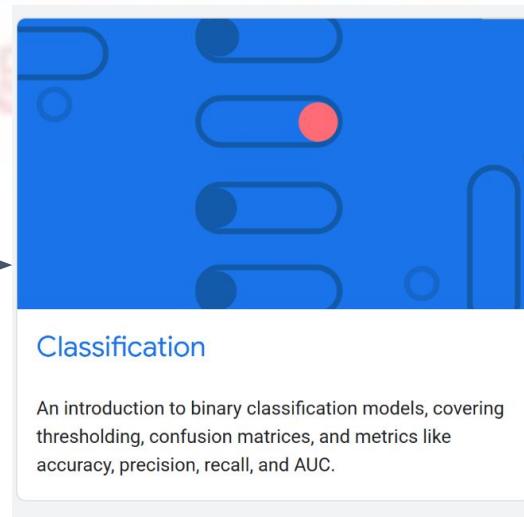


# TECHCRUSH ARTIFICIAL INTELLIGENCE BOOTCAMP

Facilitator: Hammed Obasekore  
September 30th 2025

## Recap



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## Deploying Your AI Model: Web as a Case Study

# Python

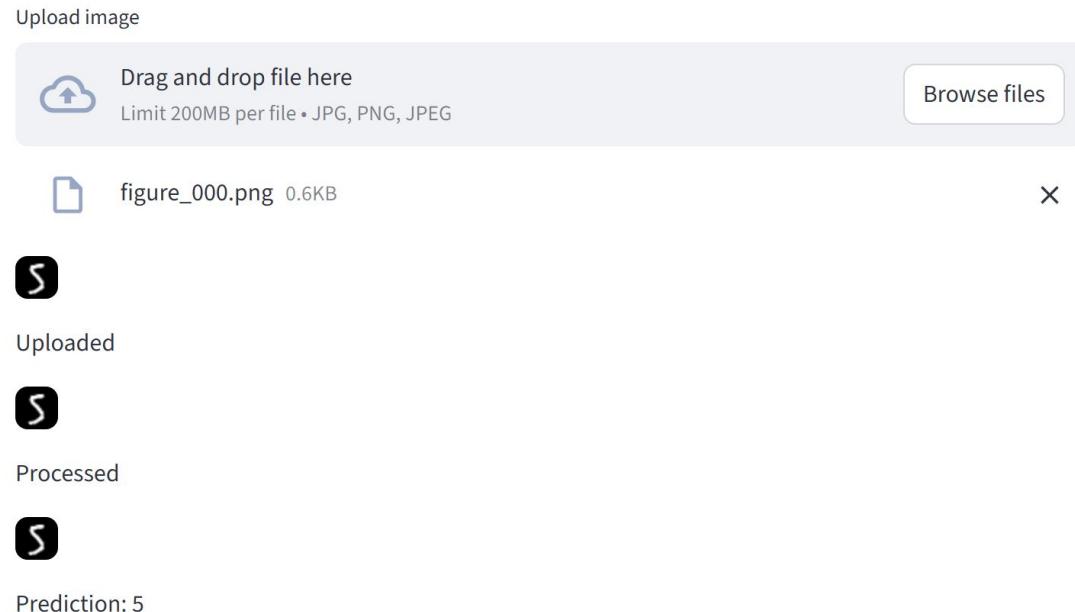
### Options

- [Streamlit](#)
- [Flask](#)
- [FastAPI](#)

### Hosting

- [pythonanywhere](#)
- [Vercel](#)

