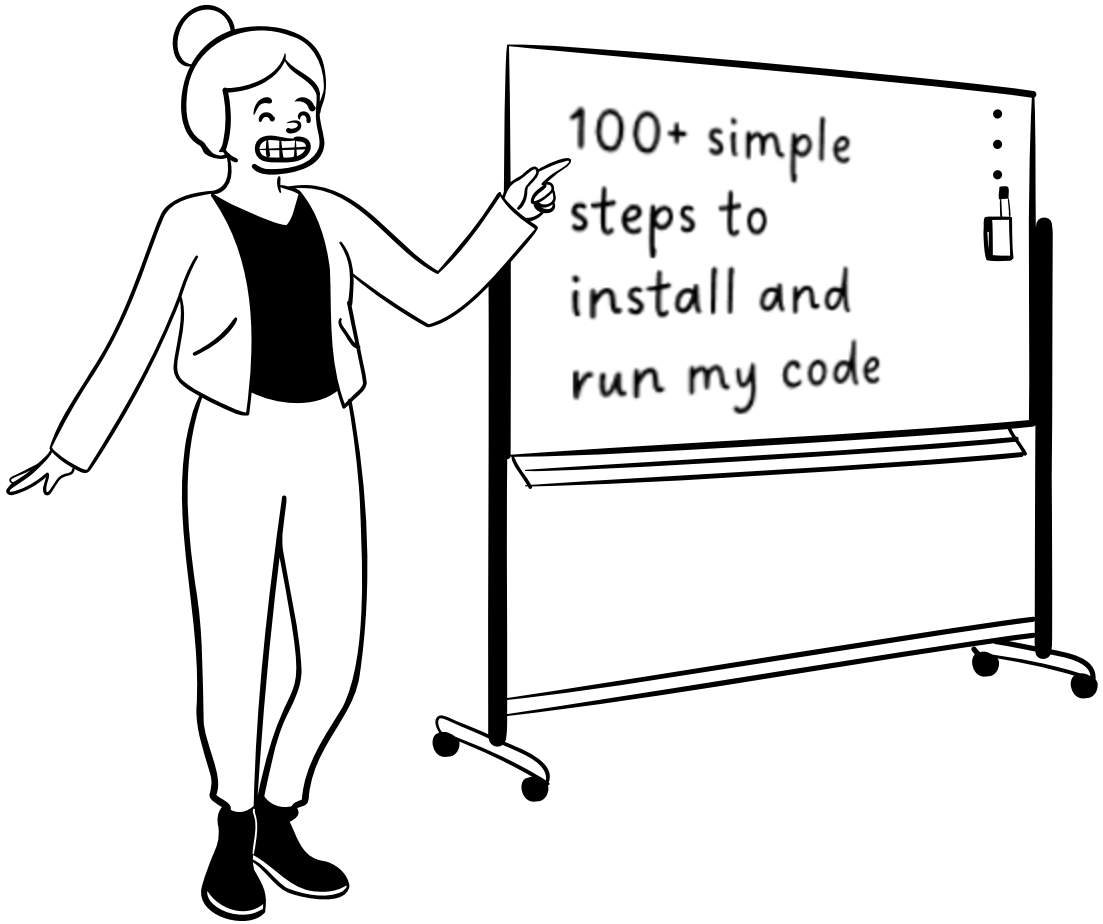
pyladies

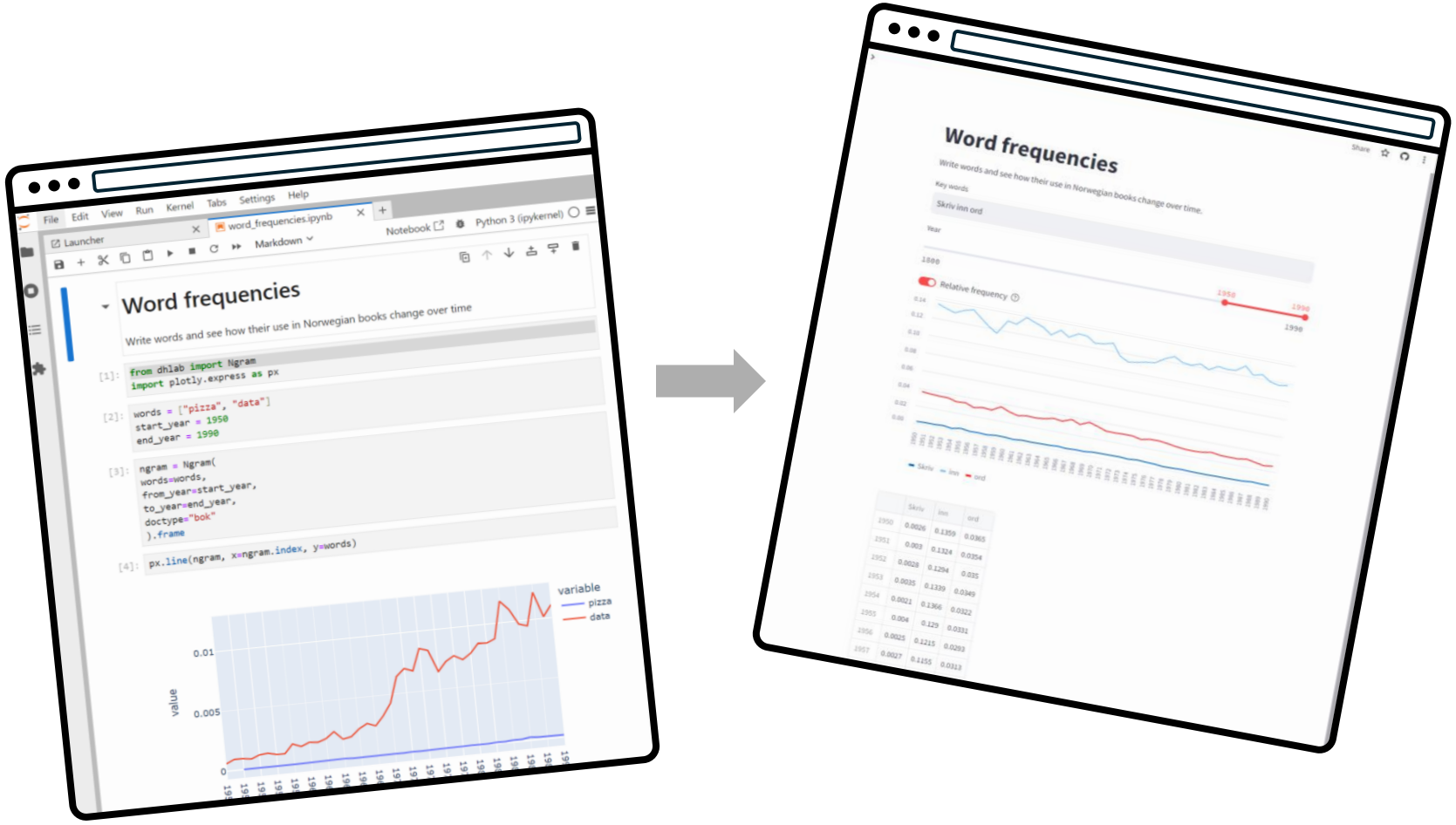
Sharing your analysis code can be challenging



