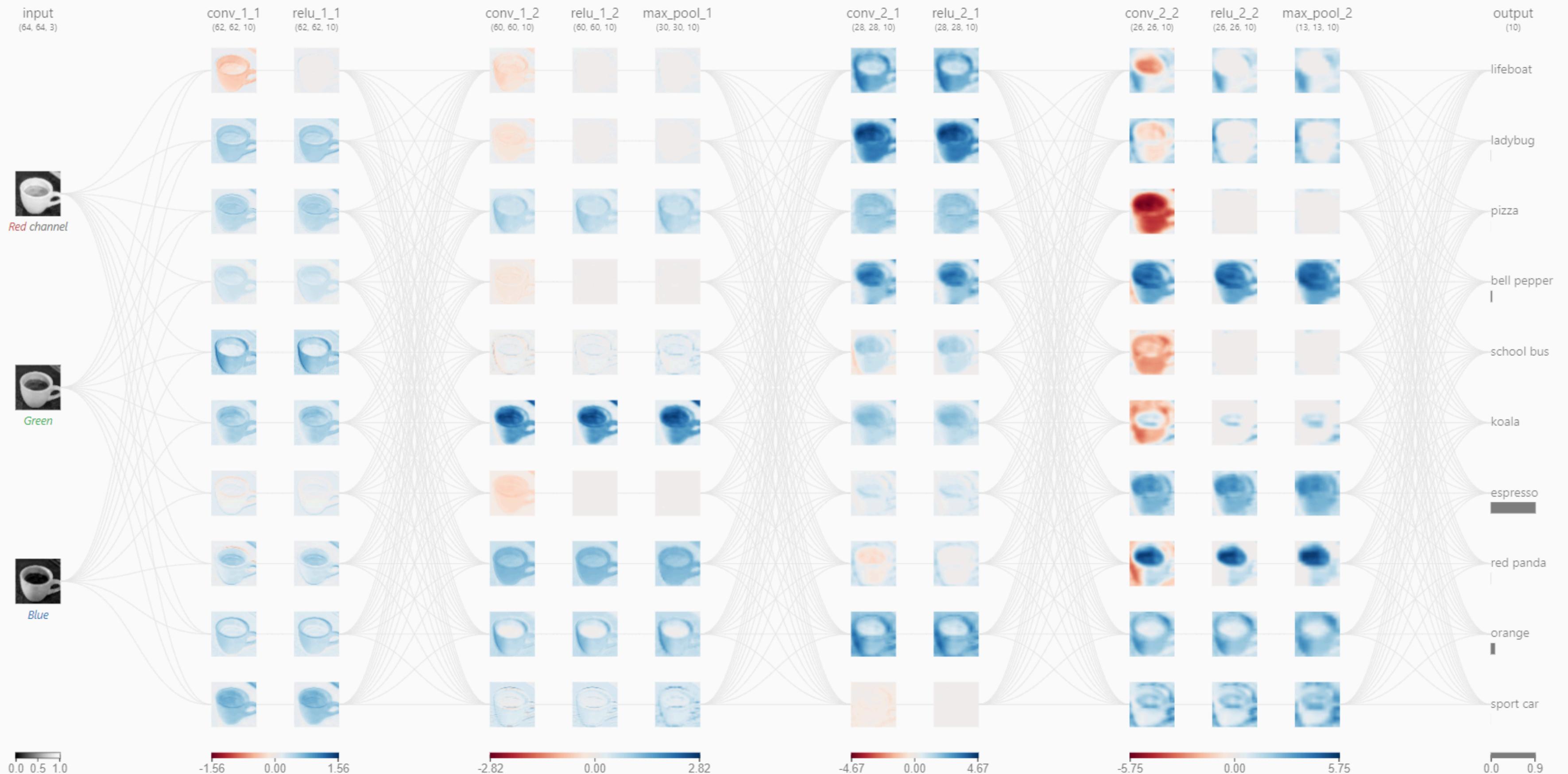
Task2 colab script:

**use the command to load the dataset and start
training the model per steps shown previously**

Train Demo:

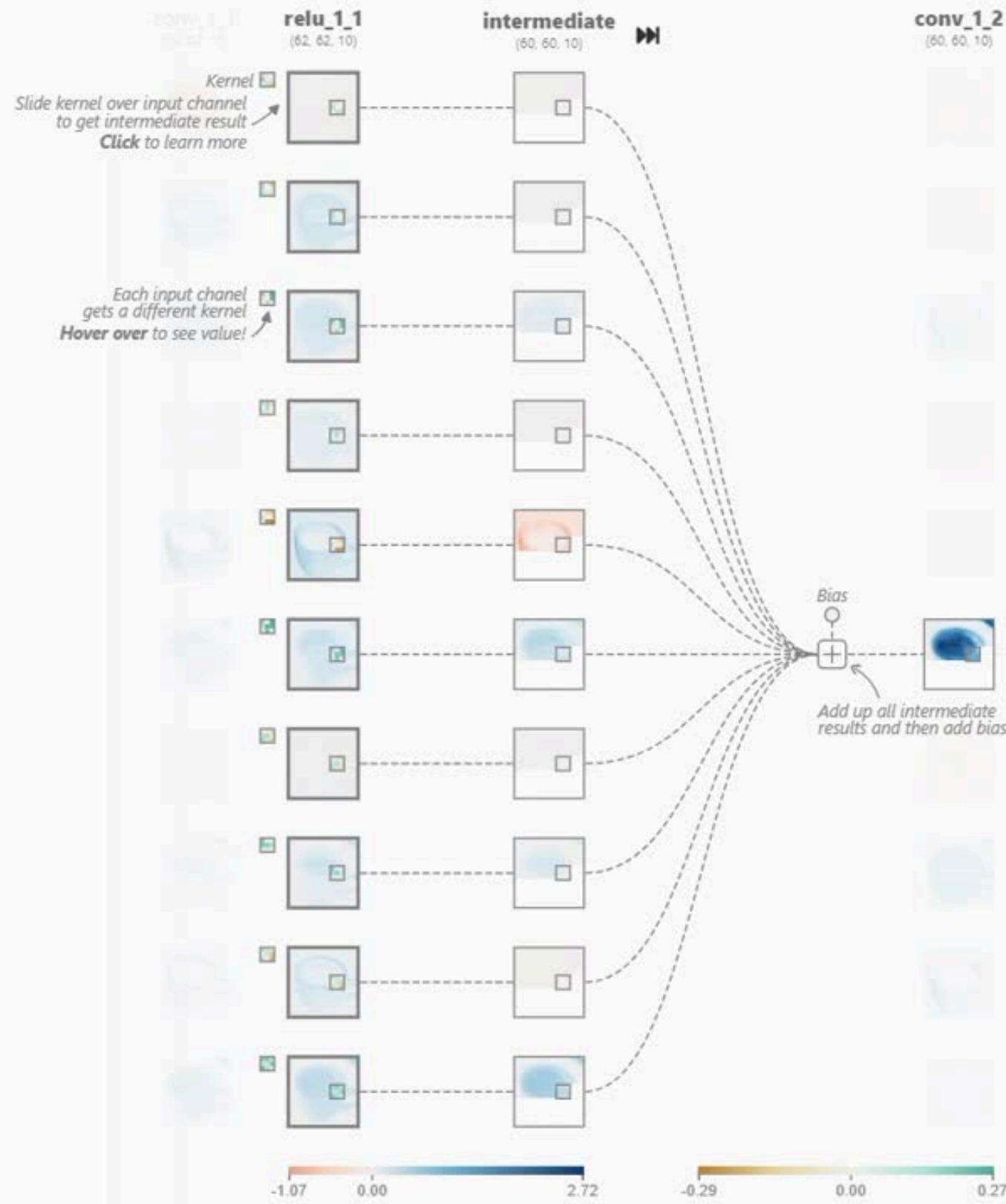
I will show the required steps now. Please follow along first
and later will help anyone who needs support :)

Bonus: Visualizing a Convolutional Neural Network (CNN)