### Predict Hand Written Digit



## Deploying Your AI Model: Web as a Case Study

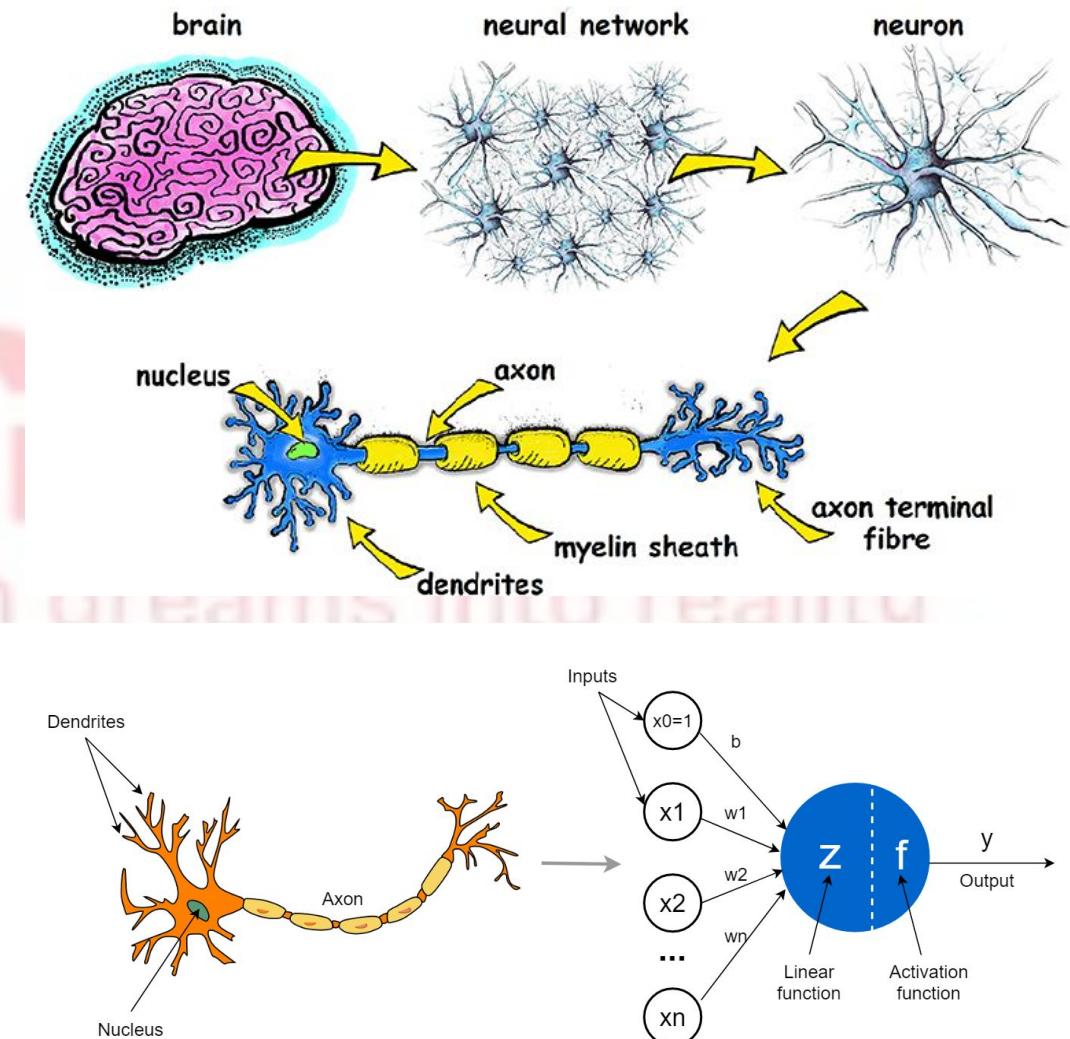
# Case Study - Python Streamlit

- Export Model Pipeline
  - Preprocessing
  - Transformations
  - Trained Model
- Import Model Pipeline
- Accept User Input
- Apply transformation and preprocessing
- Make model prediction
- Output Prediction Result

```
1 import streamlit as st
2 import pickle
3 import numpy as np
4 from PIL import Image
5
6
7 pipe = pickle.load(open('/content/mnist_knn_model.pkl','rb'))
8
9 st.title('Predict Hand Written Digit')
10
11 uploaded_file = st.file_uploader(
12     "Upload image", type=["jpg", "png"]
13 )
14 if uploaded_file is not None:
15     st.image(uploaded_file)
16     st.write(f"Uploaded")
17     st.image(uploaded_file)
18     # img = uploaded_file.read()
19     img = Image.open(uploaded_file)
20     img = img.resize((28, 28))
21     img = img.convert('L')
22     st.write(f"Processed")
23     st.image(img)
24     img = np.array(img)
25
26     img_vec = img.reshape(img.shape[0]*img.shape[1])
27
28     y_pred = pipe.predict([img_vec])
29
30     st.write(f"Prediction: {y_pred[0]}")
31
```