Turning your Python scripts into interactive dashboards with Streamlit

Marie Roald &
Ingerid Løyning Dale

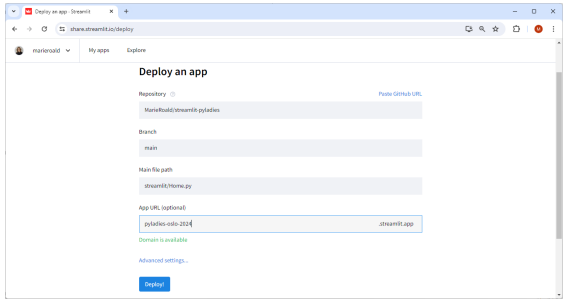
June 12th, 2024



Streamlit

Introduction to streamlit

Example dashboard



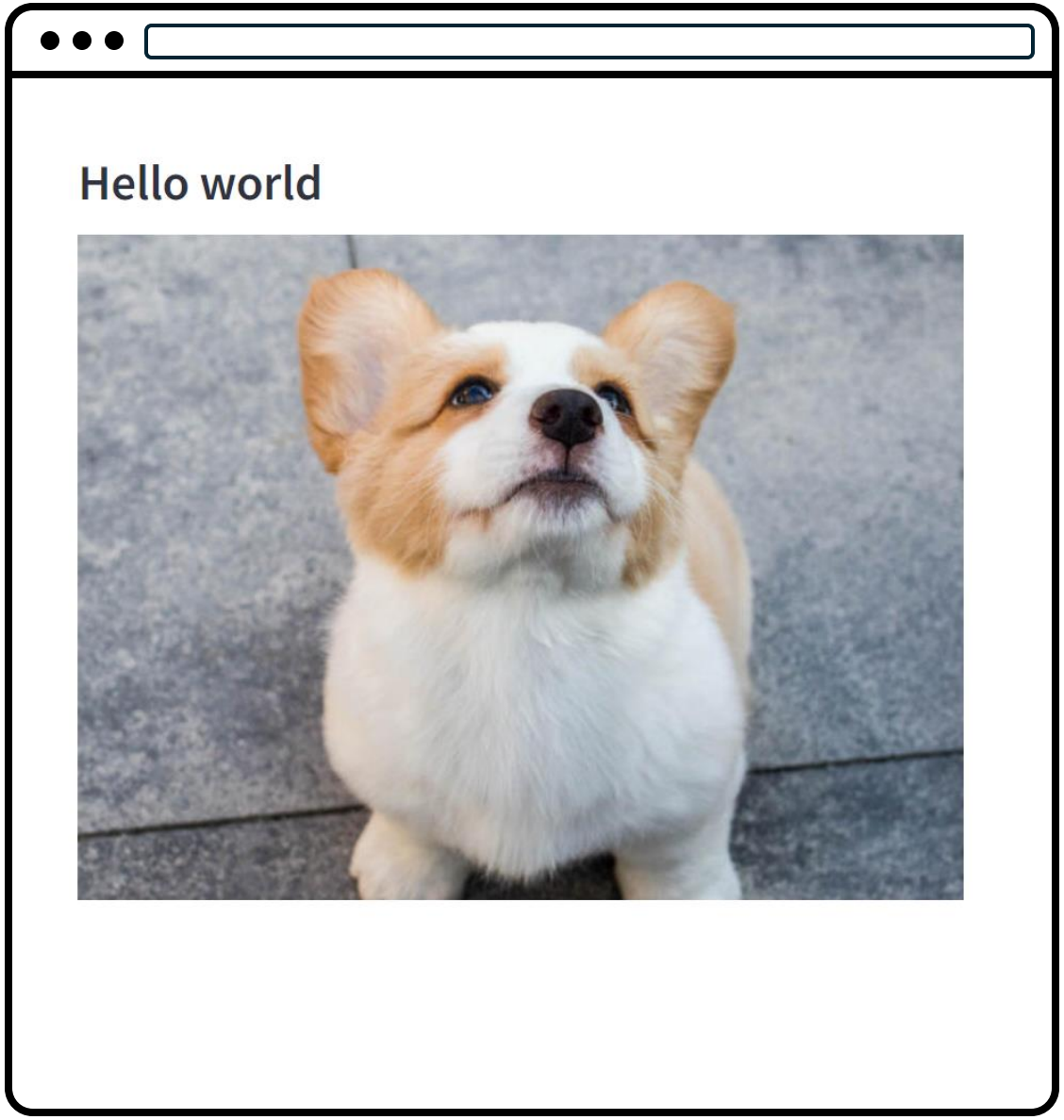
Deployment, extra tips and examples

You can use pip to install Streamlit in your Python environment

```
$ pip install streamlit
Collecting streamlit
  Downloading streamlit-1.35.0-py2.py3-none-any.whl (8.6 MB)
     ━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━ 8.6/8.6 MB 5.7 MB/s eta 0:00:00
[…]
Installing collected packages: pytz, […], streamlit
Successfully installed MarkupSafe-2.1.5 […] streamlit-1.35.0 […] watchdog-4.0.1
```

