

# Streamlit - Build and share data apps

Machine Learning Architects Basel

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# Agenda

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



# Streamlit

## Why we use streamlit ?

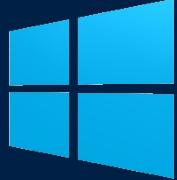
- Turn Data scripts into Web Apps
- Interactive
- Customizable
- No Frontend Experience Required
- Easy to Deploy
- Active Community
- Compatibility with major Frameworks/Libraries



# Streamlit

# Streamlit

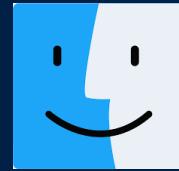
## Installation & Setup



- 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 X
```

```
⚡ TutoStreamlitMLAB.py
```

```
1 import streamlit as st  
2 st.write("Hello ,let's learn how to build a streamlit app together")  
3
```



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

```
⚡ TutoStreamlitMLAB.py X
```

```
⚡ TutoStreamlitMLAB.py
```

```
1 import streamlit as st  
2 st.title ("this is the app title")  
3 st.header("this is the markdown")  
4 st.markdown("this is the header")  
5 st.subheader("this is the subheader")  
6 st.caption("this is the caption")  
7 st.code("x=2021")  
8 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

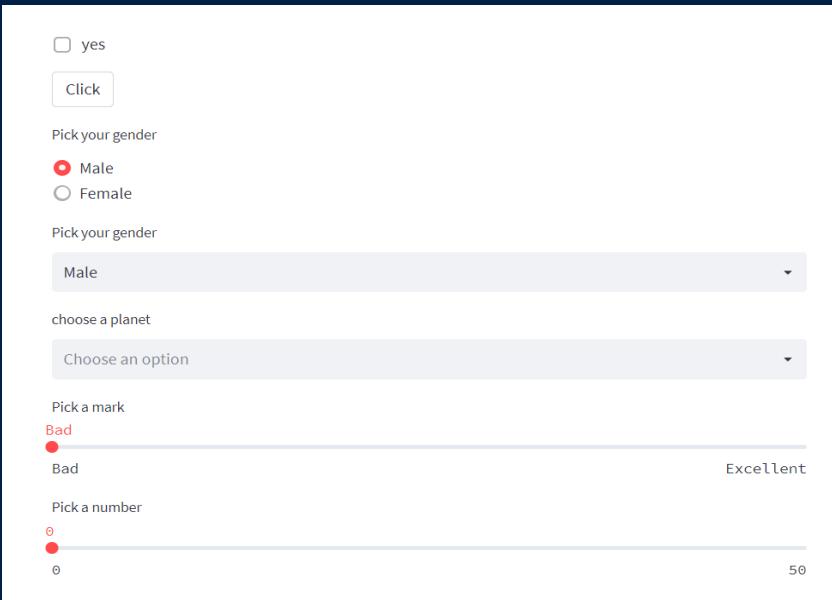
$$a + ar^1 + ar^2 + ar^3$$

# Streamlit

## Input widgets with Streamlit

TutoStreamlitMLAB.py X

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

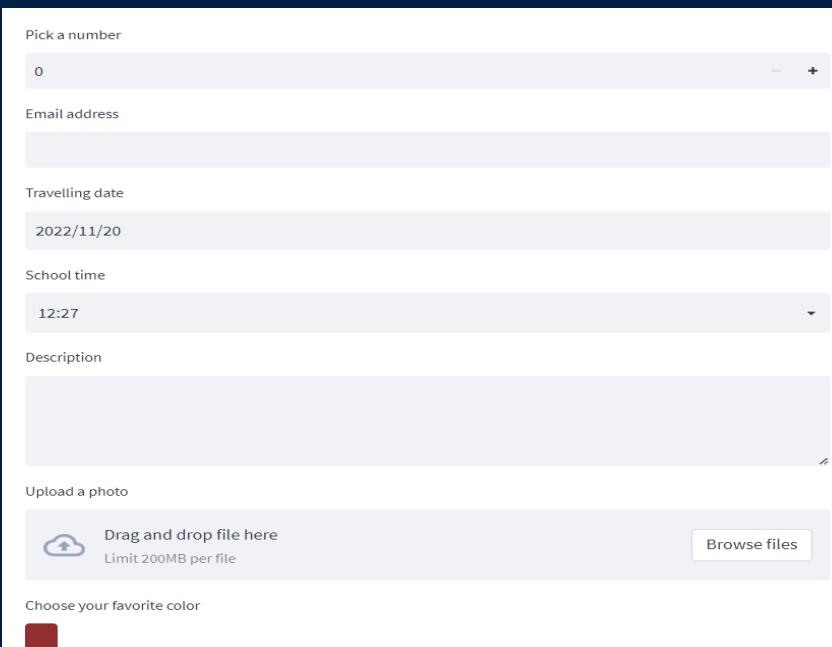


The screenshot shows a Streamlit application with the following components:

- A checkbox labeled "yes" with an unchecked state.
- A button labeled "Click".
- A radio button group labeled "Pick your gender" with "Male" selected and "Female" as an option.
- A dropdown menu labeled "Pick your gender" showing "Male" as the current selection.
