Streamlit – Build and share data apps

Machine Learning Architects Basel

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ML ARCHITECTS
BASEL

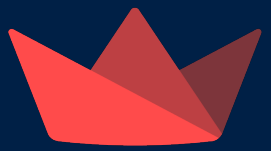
Agenda

- Why we use Streamlit ?
- Installation & Setup
- Display texts
- Input widgets
- Display status & Sidebar
- Display graphs
- Display maps

Streamlit

Why we use streamlit ?

- Turn Data scripts into Web Apps
- Interactive
- Customizable
- No Frontend Experience Required
- Easy to Deploy
- Active Community
- Compatibility with major Frameworks/Libraries



Streamlit

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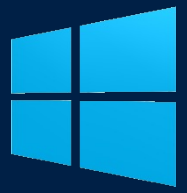
Source : https://ml-ops.org/content/mlops-principles

Streamlit

Installation & Setup



1) Open Anaconda Prompt
2) Install streamlit

$ pip install streamlit

3) Test if worked

$ Streamlit hello

1) install pip

$ sudo apt-get install python3-pip

2) Install pipenv

$ pip3 install pipenv

3) create pipenv environement

$ pipenv shell

4) Install streamlit

$ pip install streamlit

5)Test if wokred

$ streamlit hello

1) Install pip

$ sudo easy_install pip

2) Install pipenv

$ pip3 install pipenv

3) Create pipenv environement

$ pipenv shell

4) Install streamlit

$ pip install streamlit

5) Test if wokred

$ streamlit hello

How to run your Streamlit code

$ streamlit run file_name.py

Streamlit

Display texts with Streamlit

TutoStreamlitMLAB.py

```python
import streamlit as st
st.write("Hello ,let's learn how to build a streamlit app together")

```

Hello ,let's learn how to build a streamlit app together

TutoStreamlitMLAB.py

```python
import streamlit as st
st.title ("this is the app title")
st.header("this is the markdown")
st.markdown("this is the header")
st.subheader("this is the subheader")
st.caption("this is the caption")
st.code("x=2021")
st.latex(r''' a+a r^1+a r^2+a r^3 ''')
```

this is the app title

this is the markdown

this is the header

this is the subheader

this is the caption

```
x=2021
```

$$a+ar^1+ar^2+ar^3$$

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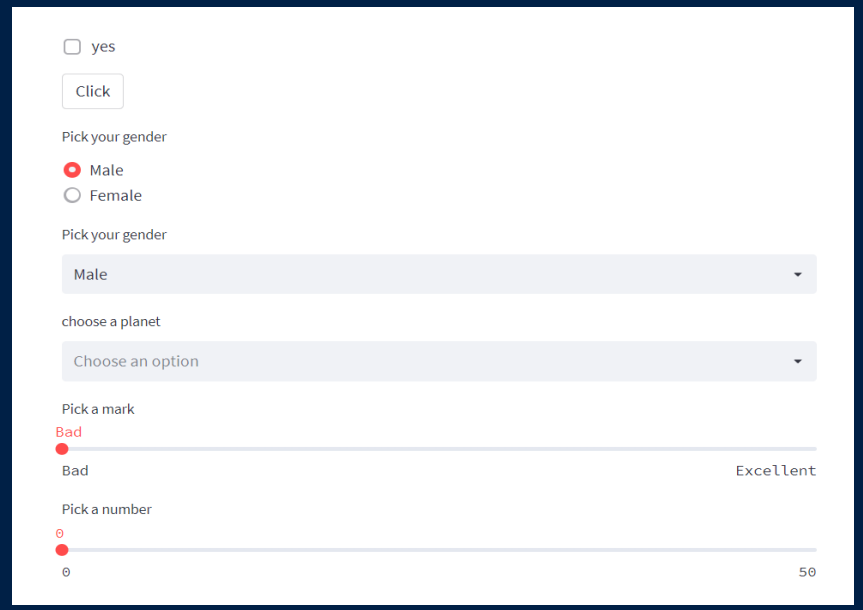
Input widgets with Streamlit