A Streamlit app looks similar to a Python script

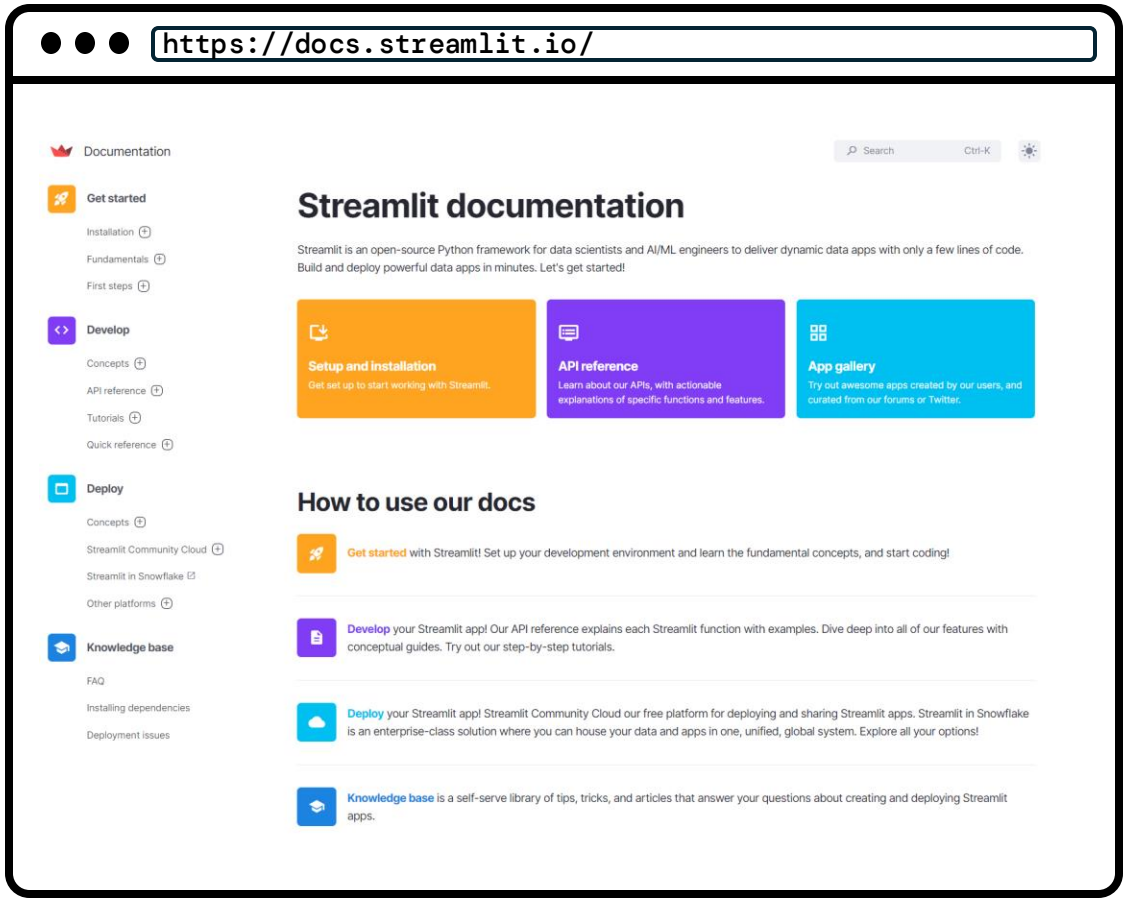
```python
import streamlit as st

st.header("Hello world")
st.image("assets/dog.png")
```



Streamlit has extensive documentation

```
$ streamlit docs
```

https://docs.streamlit.io/



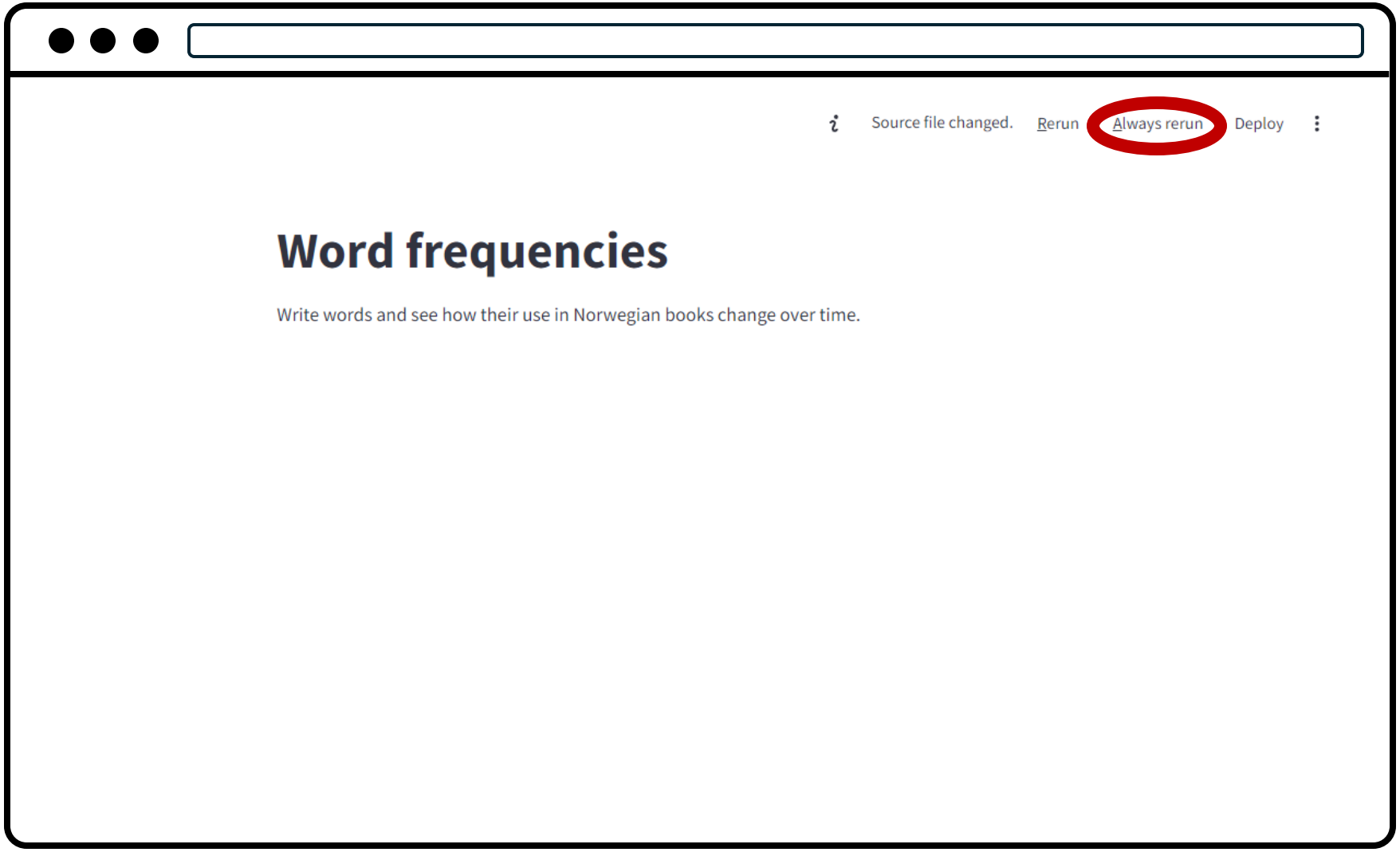
You run a Streamlit app similar to how you run a Python script

```
$ streamlit run hello.py
You can now view your Streamlit app in your browser.

Local URL: http://localhost:8501
Network URL: http://10.0.0.179:8501
```

Streamlit has native support for most common Python data libraries

```python
import streamlit as st
import pandas as pd
import plotly.express as px


df = pd.read_csv("data.csv")

fig = px.line(df, x="x", y="y")
st.plotly_chart(fig)
```

Streamlit can rerun apps whenever you update your scripts, allowing for quick iteration