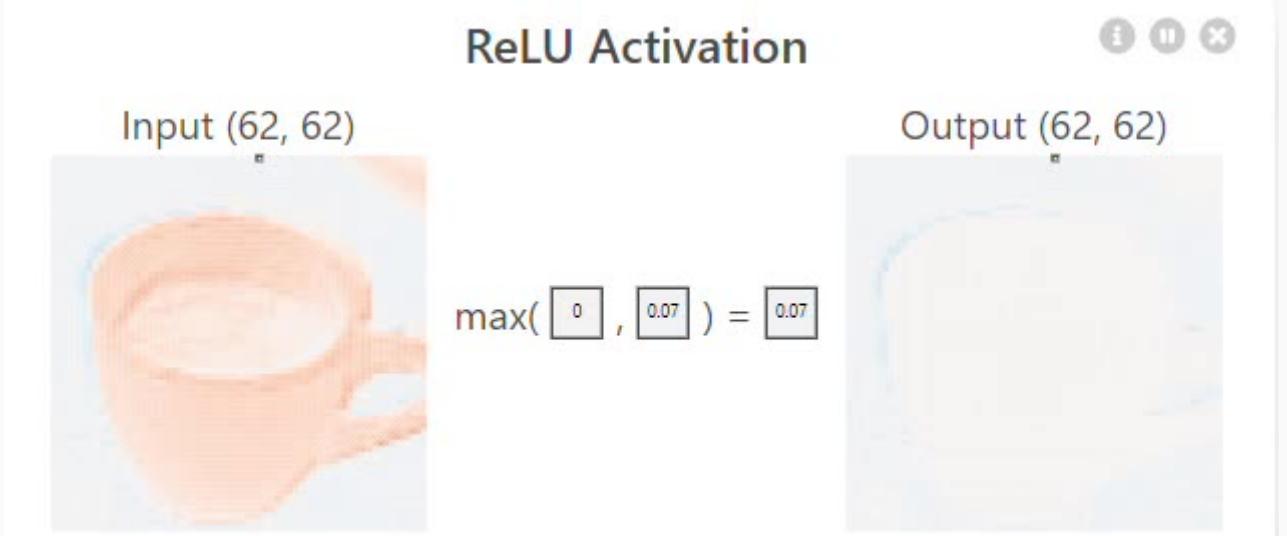


Bonus: Visualizing a CNN

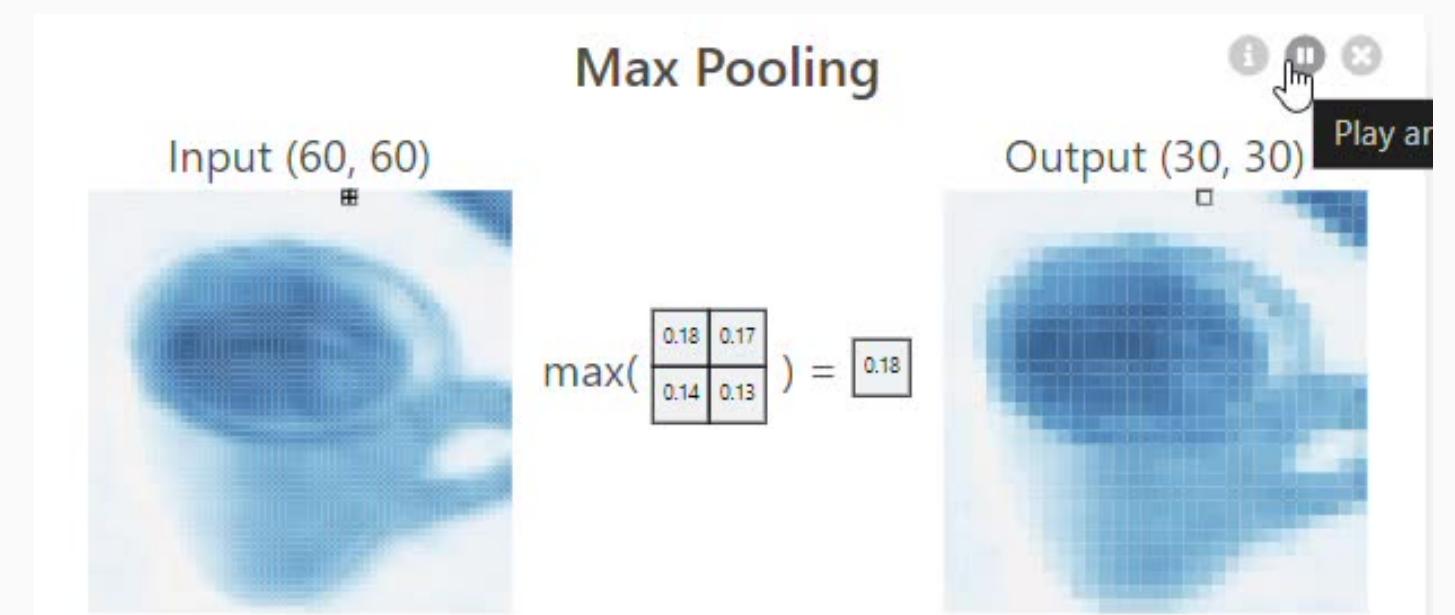
Convolution



