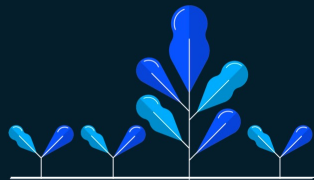


Model Deployment in Python

Presenter: Shaimaa Alghamdi

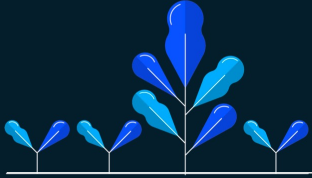
OUTLINES

- What is the Model Deployment?
- Criteria of ML Model Before Deployment.
- Steps for Deploying ML Models Into Production.
- Common Ways To Deploy ML Models.
- Fish Weight Prediction Application — DEMO
- References



What Model Deployment?

To integrate a machine learning model into an existing production environment where it can take in an input and return an output.



Criteria of ML Model Before Deployment

01

Portability

To the ability of your software to be transferred from one machine or system to another.

Scalability

Refers to how large your model can scale

02

Four Steps for Deploying Machine Learning Models Into Production

Prepare To Deploy the ML Model

01

Train the model (This involves selecting an algorithm, setting its parameters, and training it on prepared, cleaned data)

Validate the ML Model

02

Validation includes testing the model on a fresh data set and comparing the results to its initial training.

Deploy the ML Model

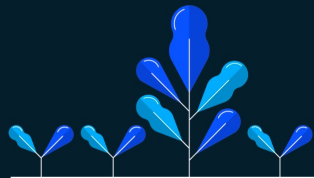
03

Move the model to a production environment where resources are streamlined and controlled for safe and efficient performance.

Monitor the ML Model

04

Model monitoring ensures that the model is working properly and that its predictions are effective over time.



Steps of Deploy The ML Model Steps

01

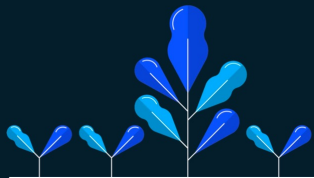
The model needs to be moved into its deployed environment.

02

The model needs to be integrated into a process.

03

The people who will be using the model need to be trained in how to activate it, access its data, and interpret its output.



Two Common Ways To Deploy ML Models

Batch inference

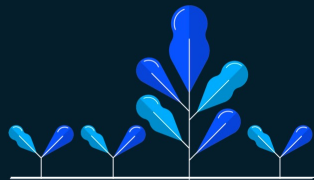


- Batch inference runs periodically and provides results for the batch of new data generated since the previous run.
- There is no latency constraint, you can deploy more complex models that can provide more accurate results.

Online inference



- Also called real-time inference, the model is available 24/7 and provides results in real-time, and on-demand.
- Since it should provide results in real-time, you cannot use complex models with online inference. Why!!!!

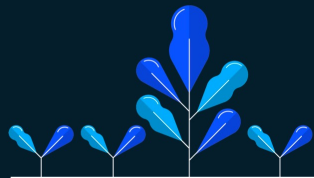


Weight Prediction Application - DEMO

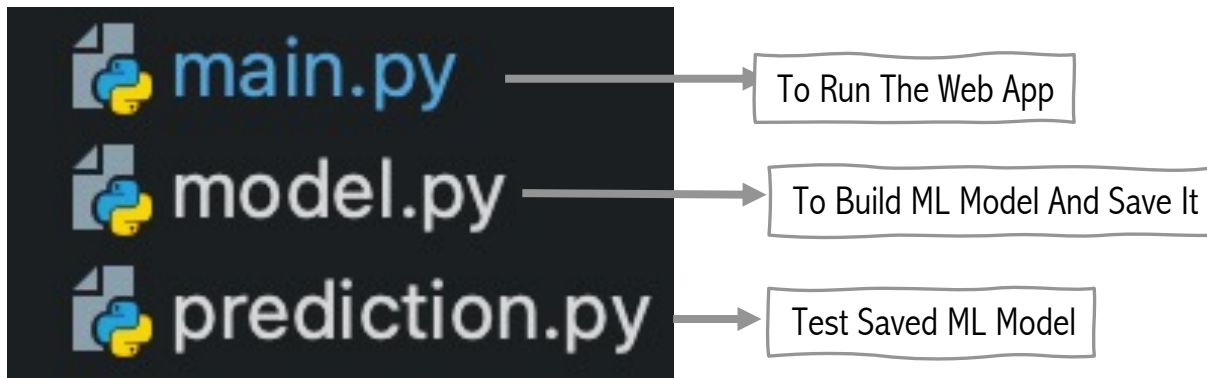


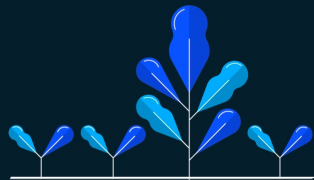
STREAMLIT

- A **faster** way to build and share data apps.
- Streamlit turns data scripts into shareable **web apps** in minutes.
- **No** front-end experience required.



Weight Prediction Application - DEMO





Weight Prediction Application - DEMO

TO TEST THE DEMO, FOLLOW THESE STEPS :

1. Cloning a repository [[DEMO](#)]

2. Using the Terminal:

2.1 Install necessary libraries

pip install requirements.txt

The screenshot shows a web application titled "Fish Weight Prediction App". It features a dark theme with white text. The interface includes a form for user input and a list of fish species to select from.

Fish Weight Prediction App

Enter your Name:

☐ Show Training Dataframe

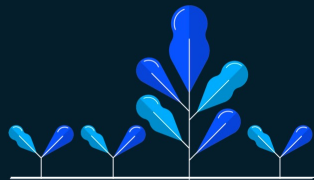
Please select relevant features of your fish!

Name of the fish:

- ☒ Bream
- ☐ Parkki
- ☐ Perch
- ☐ Pike
- ☐ Roach
- ☐ Smelt
- ☐ Whitefish

Vertical length(cm)

1.00 59.00



Weight Prediction Application - DEMO

TO TEST THE DEMO, FOLLOW THESE STEPS:

1. Cloning a repository [[DEMO](#)]

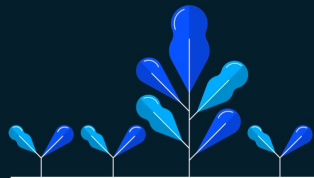
2. Using the Terminal:

1.2 Run the Streamlit tool

```
streamlit run main.py
```

The screenshot shows the 'Fish Weight Prediction App' interface. It features a dark background with white text. At the top, it says 'Fish Weight Prediction App'. Below this is a form with the following elements:

- 'Enter your Name:' followed by a text input field.
- A checkbox labeled 'Show Training Dataframe'.
- A section titled 'Please select relevant features of your fish!'.
- A label 'Name of the fish:' followed by a list of radio buttons for fish species: Bream (selected), Parkki, Perch, Pike, Roach, Smelt, and Whitefish.
- A label 'Vertical length(cm)' followed by a slider range from 0.00 to 59.00, with a current value of 1.00.
- A 'Predict' button at the bottom.



REFERENCES

3 Ways to Deploy Machine Learning Models in Production

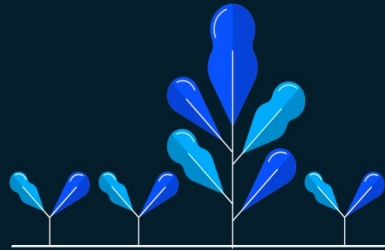
How to Deploy Machine Learning Models

3 Steps To Efficient Machine Learning Model Deployment

A Guide to Machine Learning Model Deployment

Streamlit Tool

DEMO



THANKS
ANY QUESTIONS