

Getting Started with Streamlit

Introduction to Streamlit

Streamlit is an open-source app framework designed for Machine Learning and Data Science projects. It enables you to create beautiful web applications using simple Python scripts.

Installation

To get started, install Streamlit by running the following command:

```
pip install streamlit
```

Creating Your First Streamlit App

1. Create a file named `app.py` and add the following code:

```
import streamlit as st  
import pandas as pd  
import numpy as np  
  
# Title of the application  
st.title("Hello Streamlit")  
  
# Display a simple text  
st.write("This is a simple text")  
  
# Create a simple DataFrame  
df = pd.DataFrame({  
    'first column': [1, 2, 3, 4],  
    'second column': [10, 20, 30, 40]  
})  
  
# Display the DataFrame  
st.write("Here is the dataframe")  
st.write(df)
```

Create a line chart

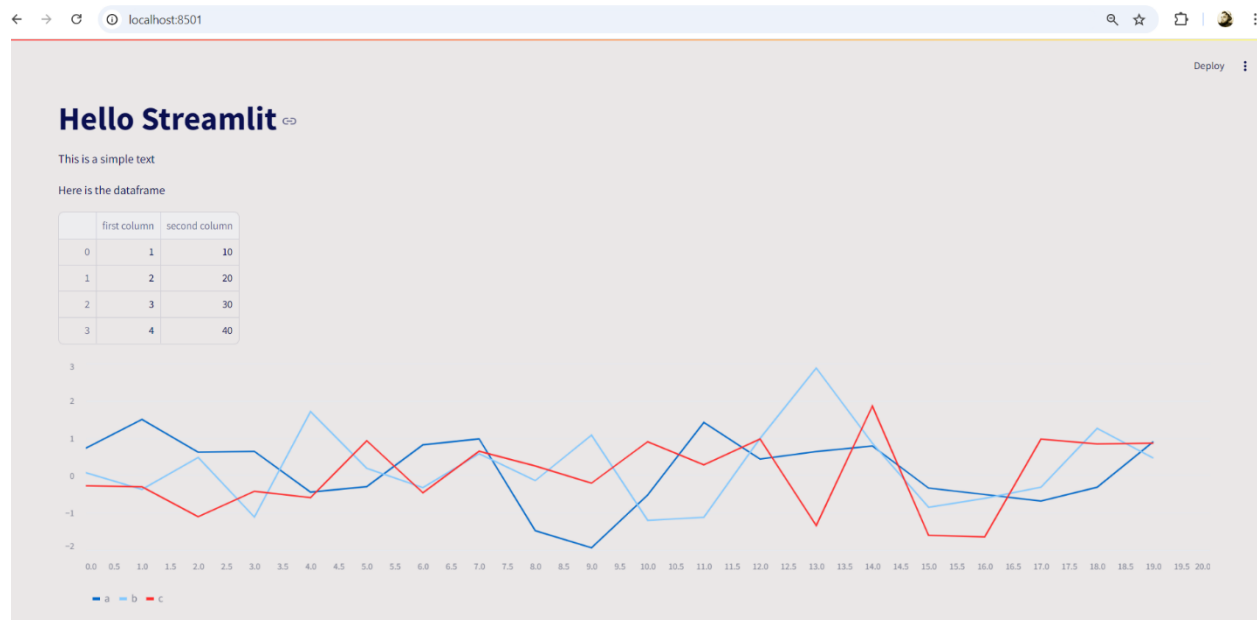
```
chart_data = pd.DataFrame(np.random.randn(20, 3), columns=['a', 'b', 'c'])
```

```
st.line_chart(chart_data)
```

2. Run the application in your terminal:

```
streamlit run app.py
```

You should see a welcome message and be directed to view your app in a web browser at `http://localhost:8501`.



