

**Name:** B. Harika

**Internship Batch code:** LISUM19

**Submitted date:** 2nd April 2023

**Submitted to:** Data Glacier

**Project Title:** Flask deployment on Render Cloud (Predictive analysis on Home Prices)

**Data storage location:**

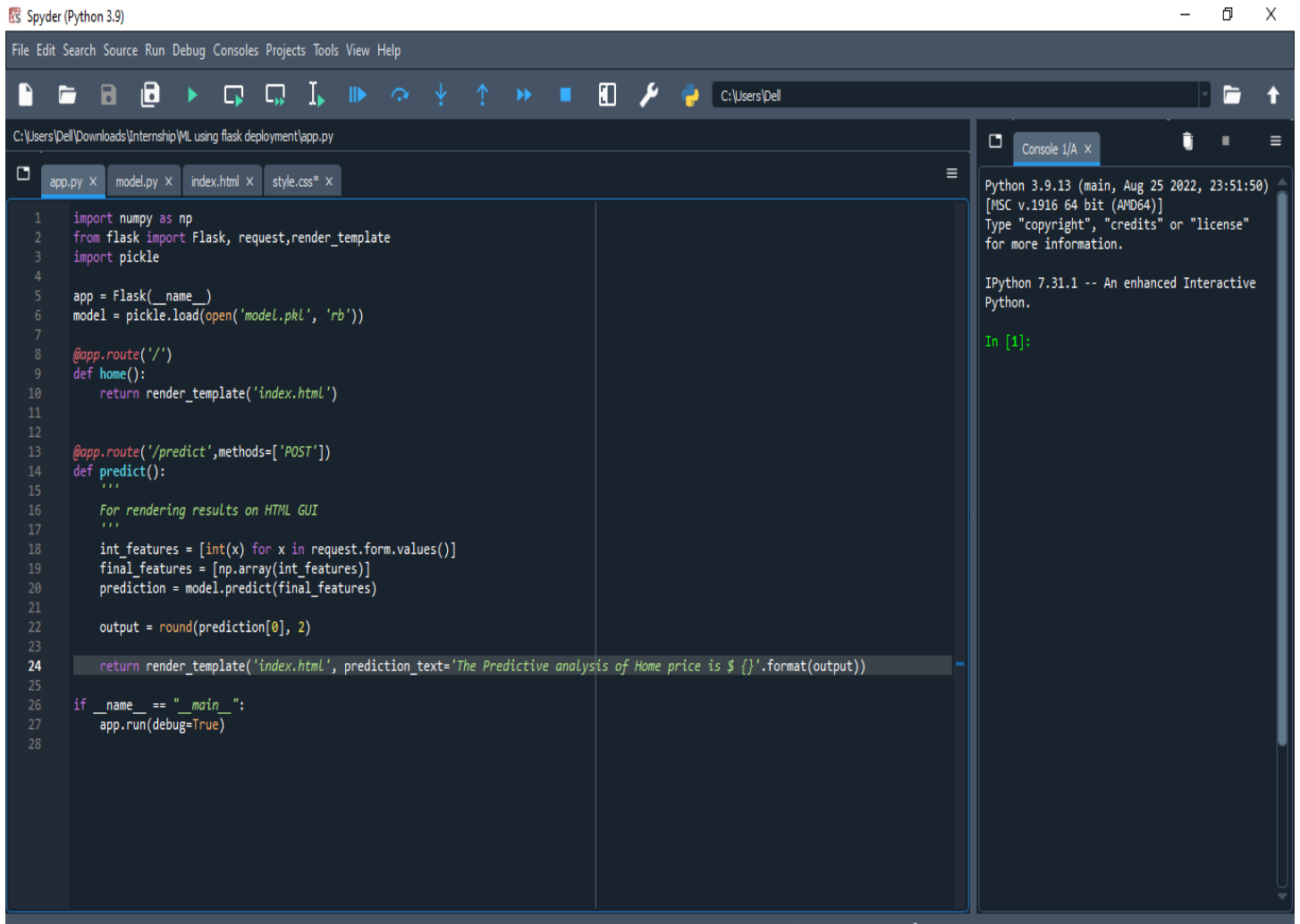
[https://github.com/HarikaReddyB/ML\\_on\\_Cloud\\_and\\_API\\_deployment](https://github.com/HarikaReddyB/ML_on_Cloud_and_API_deployment)

