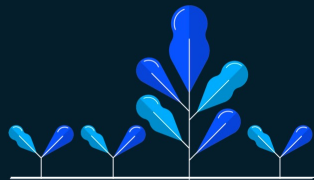


Model Deployment in Python

Presenter: Shaimaa Alghamdi

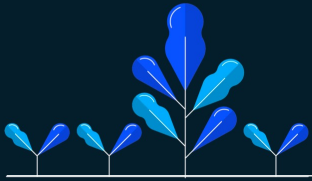
OUTLINES

- 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

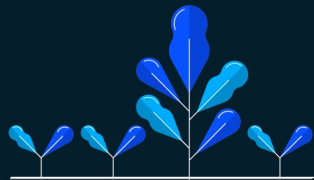
03

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

01

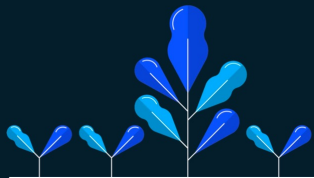
The model needs to be moved into its deployed environment.

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

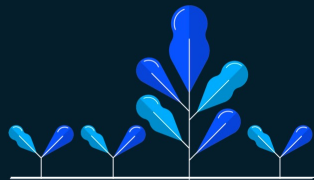


- Also called offline inference, is the process of generating predictions on a batch of observations. The batch jobs are typically generated on some recurring schedule (e.g. hourly, daily).
- There is no constraint, you can deploy more complex models that can provide more accurate results.

Online inference



- Also called real-time inference or dynamic inference. These predictions are generated on a single observation of data at runtime.
- Since it should provide results in real-time, you cannot use complex models with online inference.

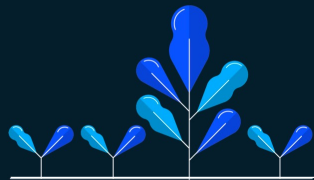


Fish Weight Prediction Application - DEMO

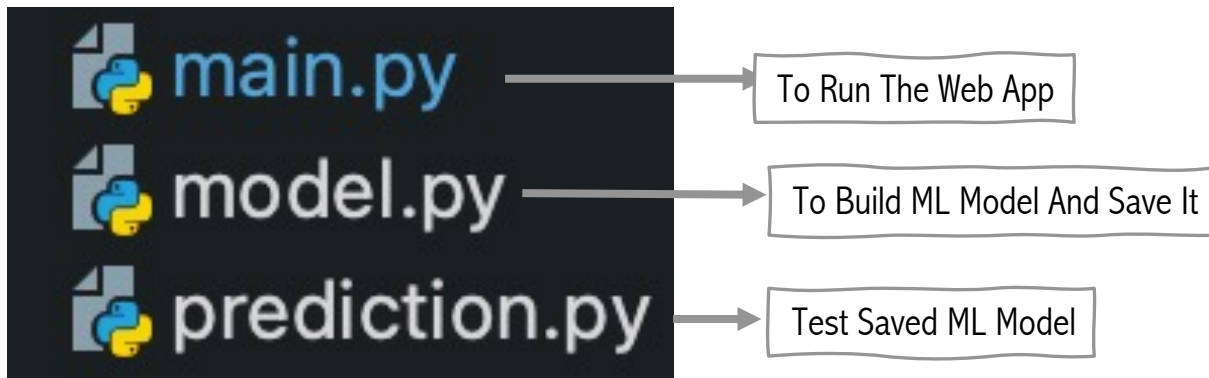


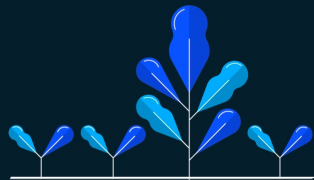
STREAMLIT

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



Fish Weight Prediction Application - DEMO





Fish 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

A screenshot of a web application titled "Fish Weight Prediction App". It features a dark theme. The interface includes a text input field for "Enter your Name:", a checkbox for "Show Training Dataframe", and a section titled "Please select relevant features of your fish!". Under this section, there is a label "Name of the fish:" followed by a list of fish species with radio buttons: Bream (selected), Parkki, Perch, Pike, Roach, Smelt, and Whitefish. Below this is a slider for "Vertical length(cm)" with a range from 0.00 to 59.00 and a current value of 1.00. A "Contacts" button is visible at the bottom right.

Fish Weight Prediction App

Enter your Name:

☐ Show Training Dataframe

Please select relevant features of your fish!

Name of the fish:

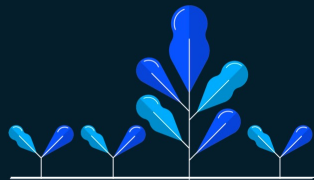
- ☒ Bream
- ☐ Parkki
- ☐ Perch
- ☐ Pike
- ☐ Roach
- ☐ Smelt
- ☐ Whitefish

Vertical length(cm)

1.00

0.00 59.00

Contacts



Fish Weight Prediction Application - DEMO

TO TEST THE DEMO, FOLLOW THESE STEPS:

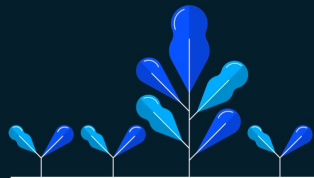
1. Cloning a repository [[DEMO](#)]

2. Using the Terminal:

1.2 Run the Streamlit tool

```
streamlit run main.py
```

The screenshot shows a web application titled "Fish Weight Prediction App". It features a dark theme with white text. The interface includes a text input field for "Enter your Name:", a checkbox for "Show Training Dataframe", and a section titled "Please select relevant features of your fish!". Under this section, there is a list of fish species: Bream, Parkki, Perch, Pike, Roach, Smelt, and Whitefish. The "Bream" option is selected with a red radio button. Below the species list, there is a slider for "Vertical length(cm)" with a value of 1.00 and a range from 0.00 to 59.00. A "Contacts" button is visible at the bottom right.



REFERENCES

3 Ways to Deploy Machine Learning Models in Production

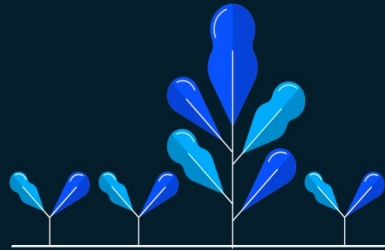
How to Deploy Machine Learning Models

3 Steps To Efficient Machine Learning Model Deployment

A Guide to Machine Learning Model Deployment

Streamlit Tool

DEMO



THANKS
ANY QUESTIONS