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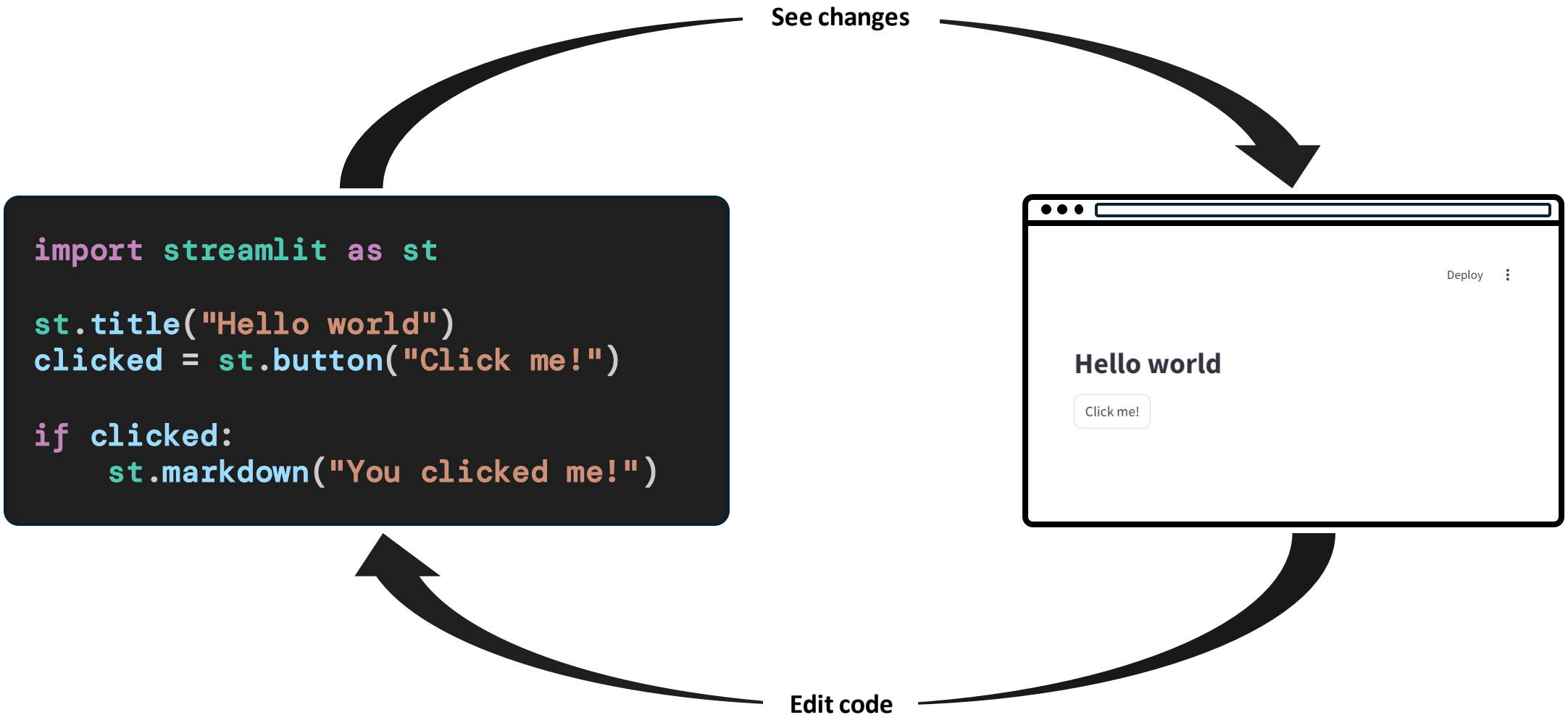

Streamlit re-runs the entire script from top to bottom when you update something on the screen

```python
import streamlit as st
import pandas as pd
import plotly.express as px


df = pd.read_csv("data.csv")

fig = px.line(df, x="x", y="y")
st.plotly_chart(fig)
```

Read like a normal script

Streamlit re-runs the entire script from top to bottom when you update something on the screen

```python
import streamlit as st
import pandas as pd
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df = pd.read_csv("data.csv")

fig = px.line(df, x="x", y="y")
st.plotly_chart(fig)
```

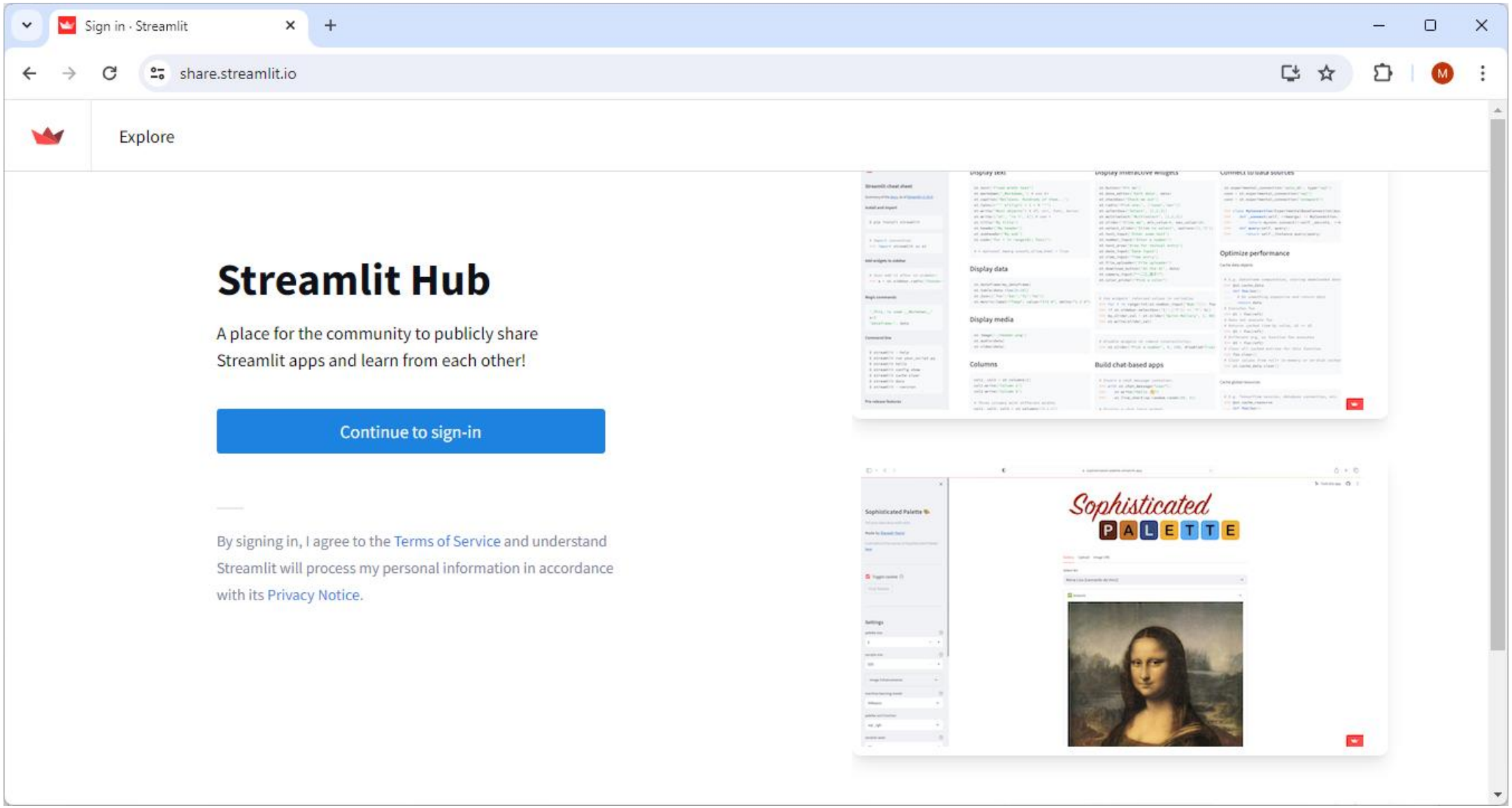
There are experimental ways to rerun only parts of a script

https://docs.streamlit.io/develop/api-reference/execution-flow/st.fragment

Time for a demo!