## Downlaoding the dataset by Kaggle datasets:

The screenshot shows the Kaggle website interface. The browser address bar displays the URL: `kaggle.com/datasets/pankeshpatel/homepricesmultiplevariables`. The page title is "homeprices-multiple-variables". Below the title, there are tabs for "Data Card", "Code (7)", and "Discussion (0)". The "Data Card" tab is selected. On the left sidebar, the "Datasets" section is highlighted. The main content area shows the dataset "homeprices.csv" (123 B) with a download icon. Below this, there are tabs for "Detail", "Compact", and "Column", with "Detail" selected. The "About this file" section describes the dataset as "Sample data of housing price. We have used this small data set to create a tutorial -- Machine learning for absolute beginners. The topic is Multivariate Regression." Below this, there is a table with 4 columns: "# area", "# bedrooms", "# age", and "# price". Each column has a description and a "total values" count of 6.

# area	# bedrooms	# age	# price
area of home in square feet	number of bedrooms in a house	age of a house	price of a house
6 total values	6 total values	6 total values	6 total values

## app.py for flask deployment



The image shows the Spyder Python IDE interface. The main editor displays the code for `app.py`, which is a Flask application. The code imports `numpy`, `Flask`, `request`, `render_template`, and `pickle`. It initializes a Flask app, loads a model from `model.pkl`, and defines two routes: a home page and a prediction endpoint. The prediction endpoint uses `request.form.values()` to get input features, processes them with the loaded model, and returns a formatted HTML response. The console on the right shows the Python version (3.9.13) and the IPython version (7.31.1).

```
1 import numpy as np
2 from flask import Flask, request, render_template
3 import pickle
4
5 app = Flask(__name__)
6 model = pickle.load(open('model.pkl', 'rb'))
7
8 @app.route('/')
9 def home():
10     return render_template('index.html')
11
12
13 @app.route('/predict', methods=['POST'])
14 def predict():
15     """
16     For rendering results on HTML GUI
17     """
18     int_features = [int(x) for x in request.form.values()]
19     final_features = [np.array(int_features)]
20     prediction = model.predict(final_features)
21
22     output = round(prediction[0], 2)
23
24     return render_template('index.html', prediction_text='The Predictive analysis of Home price is $ {}'.format(output))
25
26 if __name__ == "__main__":
27     app.run(debug=True)
28
```

Console 1/A x

Python 3.9.13 (main, Aug 25 2022, 23:51:50)  
[MSC v.1916 64 bit (AMD64)]  
Type "copyright", "credits" or "license"  
for more information.

IPython 7.31.1 -- An enhanced Interactive  
Python.

In [1]:

# Model.py

Spyder (Python 3.9)

File Edit Search Source Run Debug Consoles Projects Tools View Help

C:\Users\Dell

C:\Users\Dell\Downloads\Internship\ML using flask deployment\model.py

app.py x model.py x index.html x style.css\* x

```
1 # Importing the libraries
2 import pandas as pd
3 import pickle
4
5 dataset = pd.read_csv('https://raw.githubusercontent.com/HarikaReddyB/Flask_deployment/main/homeprices.csv')
6
7 dataset = dataset[['area', 'bedrooms', 'age', 'price']]
8
9 # Replacing missing values
10 dataset['area'].fillna(dataset['area'].mean(), inplace=True)
11 dataset['bedrooms'].fillna(0, inplace=True)
12
13 X = dataset.iloc[:, :3]
14
15
16 y = dataset.iloc[:, -1]
17
18 from sklearn.linear_model import LinearRegression
19 regressor = LinearRegression()
20
21 #Fitting model with training data
22 regressor.fit(X, y)
23
24 # Saving model to disk
25 pickle.dump(regressor, open('model.pkl', 'wb'))
26
27 # Loading model to compare the results of analysis
28 model = pickle.load(open('model.pkl', 'rb'))
29 print(model.predict([[2200, 2, 5]]))
30
31
32
```

Console 1/A x

Python 3.9.13 (main, Aug 25 2022, 23:51:50)  
[MSC v.1916 64 bit (AMD64)]  
Type "copyright", "credits" or "license"  
for more information.