Creating Widgets with Streamlit

1. Create another file named `widgets.py` and include the following code:

```
import streamlit as st
```

```
import pandas as pd
```

```
st.title("Streamlit Text Input")
```

```
name = st.text_input("Enter your name:")
```

```
age = st.slider("Select your age:", 0, 100, 31)
```

```
st.write(f"Your age is {age}.")
```

```
options = ["Python", "Java", "Perl", "JavaScript"]
choice = st.selectbox("Choose your favorite language:", options)
st.write(f"You Selected {choice}.")
```

```
if name:
    st.write(f"Hello, {name}")
```

```
data = {
    "Name": ["John", "Cena", "Roman", "Reigns"],
    "Age": [30, 32, 34, 36],
    "City": ["New York", "Los Angeles", "Tampa", "Chicago"]
}
```

```
df = pd.DataFrame(data)
```

```
df.to_csv("sampledata.csv")
```

```
st.write(df)
```

```
uploaded_file = st.file_uploader("Choose a CSV file", type="csv")
```

```
if uploaded_file is not None:
```

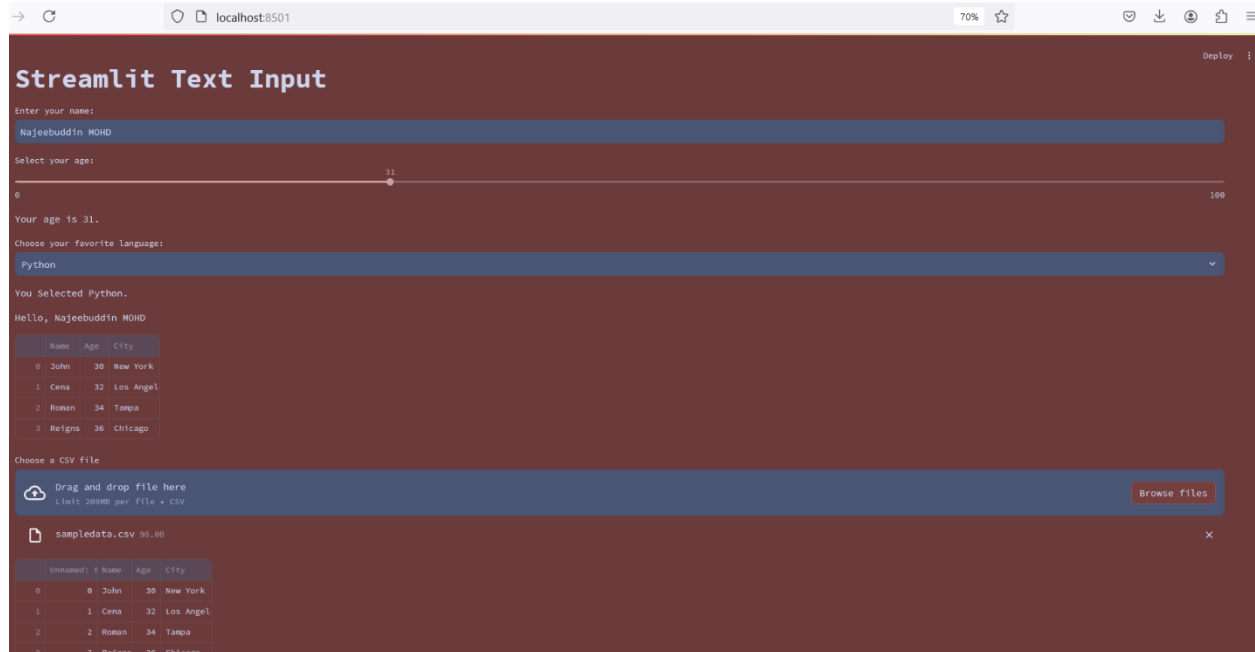
```
    df = pd.read_csv(uploaded_file)
```

```
    st.write(df)
```

2. Run the widgets application in your terminal:

```
streamlit run widgets.py
```

This will open the application in your browser.