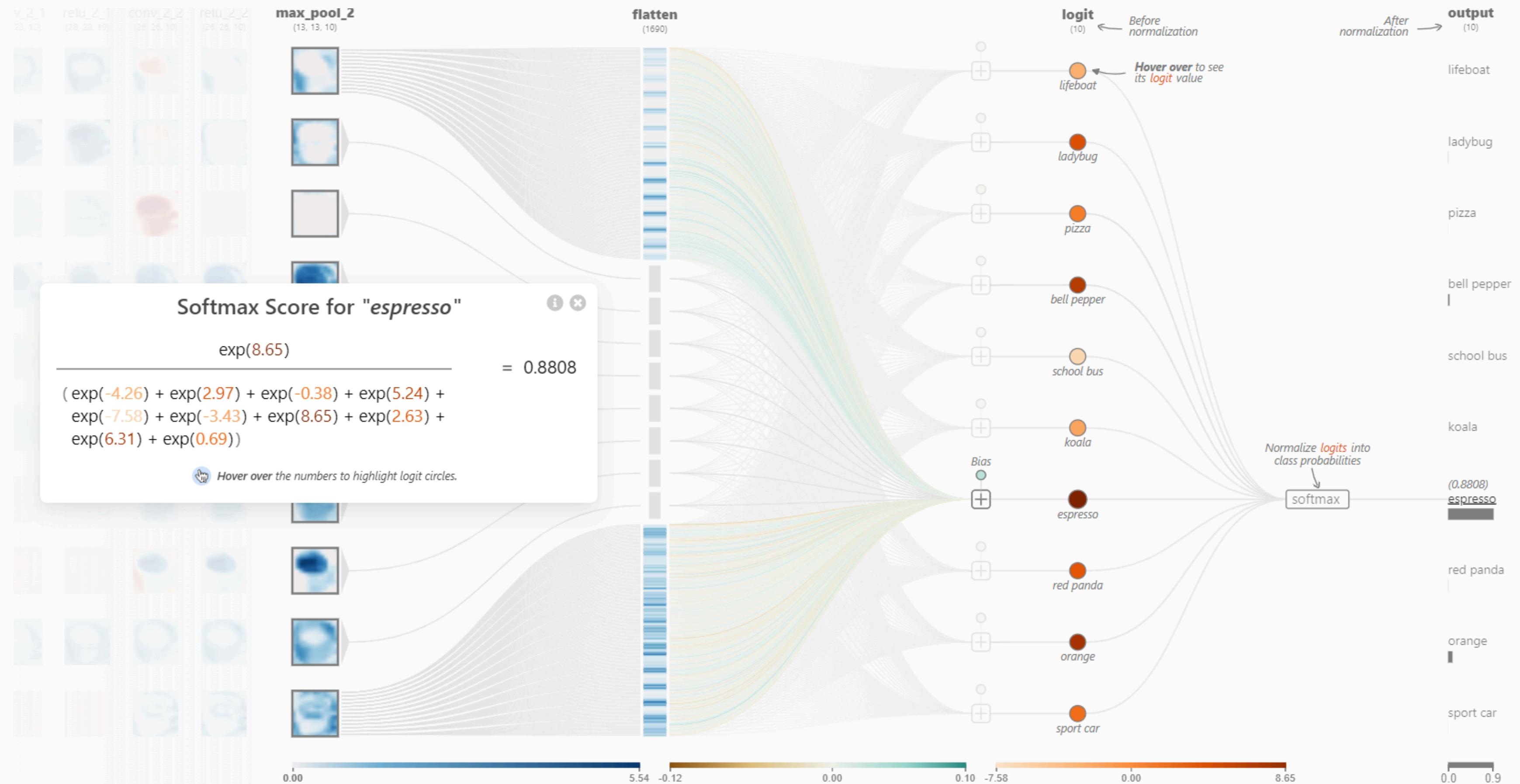
ReLU



Max pooling



Bonus: Visualizing a CNN



Hands on activity countinued.....