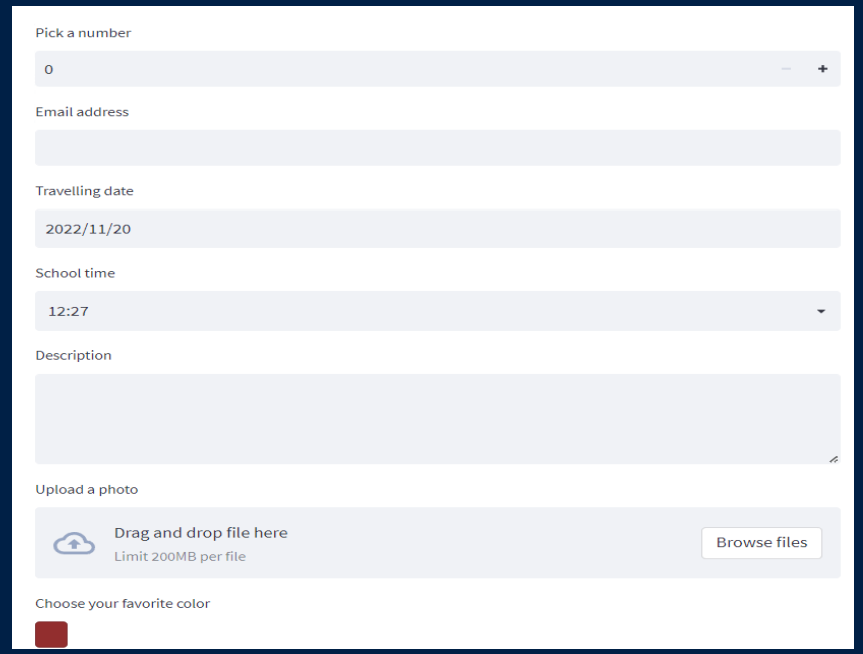
TutoStreamlitMLAB.py

```python
import streamlit as st
st.checkbox('yes')
st.button('Click')
st.radio('Pick your gender',['Male','Female'])
st.selectbox('Pick your gender',['Male','Female'])
st.multiselect('choose a planet',['Jupiter', 'Mars', 'neptune'])
st.select_slider('Pick a mark', ['Bad', 'Good', 'Excellent'])
st.slider('Pick a number', 0,50)
```



TutoStreamlitMLAB.py

```python
import streamlit as st
st.number_input('Pick a number', 0,10)
st.text_input('Email address')
st.date_input('Travelling date')
st.time_input('School time')
st.text_area('Description')
st.file_uploader('Upload a photo')
st.color_picker('Choose your favorite color')
```



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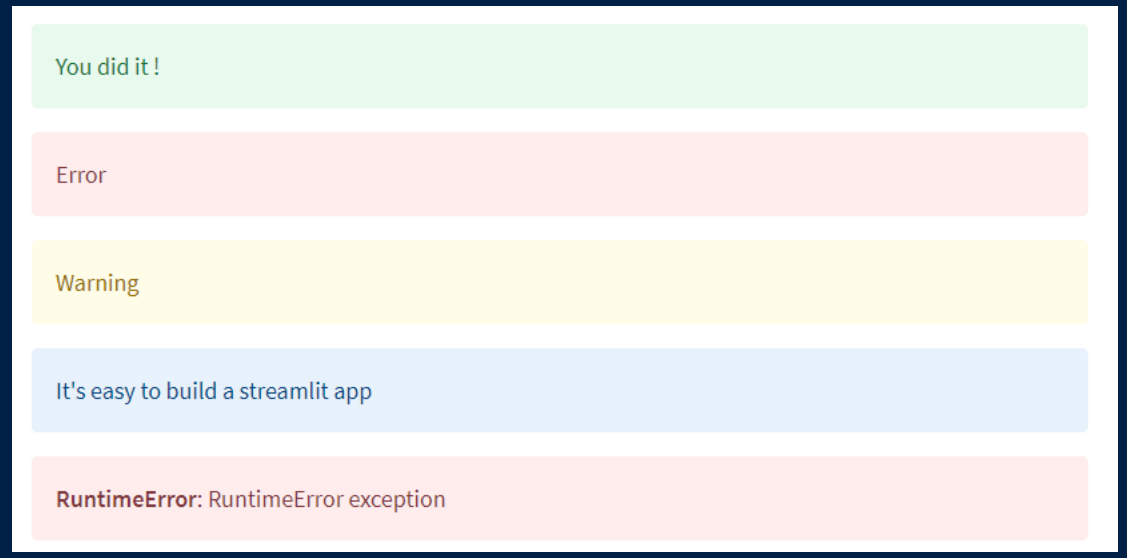
Display status & Sidebar with Streamlit