- A multiselect dropdown labeled "choose a planet" with options "Jupiter", "Mars", and "neptune".
- A select\_slider labeled "Pick a mark" with options "Bad", "Good", and "Excellent", where "Bad" is selected.
- A slider labeled "Pick a number" ranging from 0 to 50, with the value set to 0.

TutoStreamlitMLAB.py X

```
1 import streamlit as st
2 st.number_input('Pick a number', 0,10)
3 st.text_input('Email address')
4 st.date_input('Travelling date')
5 st.time_input('School time')
6 st.text_area('Description')
7 st.file_uploader('Upload a photo')
8 st.color_picker('Choose your favorite color')
```



The screenshot shows a Streamlit application with the following components:

- A number input labeled "Pick a number" with the value 0.
- A text input labeled "Email address".
- A date input labeled "Travelling date" showing the date 2022/11/20.
- A time input labeled "School time" showing the time 12:27.
- A text area labeled "Description".
- A file uploader labeled "Upload a photo" with a placeholder "Drag and drop file here" and a limit of "Limit 200MB per file".
- A color picker labeled "Choose your favorite color" showing a red square.

# Streamlit

## Display status & Sidebar with Streamlit

TutoStreamlitMLAB.py

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



You did it!

Error

Warning

It's easy to build a streamlit app

RuntimeError: RuntimeError exception

TutoStreamlitMLAB.py X

```
1 import streamlit as st
2 import time
3 st.sidebar.title("this is written inside the sidebar")
4 st.sidebar.button("click")
5 st.sidebar.radio("Pick your gender",["Male","Female"])
6 st.sidebar.progress(10)
7 with st.spinner('Wait for it...'):
8     time.sleep(10)
```



this is written inside the sidebar

click

Pick your gender

Male

Female

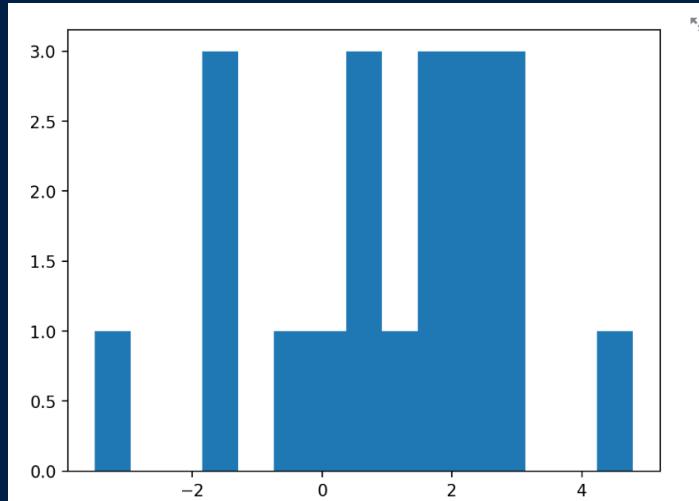
Wait for it...