## Neural Network

# Neural Network (NN)

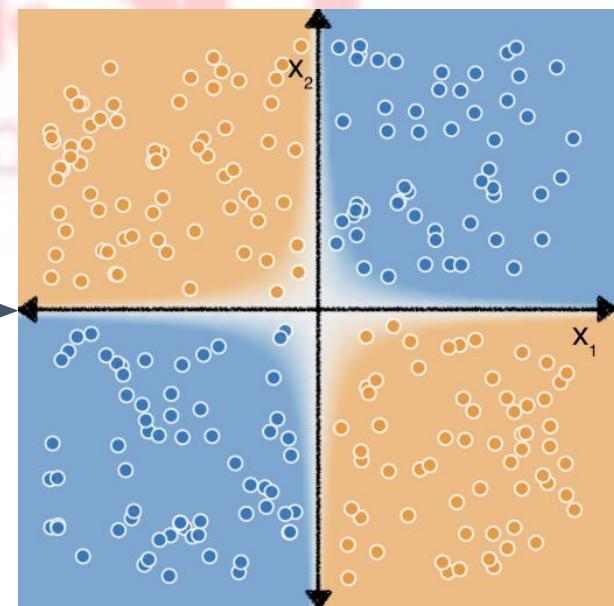
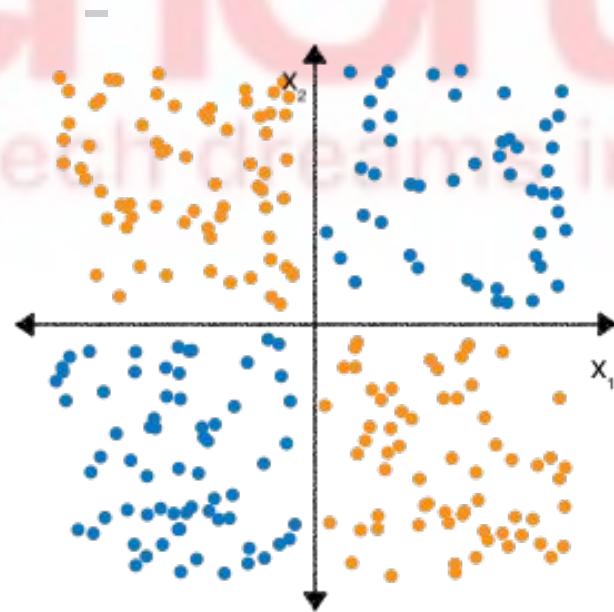
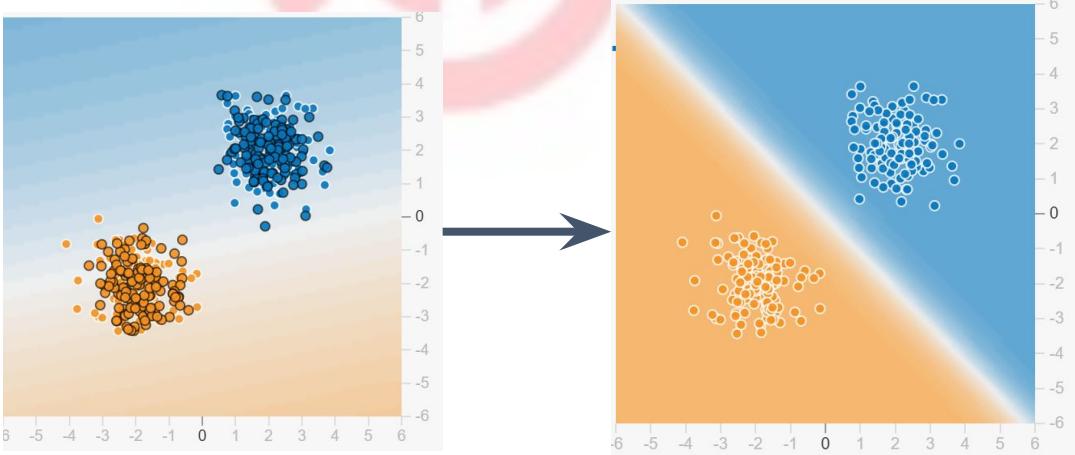


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## Neural Network

# Neural Network (NN)

- Artificial model of how human brain works.
  - Has ability to handle highly non-linear applications
  - Universal Approximator