IPython 7.31.1 -- An enhanced Interactive  
Python.

In [1]:

LSP Python: starting conda (Python 3.9.13) Line 6, Col 1 ASCII CRLF RW Mem 85%

# Index.html

Spyder (Python 3.9)

File Edit Search Source Run Debug Consoles Projects Tools View Help

C:\Users\ DELL \Downloads\Internship\ML using flask deployment\templates\index.html

C:\Users\ DELL \Downloads\Internship\ML using flask deployment\templates\index.html

app.py X model.py X index.html X style.css X

```
1 <!DOCTYPE html>
2 <html >
3 <head>
4   <meta charset="UTF-8">
5   <title>ML API</title>
6   <link href='https://fonts.googleapis.com/css?family=Pacifico' rel='stylesheet' type='text/css'>
7   <link href='https://fonts.googleapis.com/css?family=Arimo' rel='stylesheet' type='text/css'>
8   <link href='https://fonts.googleapis.com/css?family=Hind:300' rel='stylesheet' type='text/css'>
9   <link href='https://fonts.googleapis.com/css?family=Open+Sans+Condensed:300' rel='stylesheet' type='text/css'>
10  <link rel="stylesheet" href="{{ url_for('static', filename='css/style.css') }}">
11
12
13 </head>
14
15 <body>
16   <div class="login">
17     <h1>Predictive analysis of Home Price</h1>
18
19     <!-- Main Input For Receiving Query to our ML -->
20     <form action="{{ url_for('predict')}}" method="post">
21       <input type="text" name="Area" placeholder="Area (in square feet)" required="required" />
22       <input type="text" name="no.of bed rooms" placeholder="Bed Rooms" required="required" />
23       <input type="text" name="age" placeholder="Age" required="required" />
24
25       <button type="submit" class="btn btn-primary btn-block btn-large">Predict</button>
26     </form>
27
28     <br>
29     <br>
30     {{ prediction_text }}
31
32   </div>
33
34 </body>
35 </html>
36
```

Console 1/A X

Python 3.9.13 (main, Aug 25 2022, 23:51:50)  
[MSC v.1916 64 bit (AMD64)]  
Type "copyright", "credits" or "license"  
for more information.

IPython 7.31.1 -- An enhanced Interactive  
Python.

In [1]:

conda (Python 3.9.13) Line 28, Col 8 ASCII CRLF RW Mem 91%

# Style.css

Spyder (Python 3.9)