http://pyladies-oslo-2024.streamlit.app/

You can share your apps at https://share.streamlit.io/



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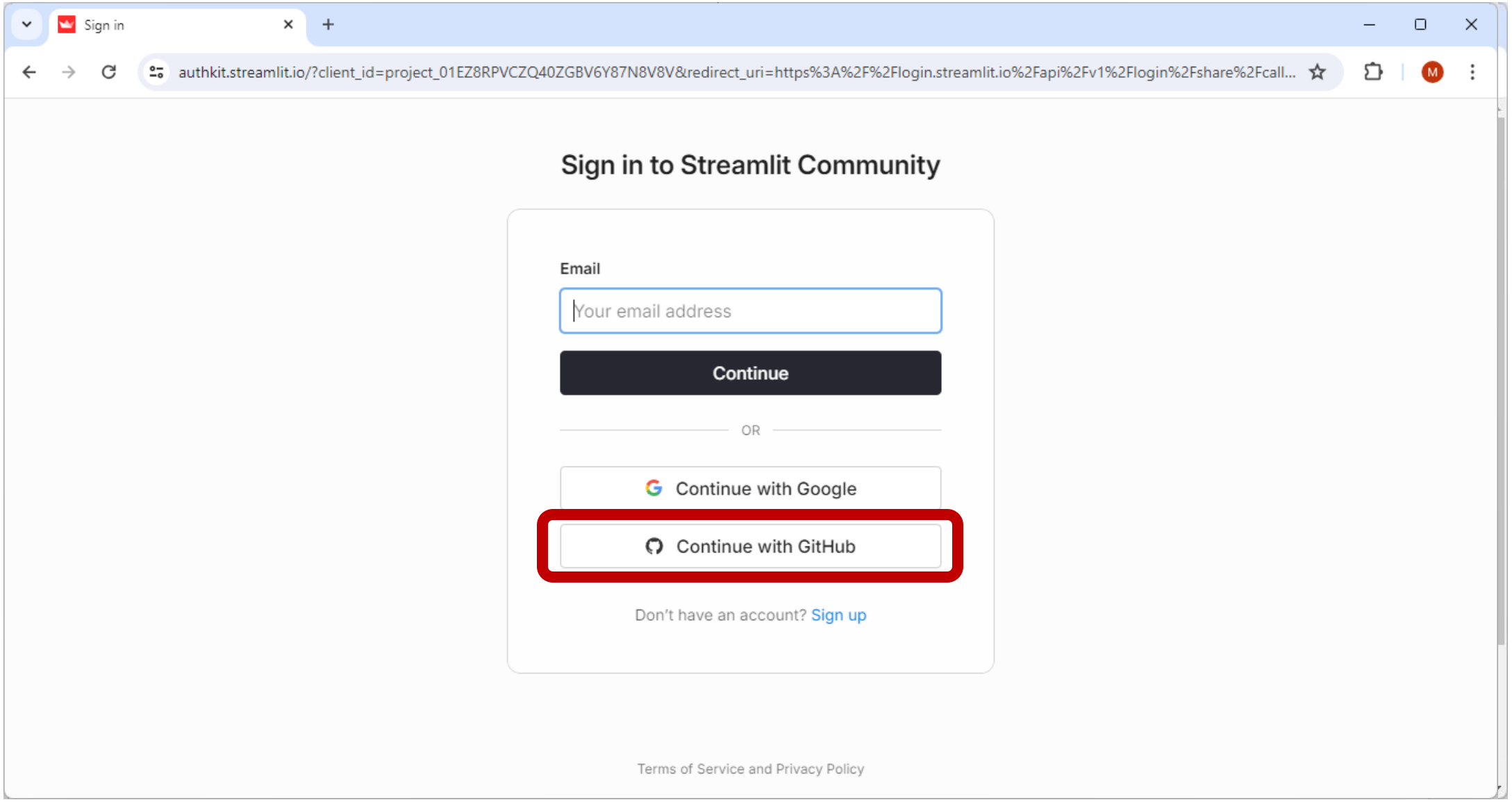

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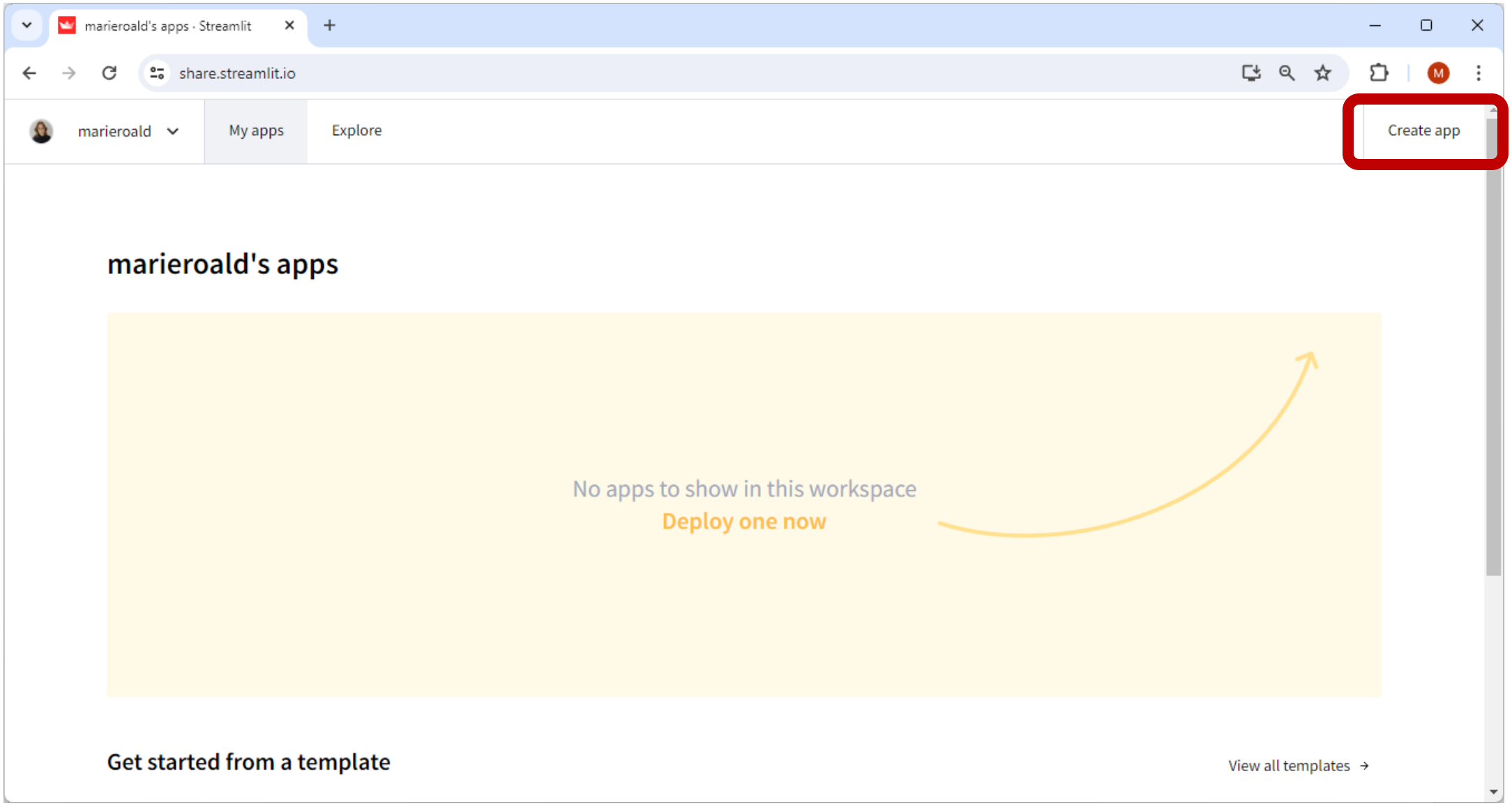