# Neural Network (NN)

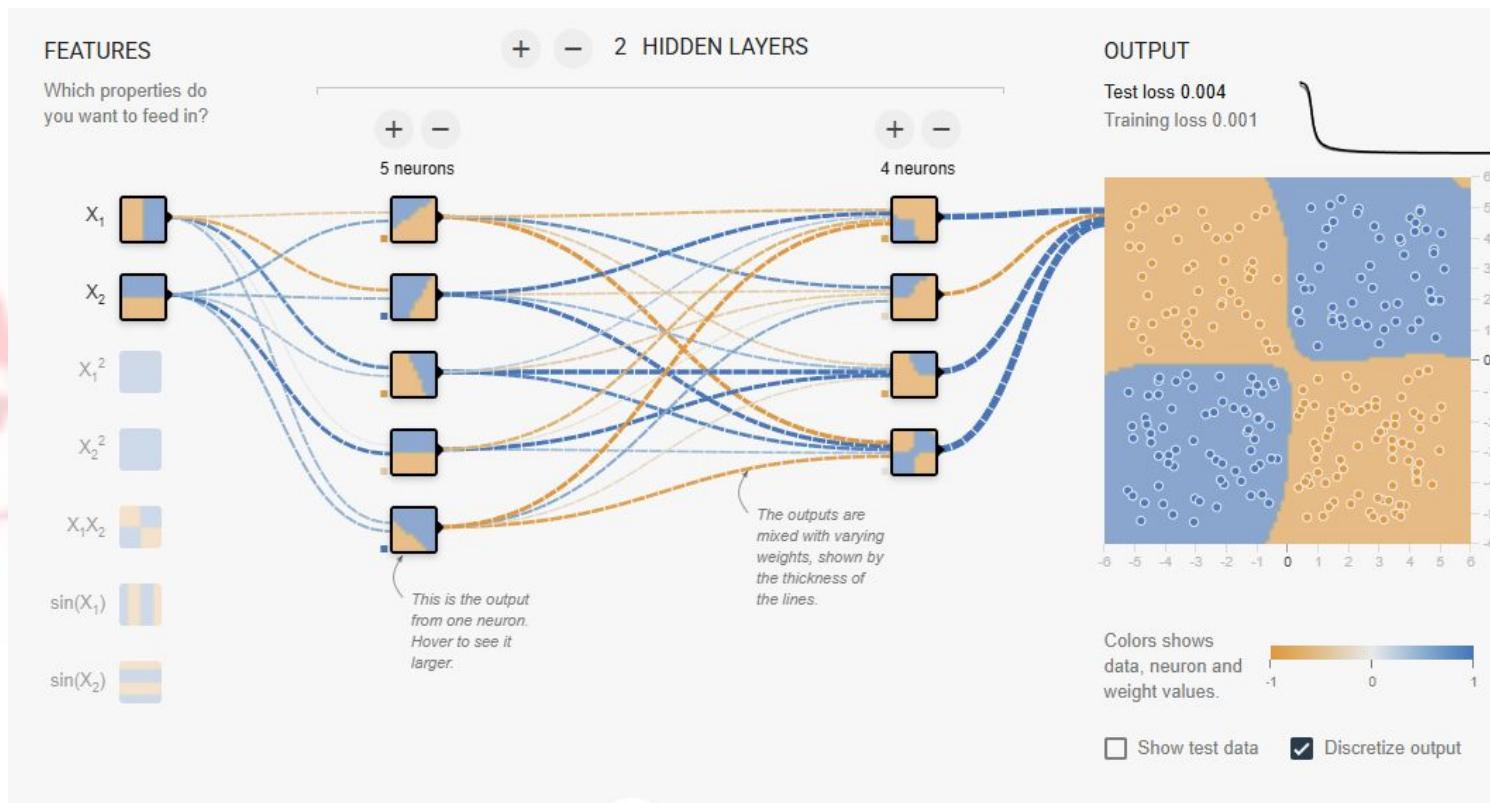
- **Vanishing Gradients:** The gradients for the lower neural network layers can become very small.
  - The ReLU activation function can help prevent vanishing gradients.
- **Exploding Gradients:** If the weights in a network are very large, then the gradients for the lower layers involve products of many large terms.
  - Batch normalization can help prevent exploding gradients, as can lowering the learning rate.
- **Dead ReLU Units**
  - Once the weighted sum for a ReLU unit falls below 0, the ReLU unit can get stuck
- **Dropout Regularization:** It works by randomly "dropping out" unit activations in a network for a single gradient step.

## Neural Network

# Neural Network (NN)

- Input Layer
- Hidden Layer
- Activation Function
- Output Layer

Deep Neural Network - networks with more than one hidden layer



# Capstone Project



Total:  
\$130

## CoppeliaSim SLAM robotic project



Pakistan · Mon 8:27 PM



Overview    Messages    Contract details

### Description

Aug 28, 2024 - Sep 22, 2024

I am looking for someone with expertise in CoppeliaSim, someone who can help me with a SLAM Robot project. The goal is to have a robot stand in 6 spots in a room and do a full spin and get the distance. Moving 10 degrees ex. I can send more details of the project. Don't waste time if u haven't used coppeliasim. No copying code from internet.

