

SIC Batch 5

Week 8 - Introduction to Streamlit

Streamlit

Streamlit is a free and open-source framework to rapidly build and share beautiful machine learning and data science web apps. It is a Python-based library specifically designed for machine learning engineers



Streamlit

Why Streamlit?

- **Open-Source Python Library:** Empower your data science and machine learning projects with a robust, open-source Python library.
- **Interactive User Interfaces:** Build intuitive and interactive web interfaces without extensive front-end expertise.
- **Low-Code Development:** Streamline development with pre-built widgets and elements, allowing you to create web pages with minimal coding.
- **Extensive Compatibility:** Seamlessly integrate with your existing Python ecosystem for a cohesive development experience (e.g. pandas, matplotlib, seaborn, plotly, Keras, PyTorch, SymPy(latex)).

Streamlit Getting Started

Install & Import

```
pip install streamlit

streamlit run first_app.py

# Import convention
>>> import streamlit as st
```

Command Line

```
streamlit --help
streamlit run your_script.py
streamlit hello
streamlit config show
streamlit cache clear
streamlit docs
streamlit --version
```

Streamlit Page Elements & Capabilities

- ❑ **Text Elements**
 - ❑ Working with text information (Insert text, markdown, title, etc)
- ❑ **Data Elements**
 - ❑ Working with data, includes dataframe, metrics, JSON, static tables, etc)
- ❑ **Chart Elements**
 - ❑ Visualizing data through chart (bar, line, scatter, etc)
- ❑ **Input Widgets**
 - ❑ Interact directly into your apps with buttons, sliders, text inputs, and more
- ❑ **Media Elements**
 - ❑ Embed images, videos, and audio files directly into Streamlit apps.
- ❑ **Layouts and Containers**
 - ❑ Controlling how different elements are laid out on the screen
- ❑ And many more, read on <https://docs.streamlit.io/develop/api-reference>

Streamlit



Streamlit code



Menampilkan teks pada streamlit

```
import streamlit as st
```

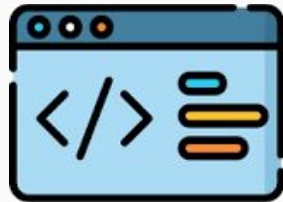
```
st.write('Hello, *World!* :sunglasses:')
```

Hello, *World!* 🕶️

Built with Streamlit 🍷

Fullscreen 

Streamlit code



Menampilkan teks

```
st.write("Most objects")
st.write(["st", "is <", 3])
st.write_stream(my_generator)

st.text("Fixed width text")
st.markdown("_Markdown_")
st.title("My title")
st.header("My header")
st.subheader("My sub")
st.code("for i in range(9):
do()")
```

Menampilkan data

```
st.dataframe(my_dataframe)
st.table(data.iloc[0:10])
st.json({"foo":"bar","fu":"ba"})
st.metric("My metric", 42, 2)
```


Streamlit code



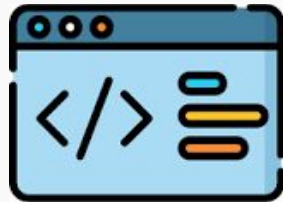
Menampilkan media

```
st.image("./header.png")  
st.audio(data)  
st.video(data)  
st.video(data,  
subtitles="./subs.vtt")
```

Membuat tab

```
# Menambahkan tab:  
>>> tab1, tab2 = st.tabs(["Tab  
1", "Tab2"])  
>>> tab1.write("Ini tab 1")  
>>> tab2.write("Ini tab 2")
```

Streamlit code

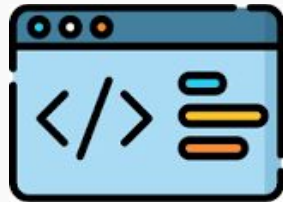


Menampilkan grafik

```
st.area_chart(df)
st.bar_chart(df)
st.line_chart(df)
st.map(df)
st.scatter_chart(df)
```

```
st.altair_chart(chart)
st.bokeh_chart(fig)
st.graphviz_chart(fig)
st.plotly_chart(fig)
st.pydeck_chart(chart)
st.pyplot(fig)
st.vega_lite_chart(df)
```

Streamlit code



Menampilkan widget interaktif

```
st.button("Klik di sini")
st.download_button("Unduh file",
data)
st.link_button("Ke laman utama",
url)
st.page_link("app.py",
label="Home")
st.data_editor("Edit data", data)
st.checkbox("Setuju")
st.toggle("Enable")
```

```
st.radio("Pilih salah satu",
["kucing", "hamster"])
st.selectbox("Pilih salah satu",
["kucing", "hamster"])
st.multiselect("Beli", ["kopi",
"susu", "teh"])
st.slider("Pilih angka", 0, 100)
```

Streamlit Demo App



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Hello

Animation Demo

Plotting Demo

Mapping Demo

DataFrame Demo

^

Select a demo above.

☰

Welcome to Streamlit! 🙌

Streamlit is an open-source app framework built specifically for Machine Learning and Data Science projects. 🖱️ **Select a demo from the sidebar** to see some examples of what Streamlit can do!

Want to learn more?