task 2.1 (only if you are using a different data set then provided)

find a couple of images to test your data on

(example: if your classes contain car, drone etc.., find images with those objects)

DO NOT USE THE TRAINING IMAGES TO TEST HOW WELL YOUR MODEL IS

Task 3 Detect:

now that your model is done training, use provided script to test it

Output: get a similar if not identical results to images below

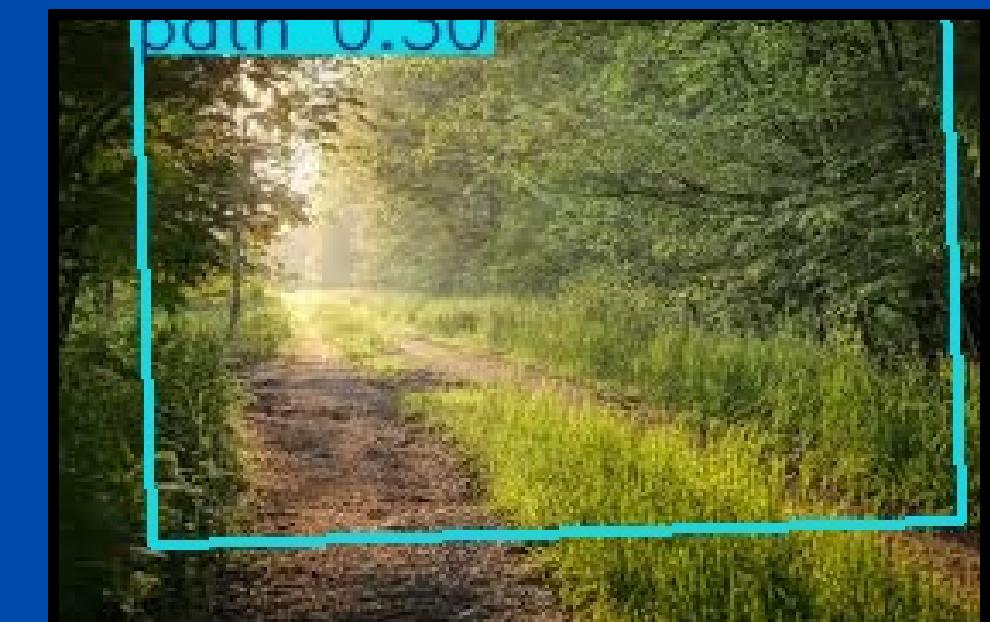
**rock-paper-scissors
(yolov8)**