Example of a Machine Learning App with Streamlit

1. Install the scikit-learn library:

pip install scikit-learn

2. Create a file named `classification.py` and add the following code:

```
import streamlit as st
```

```
import pandas as pd
```

```
from sklearn.datasets import load_iris
```

```
from sklearn.ensemble import RandomForestClassifier
```

```
@st.cache_data
```

```
def load_data():
```

```
    iris = load_iris()
```

```
    df = pd.DataFrame(iris.data, columns=iris.feature_names)
```

```
    df['species'] = iris.target
```

```
    return df, iris.target_names
```

```
df, target_name = load_data()
```

```
model = RandomForestClassifier()
model.fit(df.iloc[:, :-1], df['species'])
```

```
st.sidebar.title("Input Features")

sepal_length = st.sidebar.slider("Sepal Length", float(df['sepal length (cm)'].min()), float(df['sepal length (cm)'].max()))

sepal_width = st.sidebar.slider("Sepal Width", float(df['sepal width (cm)'].min()), float(df['sepal width (cm)'].max()))

petal_length = st.sidebar.slider("Petal Length", float(df['petal length (cm)'].min()), float(df['petal length (cm)'].max()))

petal_width = st.sidebar.slider("Petal Width", float(df['petal width (cm)'].min()), float(df['petal width (cm)'].max()))
```

```
input_data = [[sepal_length, sepal_width, petal_length, petal_width]]
```

```
# Prediction
prediction = model.predict(input_data)
predicted_species = target_name[prediction[0]]
```

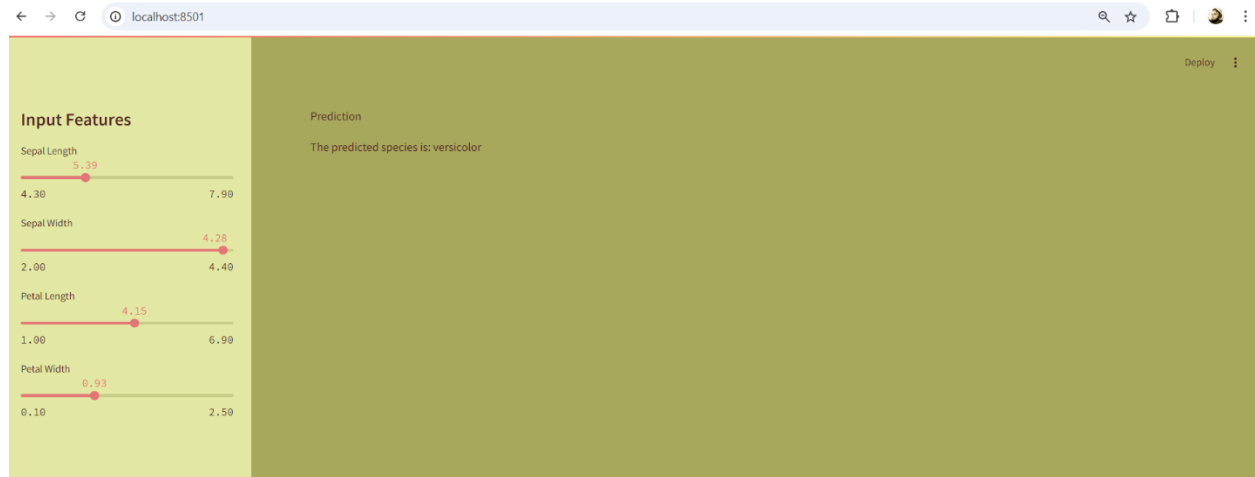
```
st.write("Prediction")

st.write(f"The predicted species is: {predicted_species}")
```

3. Run the machine learning app in your terminal:

```
streamlit run classification.py
```

Open your browser to view the output.



Conclusion

This document provides a concise guide to getting started with Streamlit, including creating basic applications, adding widgets, and building a machine learning app.

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