# Streamlit

## Display graphs with Streamlit

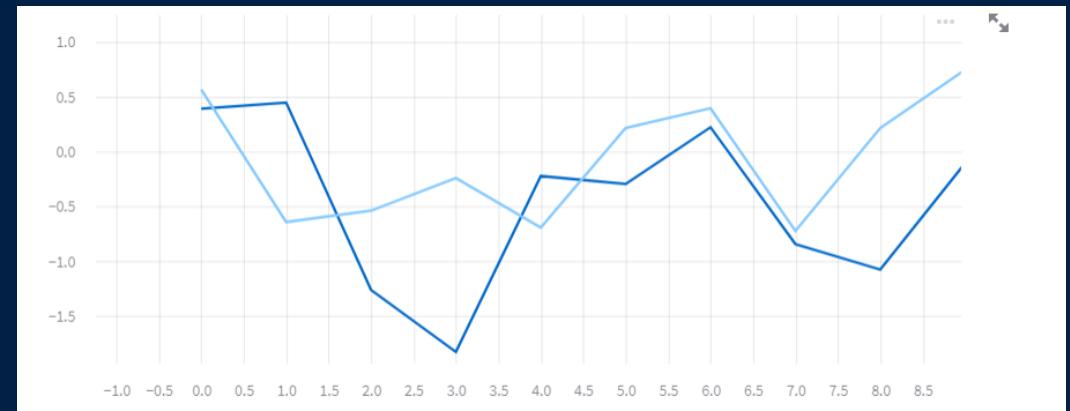
TutoStreamlitMLAB.py X

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



TutoStreamlitMLAB.py X

```
1 import streamlit as st
2 import pandas as pd
3 import numpy as np
4 df= pd.DataFrame(
5     np.random.randn(10, 2),
6     columns=['x', 'y']
7 )
```



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

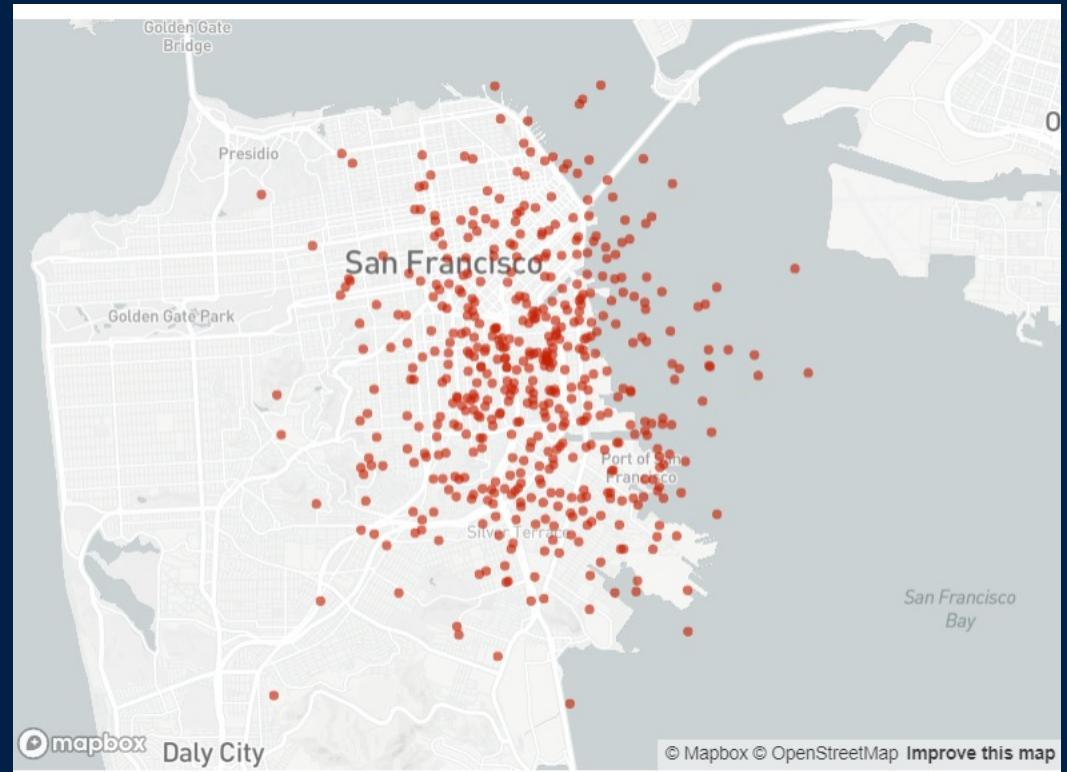
# Streamlit

## Display maps with Streamlit

TutoStreamlitMLAB.py X

TutoStreamlitMLAB.py > ...

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





Implementing reliable  
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