File Edit Search Source Run Debug Consoles Projects Tools View Help

C:\Users\Del

C:\Users\Del\Downloads\Internship\ML using flask deployment\static\css\style.css

```
1 @import url('https://fonts.googleapis.com/css?family=Open+Sans');
2 .btn { display: inline-block; *display: inline; *zoom: 1; padding: 4px 10px 4px; margin-bottom: 0; font-size: 13px; line-height: 18px; color: #333333; text-
3 .btn:hover, .btn.active, .btn.active, .btn.disabled, .btn[disabled] { background-color: #e6e6e6; }
4 .btn-large { padding: 9px 14px; font-size: 15px; line-height: normal; -webkit-border-radius: 5px; -moz-border-radius: 5px; border-radius: 5px; }
5 .btn:hover { color: #333333; text-decoration: none; background-color: #e6e6e6; background-position: 0 -15px; -webkit-transition: background-position 0.1s li
6 .btn-primary, .btn-primary:hover { text-shadow: 0 -1px 0 rgba(0, 0, 0, 0.25); color: #ffffff; }
7 .btn-primary.active { color: rgba(255, 255, 255, 0.75); }
8 .btn-primary { background-color: #4a77d4; background-image: -moz-linear-gradient(top, #6eb6de, #4a77d4); background-image: -ms-linear-gradient(top, #6eb6de,
9 .btn-primary:hover, .btn-primary.active, .btn-primary.disabled, .btn-primary[disabled] { filter: none; background-color: #4a77d4; }
10 .btn-block { width: 100%; display: block; }
11
12 * { -webkit-box-sizing: border-box; -moz-box-sizing: border-box; -ms-box-sizing: border-box; -o-box-sizing: border-box; box-sizing: border-box; }
13
14 html { width: 100%; height: 100%; overflow: hidden; }
15
16 body {
17     width: 100%;
18     height: 100%;
19     font-family: 'Open Sans', sans-serif;
20     color: #fff;
21     font-size: 18px;
22     text-align: center;
23     letter-spacing: 1.2px;
24     background: #383838 !important;
25     filter: progid:DXImageTransform.Microsoft.gradient( startColorstr='#3E1060', endColorstr='#092756', GradientType=1 );
26 }
27
28 .login {
29     position: absolute;
30     top: 40%;
31     left: 50%;
32     margin: -150px 0 0 -150px;
33     width: 400px;
34     height: 400px;
35 }
36
37 .login h1 { color: #fff; text-shadow: 0 0 10px rgba(0,0,0,0.3); letter-spacing: 1px; text-align: center; }
38
39 input {
40     width: 100%;
41     height: 40px;
42     border: 1px solid #ccc;
43     border-radius: 5px;
44     margin-top: 10px;
45     margin-bottom: 10px;
46     padding: 5px 10px;
47     font-size: 14px;
48     font-family: 'Open Sans', sans-serif;
49     color: #333;
50     background-color: #fff;
51     background-image: -moz-linear-gradient(to top, #fff 49%, #f0f0f0 49%, #f0f0f0 51%, #fff 51%);
52     background-image: -ms-linear-gradient(to top, #fff 49%, #f0f0f0 49%, #f0f0f0 51%, #fff 51%);
53     background-image: linear-gradient(to top, #fff 49%, #f0f0f0 49%, #f0f0f0 51%, #fff 51%);
54     background-size: 100% 3px;
55     background-position: bottom, top, top, bottom;
56     background-repeat: repeat, repeat, repeat, repeat;
57 }
```