[View original offer](#)

[View original proposal](#)

[View original job posting](#)

### Summary

Contract type

Fixed-price

Start date

Jul 3, 2024

[Show details](#)

### Company information

Payment method verified

Phone number verified

5.0

5.00 of 2 reviews

Pakistan

8:37 PM

9 jobs posted

34% hire rate

\$105 total spent

3 hires, 1 active

Member since Apr 6, 2024

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# Capstone Project



Total:  
\$1,870.00

## Crowd Following with Deep Reinforcement Learning in Dynamic Environment See less

 South Korea · Tue 12:56 AM

[Overview](#) [Messages](#) [Contract details](#)

### Description

Multi-Robot Navigation with Deep Reinforcement Learning for Efficient Crowd Following in Dynamic Environment like hall Main idea: 2 or more robots follow the crowd (group of ppl) who move to move one goal in dynamic environment. Implementation: Multiple robots, Gazebo simulations, use DRL

[View original offer](#)  
[View original proposal](#)  
[View original job posting](#)

### Summary

Contract type	Fixed-price
Start date	May 21, 2024

[Show details](#)

#### Company information

 Payment method verified  
 Phone number verified

 4.8  
4.80 of 2 reviews

South Korea  
Gumi 1:07 AM

2 jobs posted  
100% hire rate

\$2K total spent  
2 hires, 0 active

Member since Feb 16, 2024

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## Deploying Your AI Model: Web as a Case Study

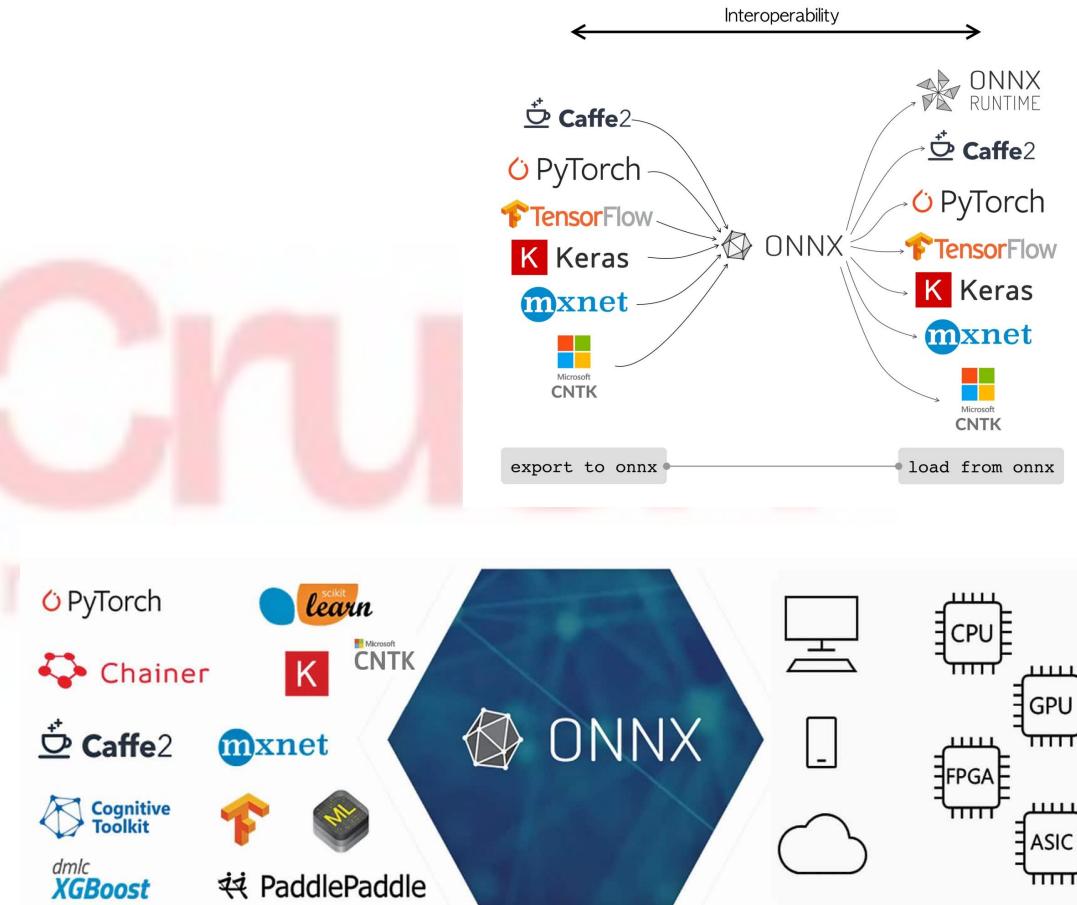
# Case Study

### Export

- [ONNX](#) - Open Neural Network Exchange
  - [Viz](#)
  - [Docs](#)

### Import

- By Language
- By Framework
- By Device





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