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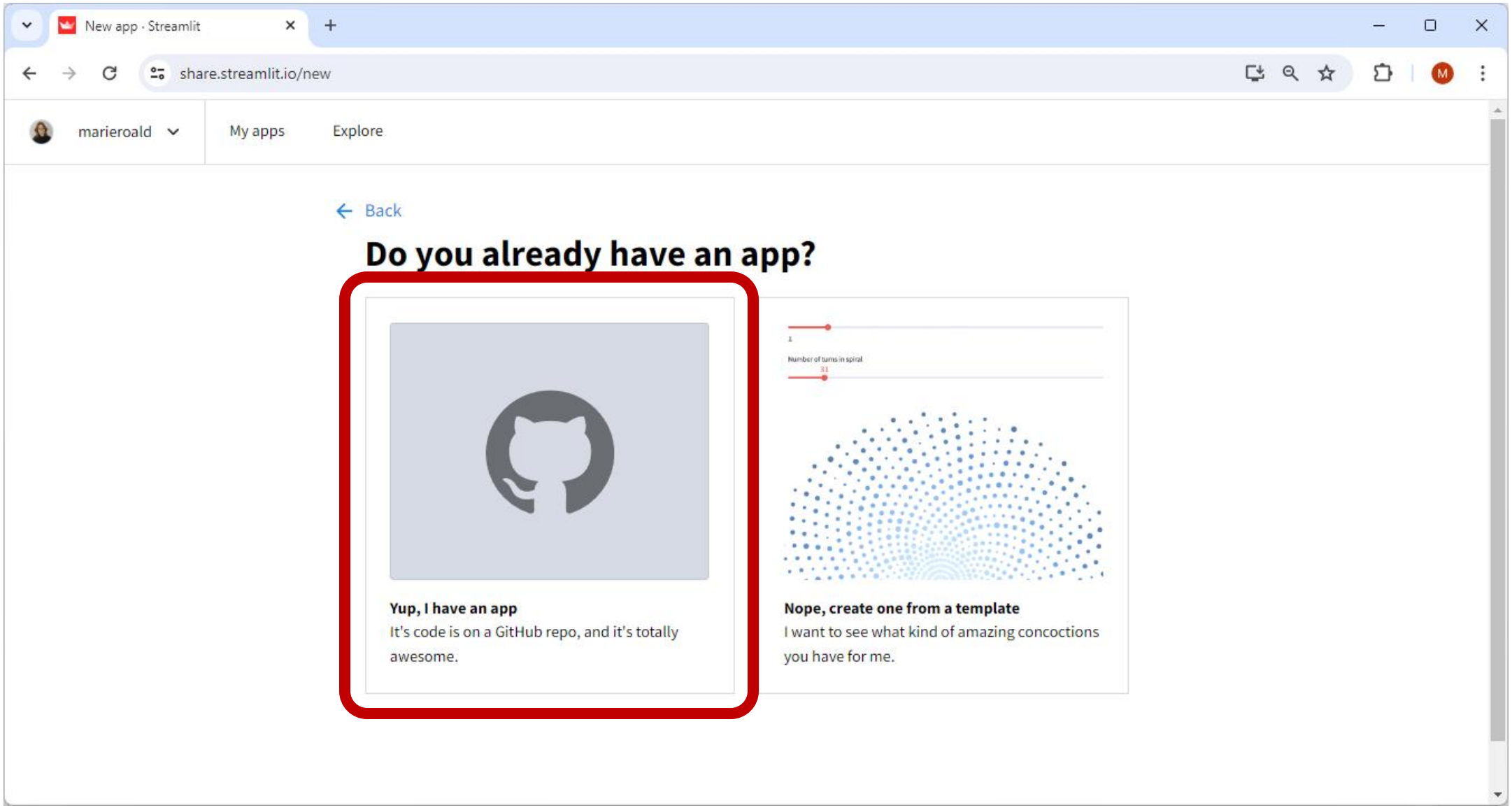