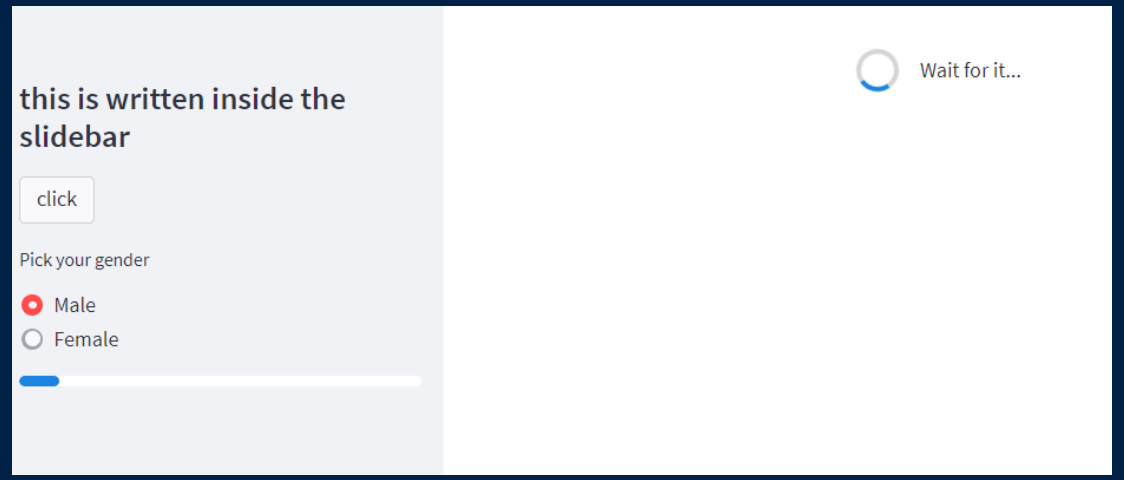
TutoStreamlitMLAB.py

```python
import streamlit as st
st.success("You did it !")
st.error("Error")
st.warning("Warning")
st.info("It's easy to build a streamlit app")
st.exception(RuntimeError("RuntimeError exception"))
```



TutoStreamlitMLAB.py

```python
import streamlit as st
import time
st.sidebar.title("this is written inside the slidebar")
st.sidebar.button("click")
st.sidebar.radio("Pick your gender",["Male","Female"])
st.sidebar.progress(10)
with st.spinner('Wait for it...'):
    time.sleep(10)
```



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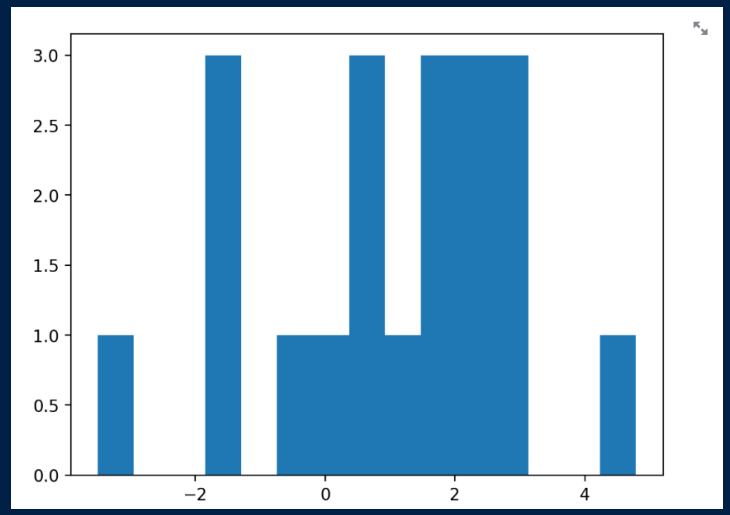
Display graphs with Streamlit