Console 1/A x

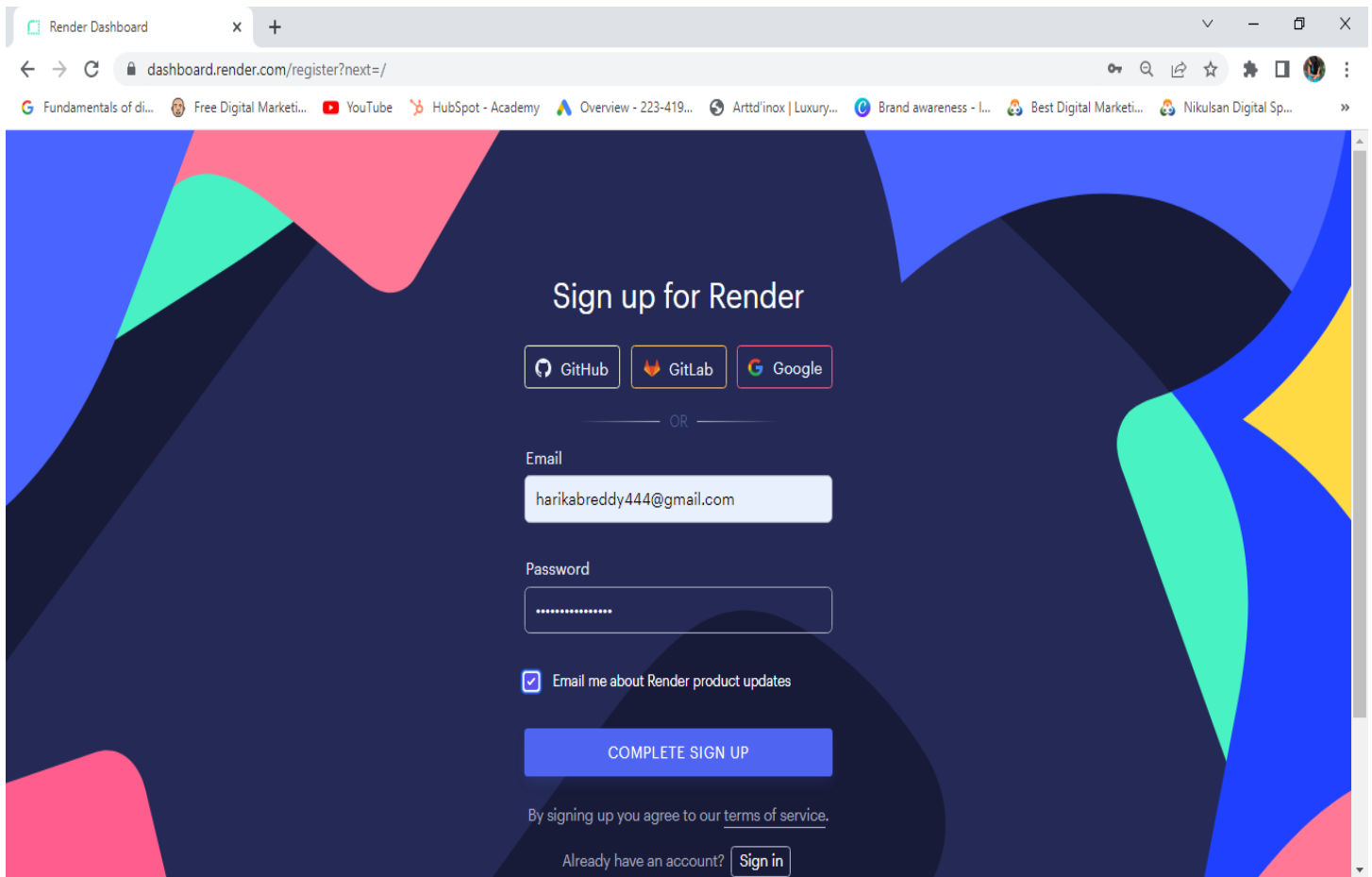
Python 3.9.13 (main, Aug 25 2022, 23:51:50)  
[MSC v.1916 64 bit (AMD64)]  
Type "copyright", "credits" or "license"  
for more information.

IPython 7.31.1 -- An enhanced Interactive  
Python.

In [1]:

conda (Python 3.9.13) Line 22, Col 20 ASCII CRLF RW Mem 86%

## Creating Account on Render.com

A screenshot of a web browser showing the registration page for Render.com. The browser's address bar displays 'dashboard.render.com/register?next=/' and the page title is 'Render Dashboard'. The registration form is centered on a dark blue background with colorful abstract shapes. It includes options to sign up with GitHub, GitLab, or Google, followed by an 'OR' separator. Below this are input fields for 'Email' (containing 'harikabreddy444@gmail.com') and 'Password' (masked with dots). A checkbox for 'Email me about Render product updates' is checked. A blue 'COMPLETE SIGN UP' button is positioned below the checkbox. At the bottom, there is a link to 'terms of service' and a 'Sign in' button for existing users.

Render Dashboard

dashboard.render.com/register?next=/

Sign up for Render

GitHub GitLab Google

OR

Email

harikabreddy444@gmail.com

Password

\*\*\*\*\*

☒ Email me about Render product updates

COMPLETE SIGN UP

By signing up you agree to our [terms of service](#).

Already have an account? [Sign in](#)

# Deploying after connecting with github:

Render Dashboard

ML API

dashboard.render.com/web/new

Fundamentals of di... Free Digital Marketi... YouTube HubSpot - Academy Overview - 223-419... Arttd'inox | Luxury... Brand awareness - L... Best Digital Marketi... Nikulsan Digital Sp...

render

Dashboard Blueprints Env Groups Docs Community Help

New + Harika Reddy

You are deploying a web service for **HarikaReddyB/ML\_on\_Cloud\_and\_API\_deployment**.