- Check out streamlit.io
- Jump into our [documentation](#)
- Ask a question in our [community forums](#)

See more complex demos

- Use a neural net to [analyze the Udacity Self-driving Car Image Dataset](#)
- Explore a [New York City rideshare dataset](#)

Contoh streamlit app



COLUMBUS - The Explorer

Data Description

- ☐ Describe the data
- ☐ Show Column Names
- ☐ Show the data shape
- ☐ Select Columns to show
- ☐ Data Summary

Data Cleaning Options

Affects on the original dataset -
Irreversible

- ☐ Remove Empty Rows - Removed
NaN values too
- ☐ Remove Column - Removed NaN
values too
- ☐ Convert to best fit datatypes
- ☐ Remove outliers

Data visualization

Select Type of plot

DATA UBER - Dwell in data verity

Upload your dataset

Drop files here to upload
or
[browse files](#)

Show DataTypes

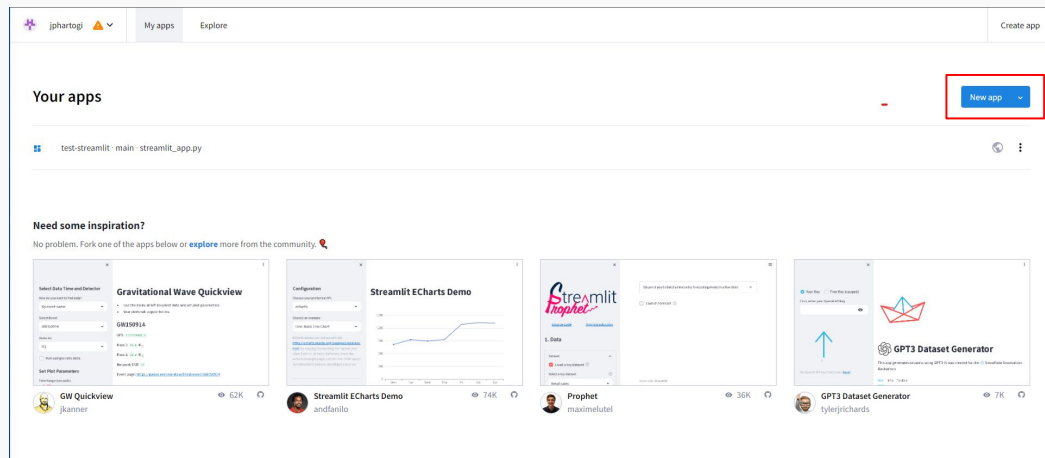
Data Representation

Select Columns to plot

No options to select.

Generate Plot(s)

Deploy app on public URL



[← Back](#)

Deploy an app

Repository

[Paste GitHub URL](#)

jphartogi/repo

Branch

master

Main file path

streamlit_app.py

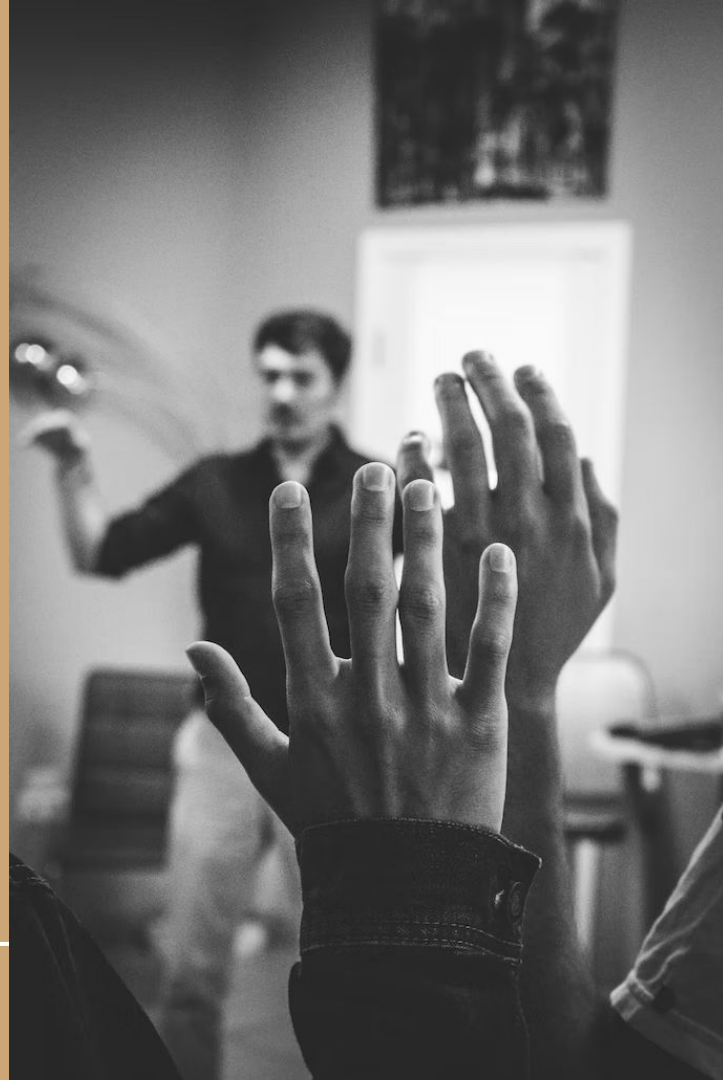
App URL (Optional)

.streamlit.app

[Advanced settings...](#)

Deploy!

Demo



Challenge!

Streamlit Challenge:

- Create and improve the UI to your style of choice
- Change the video processing app to image (.jpg, .png) processing app!
- Deploy your app to the cloud so it can be accessed from anywhere!