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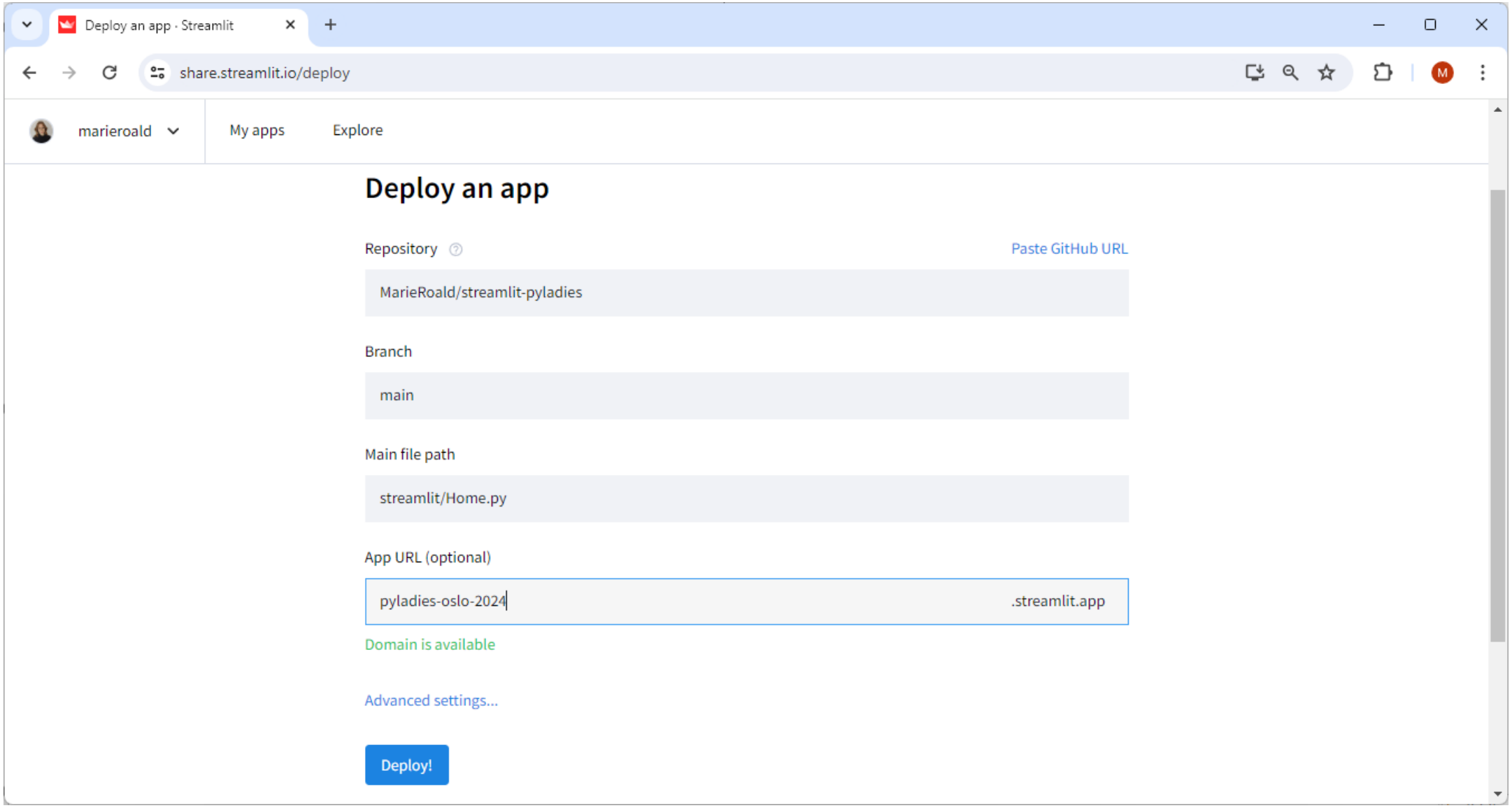

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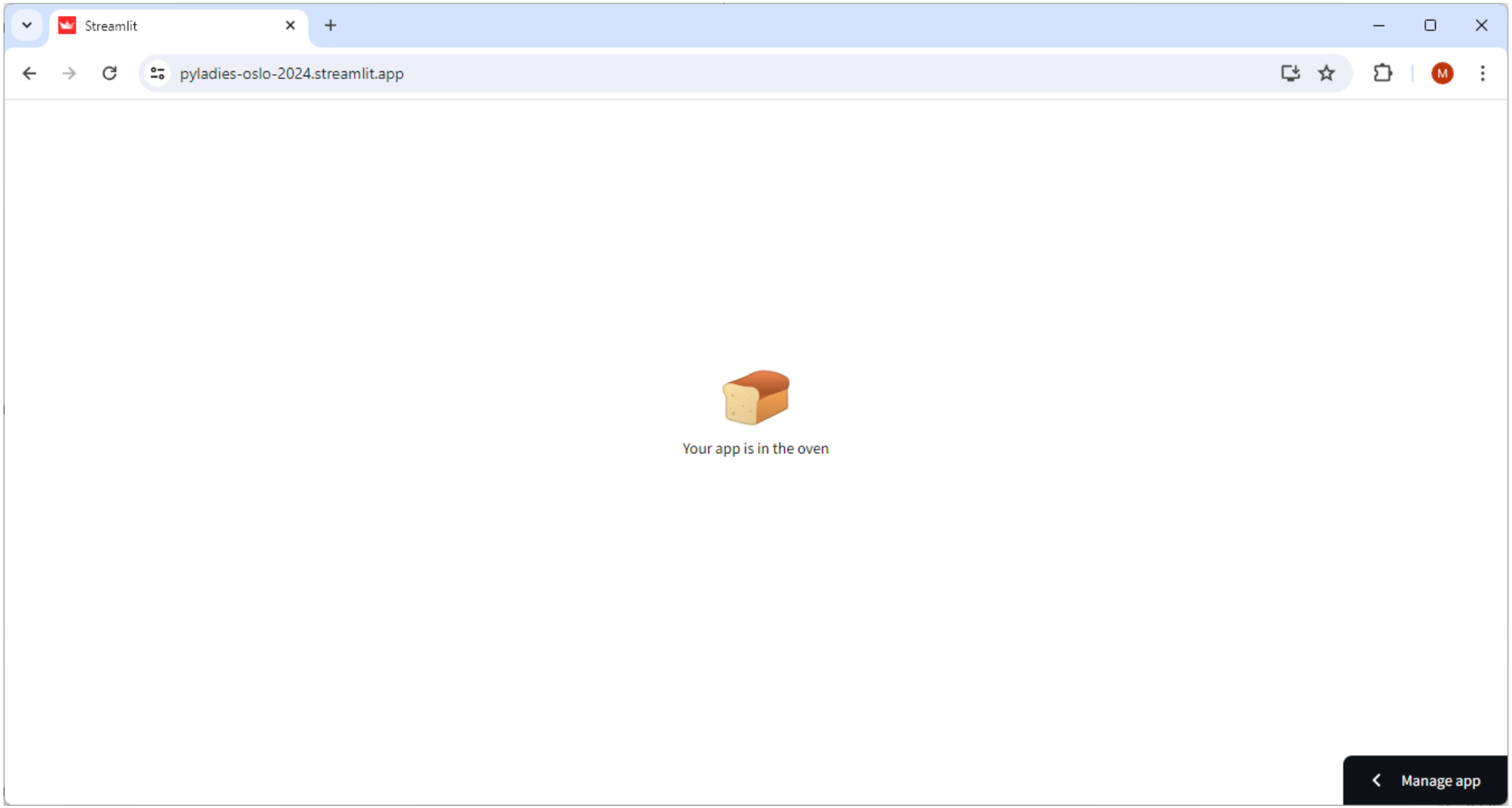