You seem to be using Flask, so we've autofilled some fields accordingly. Make sure the values look right to you!

Name

A unique name for your web service.

ml\_on\_cloud\_homeprices

Region

The region where your web service runs. Services must be in the same region to communicate privately and you currently have services running in Oregon.

Oregon (US West)

Branch

The repository branch used for your web service.

main

Root Directory

Optional

Defaults to repository root. When you specify a root directory that is different from your repository root, Render runs all your commands in the specified directory and ignores changes outside the directory.

e.g., src

Render Dashboard

ML API

dashboard.render.com/web/new

Fundamentals of di... Free Digital Marketi... YouTube HubSpot - Academy Overview - 223-419... Arttd'inox | Luxury... Brand awareness - L... Best Digital Marketi... Nikulsan Digital Sp...

render

Dashboard Blueprints Env Groups Docs Community Help

New + Harika Reddy

Render runs all your commands in the specified directory and ignores changes outside the directory.

Runtime

The runtime for your web service.

Python 3

Build Command

This command runs in the root directory of your repository when a new version of your code is pushed, or when you deploy manually. It is typically a script that installs libraries, runs migrations, or compiles resources needed by your app.

\$ pip install -r requirements.txt

Start Command

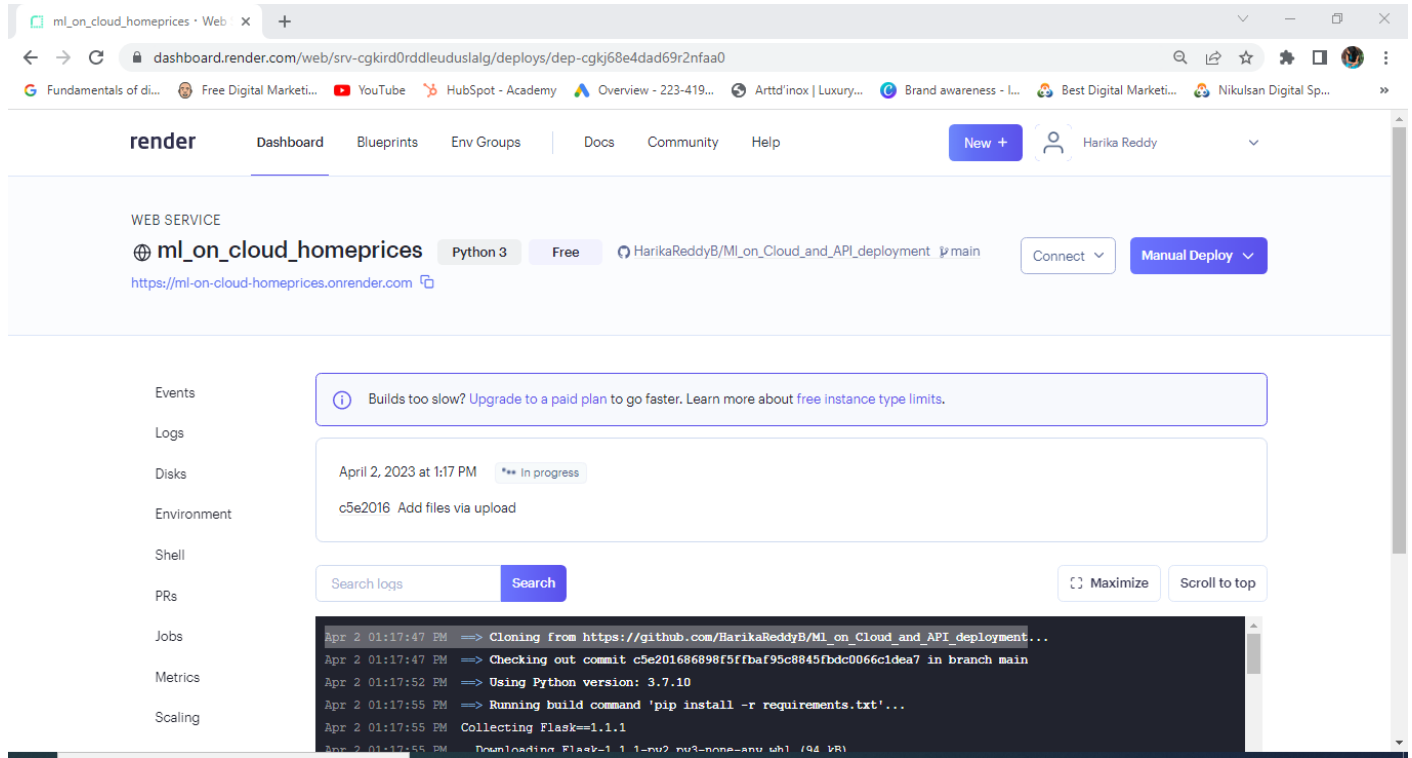
This command runs in the root directory of your app and is responsible for starting its processes. It is typically used to start a webserver for your app. It can access environment variables defined by you in Render.