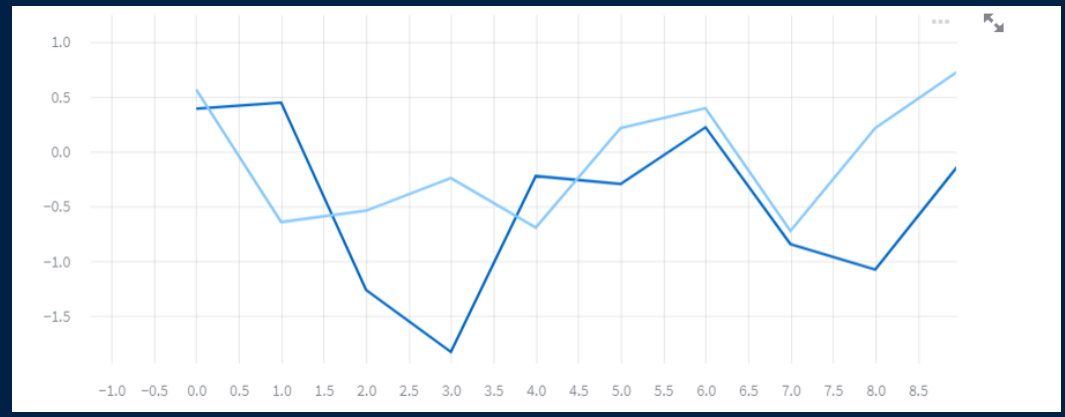
TutoStreamlitMLAB.py

```python
import streamlit as st
import matplotlib.pyplot as plt
import numpy as np
rand=np.random.normal(1, 2, size=20)
fig, ax = plt.subplots()
ax.hist(rand, bins=15)
st.pyplot(fig)
```



TutoStreamlitMLAB.py

```python
import streamlit as st
import pandas as pd
import numpy as np
df= pd.DataFrame(
    np.random.randn(10, 2),
    columns=['x', 'y'])
st.line_chart(df)
```



We can use st.bar_chart() for bar chart and st.area_chart() for area chart for the same code

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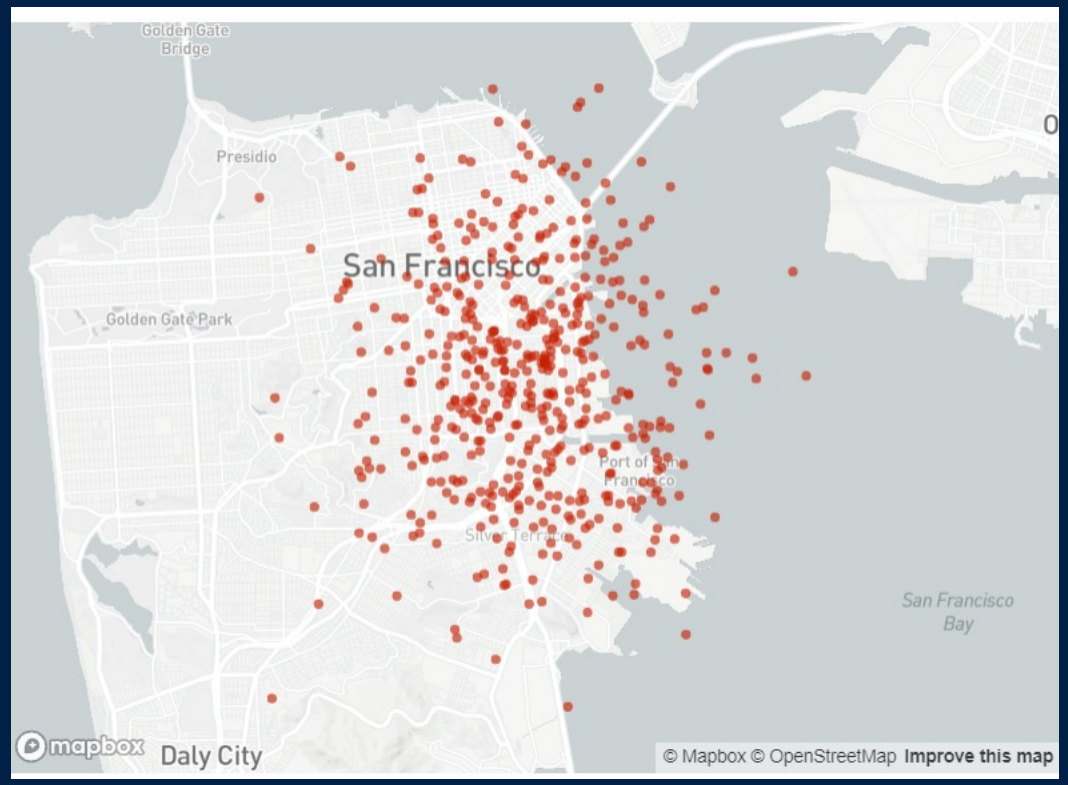
Display maps with Streamlit

TutoStreamlitMLAB.py

```python
import pandas as pd
import numpy as np
import streamlit as st
df = pd.DataFrame(np.random.randn(500, 2) / [50, 50] + [37.76, -122.4],
columns=['lat', 'lon'])
st.map(df)
```



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Implementing reliable
machine learning solutions

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Operating Models – Technologies – Culture & Skills

Consulting – Engineering - Training