# Deploying Python Applications Using Streamlit

## 1. Introduction to Streamlit

Streamlit is an open-source Python library that makes it easy to create and share beautiful, custom web apps for machine learning and data science. It allows you to turn data scripts into shareable web applications in a few lines of code.

## 2. Setting Up Streamlit

### 2.1 Installation

To install Streamlit, use pip:

```bash  
pip install streamlit  
```

### 2.2 Running Streamlit

To run a Streamlit application, use the following command in your terminal:

```bash  
streamlit run your\_script.py  
```

Replace `your\_script.py` with the name of your Python script.

## 3. Creating a Simple Streamlit App

### 3.1 Basic Structure

A basic Streamlit app consists of importing the library and using its functions to create UI components. Here is an example of a simple app:

```python  
import streamlit as st  
  
st.title('Hello, Streamlit!')  
st.write('This is a simple Streamlit app.')  
```

### 3.2 Adding Interactivity

Streamlit provides various widgets to make your app interactive, such as sliders, buttons, and text inputs. Here is an example with a slider:

```python  
import streamlit as st  
  
st.title('Interactive Streamlit App')  
  
number = st.slider('Pick a number', 0, 100)  
st.write(f'The selected number is {number}')  
```

## 4. Deploying a Streamlit App

### 4.1 Local Deployment

To deploy a Streamlit app locally, simply run the script using the Streamlit command:

```bash  
streamlit run your\_script.py  
```

## 5. Enhancing Streamlit Apps

### 5.1 Using DataFrames

Streamlit makes it easy to display dataframes:

```python  
import streamlit as st  
import pandas as pd  
  
df = pd.DataFrame({  
 'A': [1, 2, 3, 4],  
 'B': [5, 6, 7, 8]  
})  
  
st.write(df)  
```

### 5.2 Adding Charts

Streamlit supports various charting libraries such as Matplotlib, Altair, and Plotly:

```python  
import streamlit as st  
import matplotlib.pyplot as plt  
  
# Sample data  
 data = [1, 2, 3, 4, 5]  
  
# Plot  
fig, ax = plt.subplots()  
ax.plot(data)  
  
# Display  
st.pyplot(fig)  
```

## 6. Conclusion

Streamlit is a powerful tool for creating and deploying interactive Python applications. Its simplicity and ease of use make it an excellent choice for data scientists and machine learning engineers to showcase their work.