\$ gunicorn app:app

Please enter your payment information to select an instance type with higher limits.

Instance Type	RAM	CPU	Price
---------------	-----	-----	-------

## Deployment and after Site is live:



render Dashboard Blueprints Env Groups Docs Community Help New + Harika Reddy

WEB SERVICE

**ml\_on\_cloud\_homeprices** Python 3 Free HarikaReddyB/ML\_on\_Cloud\_and\_API\_deployment main Connect Manual Deploy

<https://ml-on-cloud-homeprices.onrender.com>

Events

Builds too slow? Upgrade to a paid plan to go faster. Learn more about free instance type limits.

Logs

April 2, 2023 at 1:17 PM **In progress**

Environment

c5e2016 Add files via upload

Shell

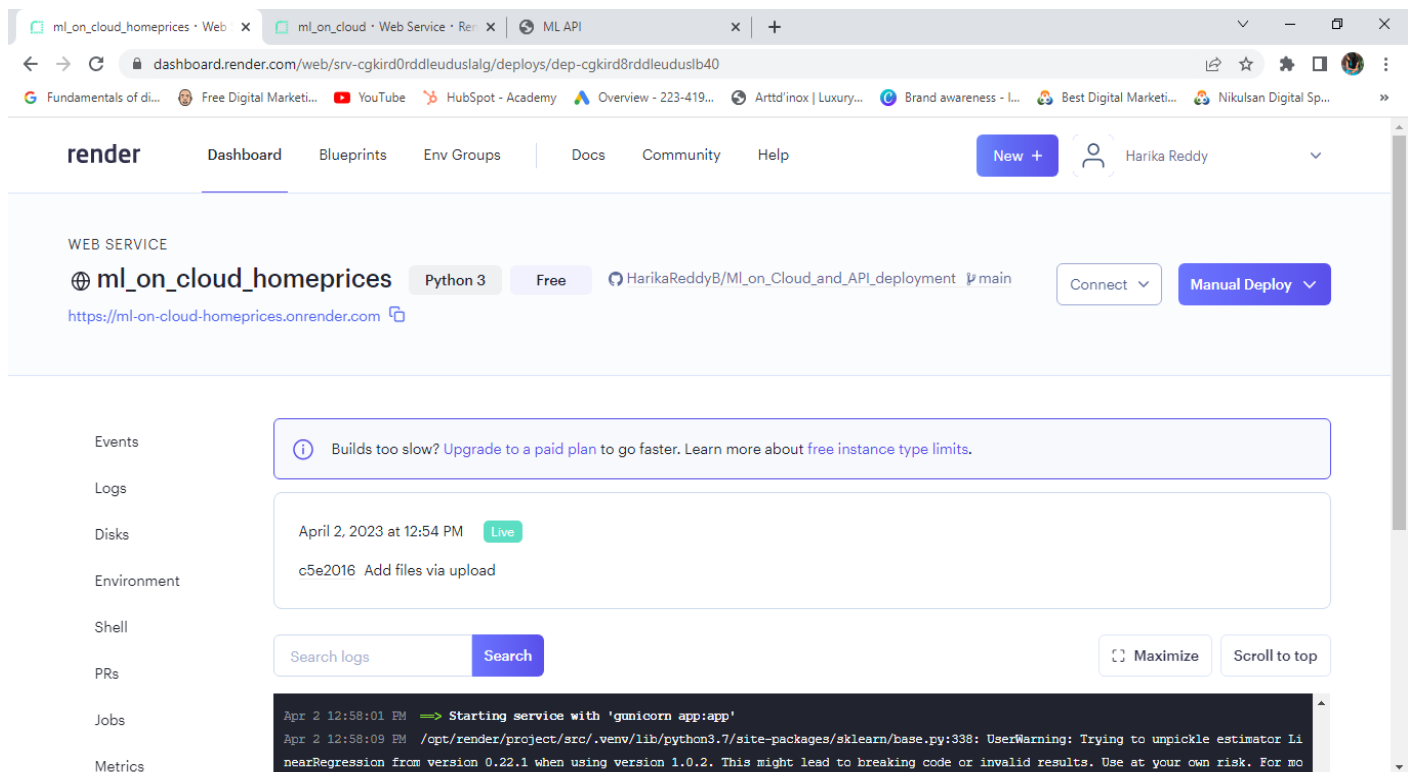
Search logs Search Maximize Scroll to top