**Person segmentaion
(yolov8-seg)**



**Path Oriented BBox
(yolov8-obb)**



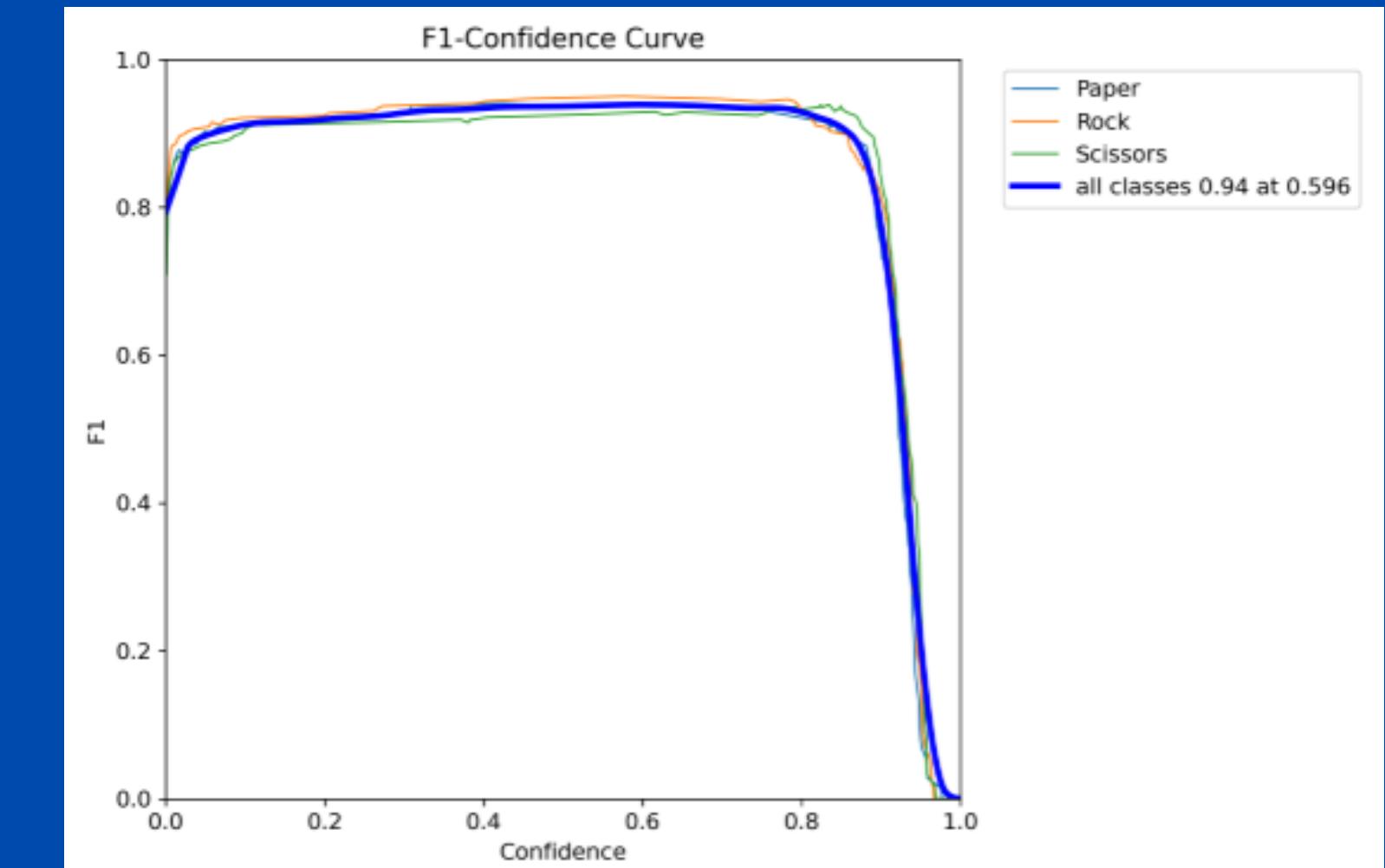
Hands on activity countinued.....

Task 4 Evaluate model:

use the tables generated from framework
to evaluate how well your model is

Predict Demo :

I will now show a live demo how to test your
model on images, videos and webcams

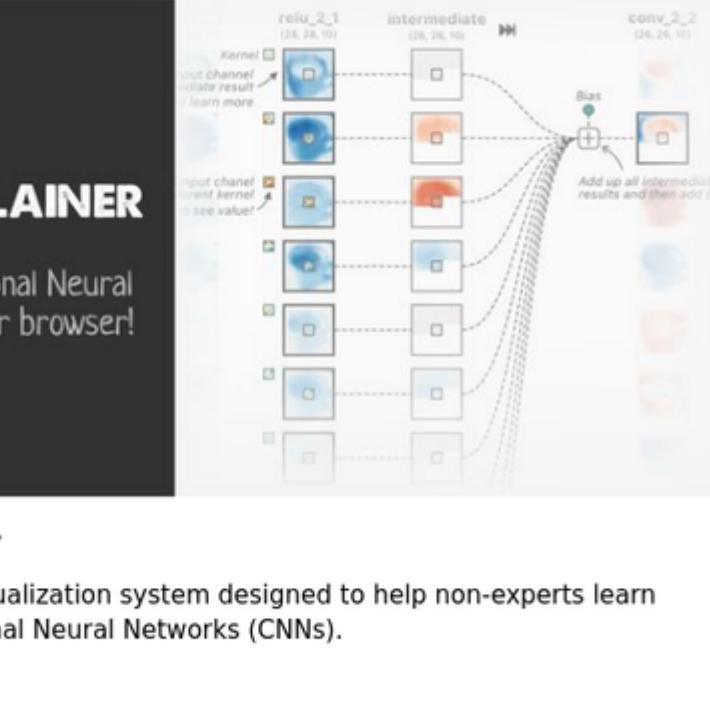


Bonus: Self read

Study and visualise CNN

CNN EXPLAINER

Learn Convolutional Neural Networks in your browser!



CNN Explainer

An interactive visualization system designed to help non-experts learn about Convolutional Neural Networks (CNNs).

 jay4w

the Hugging Face Community Computer Vision Course:

Welcome to the Community Computer Vision Course - Hugging Face Community Computer Vision Course

We're on a journey to advance and democratize artificial intelligence through open source and open science.

 huggingface

ML and ROS course Construct (paid)



LEARNING PATH: Machine Learning for Robots

Study up and learn to master the next level of ROS & robotics

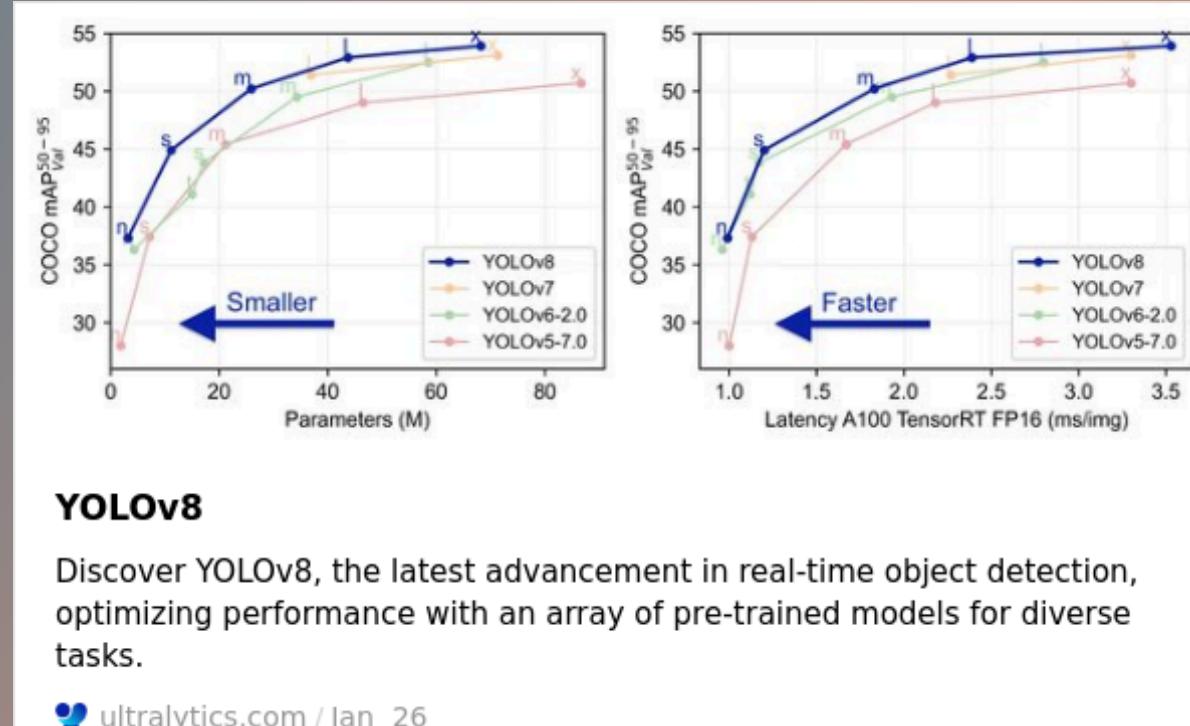
3 Courses

Machine Learning for Robots Learning Path

[et_pb_section fb_built="1" admin_label="Course Hero" _builder_version="4.4.8" background_enable_color="off" background_color_gradient_direction="158deg" ...]

 The Construct /

Yolov8 Docs



tutorial to easily use meta's SAM Model



How to Use the Segment Anything Model (SAM) to Create Masks

By Jess Wilk Hey there! So, you know that buzz about Tesla's autopilot being all futuristic and driverless? Ever thought about how it actually does its magic? Well, let me tell you – it's all about image segmentation...

 freeCodeCamp.org / Nov 8, 2023

import Data roboflow universe



Try this Cool VLM on Nividia NIM



phi-3-vision-128k-instruct Model by Microsoft

Cutting-edge open multimodal model excelling in high-quality reasoning from images.