Jobs

```
Apr 2 01:17:47 PM => Cloning from https://github.com/HarikaReddyB/ML_on_Cloud_and_API_deployment...
Apr 2 01:17:47 PM => Checking out commit c5e201686898f5fbbaf95c8845fbd0066c1dea7 in branch main
Apr 2 01:17:52 PM => Using Python version: 3.7.10
Apr 2 01:17:55 PM => Running build command 'pip install -r requirements.txt'...
Apr 2 01:17:55 PM Collecting Flask==1.1.1
Apr 2 01:17:55 PM Downloading Flask-1.1.1-py2.py3-none-any.whl (94 kB)
```

Metrics

Scaling



render Dashboard Blueprints Env Groups Docs Community Help New + Harika Reddy

WEB SERVICE

**ml\_on\_cloud\_homeprices** Python 3 Free HarikaReddyB/ML\_on\_Cloud\_and\_API\_deployment main Connect Manual Deploy

<https://ml-on-cloud-homeprices.onrender.com>

Events

Builds too slow? Upgrade to a paid plan to go faster. Learn more about free instance type limits.

Logs

April 2, 2023 at 12:54 PM **Live**

Environment

c5e2016 Add files via upload

Shell

Search logs Search Maximize Scroll to top

Jobs

```
Apr 2 12:58:01 PM ==> Starting service with 'gunicorn app:app'
Apr 2 12:58:09 PM /opt/render/project/src/.venv/lib/python3.7/site-packages/sklearn/base.py:338: UserWarning: Trying to unpickle estimator LinearRegression from version 0.22.1 when using version 1.0.2. This might lead to breaking code or invalid results. Use at your own risk. For mo
```

Metrics



## Predictive analysis of Home Price on Render Cloud:

<https://ml-on-cloud-homeprices.onrender.com>

The screenshot shows a web browser window with the URL `ml-on-cloud-homeprices.onrender.com`. The page has a dark gray background and features the title "Predictive analysis of Home Price" in white text. Below the title, there are three input fields: "Area (in square feet)", "Bed\_Rooms", and "Age". A blue "Predict" button is positioned below these fields. The browser's address bar and tabs are visible at the top.

This screenshot shows the same web application after a prediction. The URL in the address bar is `ml-on-cloud-homeprices.onrender.com/predict`. The input fields for "Area (in square feet)", "Bed\_Rooms", and "Age" are present but empty. The blue "Predict" button remains. Below the input fields, the text "The Predictive analysis of Home price is \$" is displayed, followed by the value "6113926.9". The browser window and tabs are also visible.