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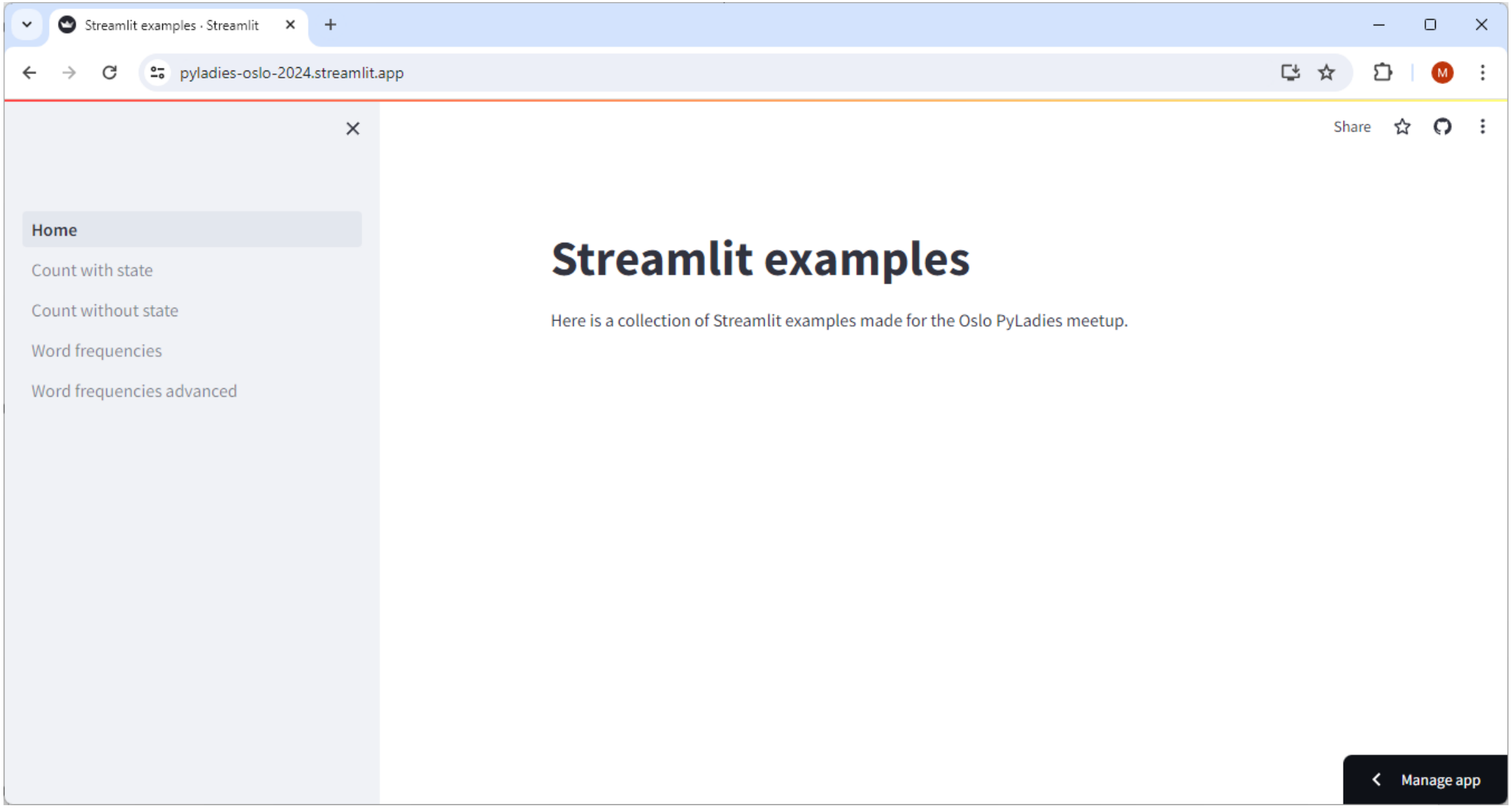

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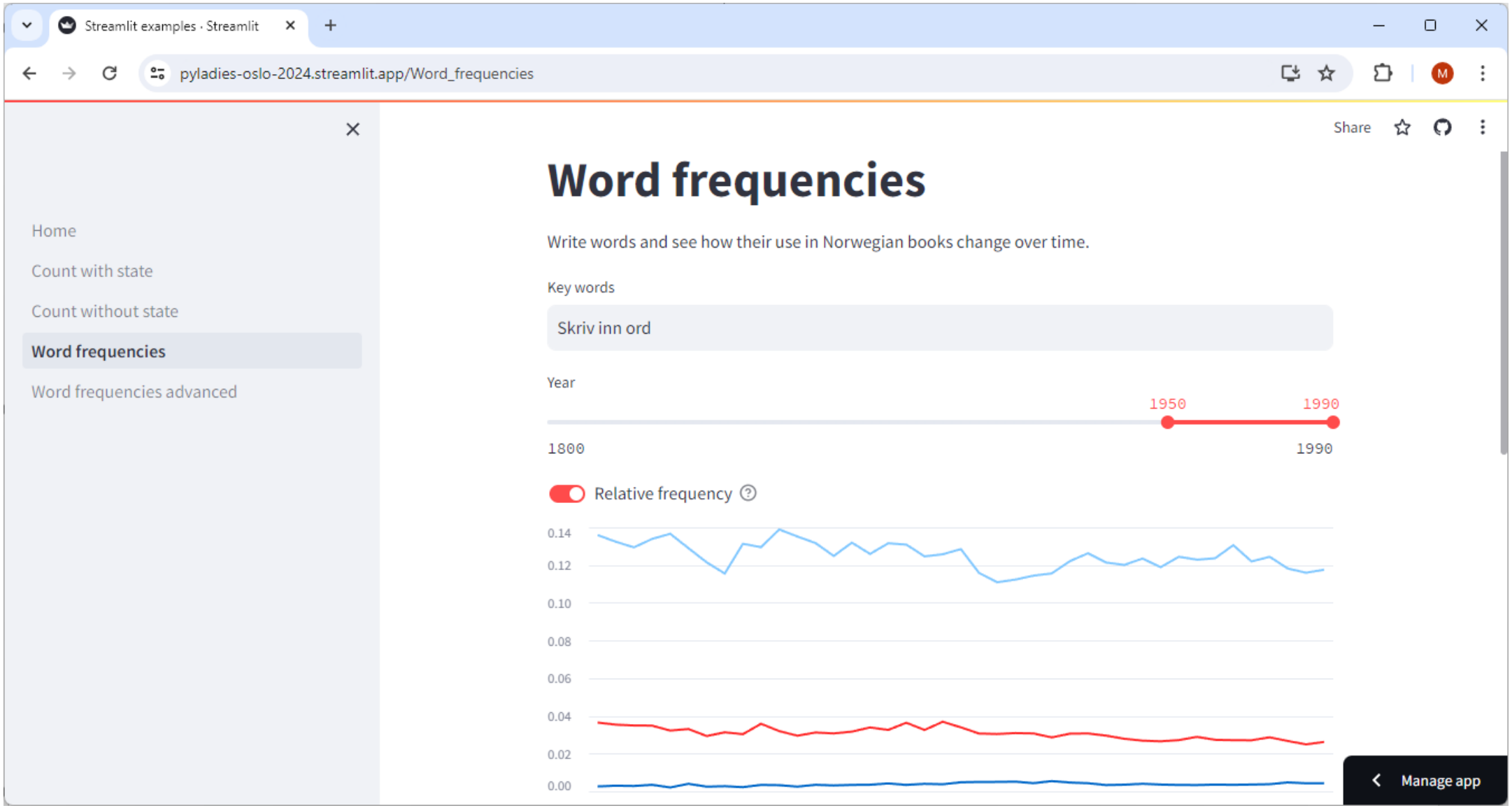
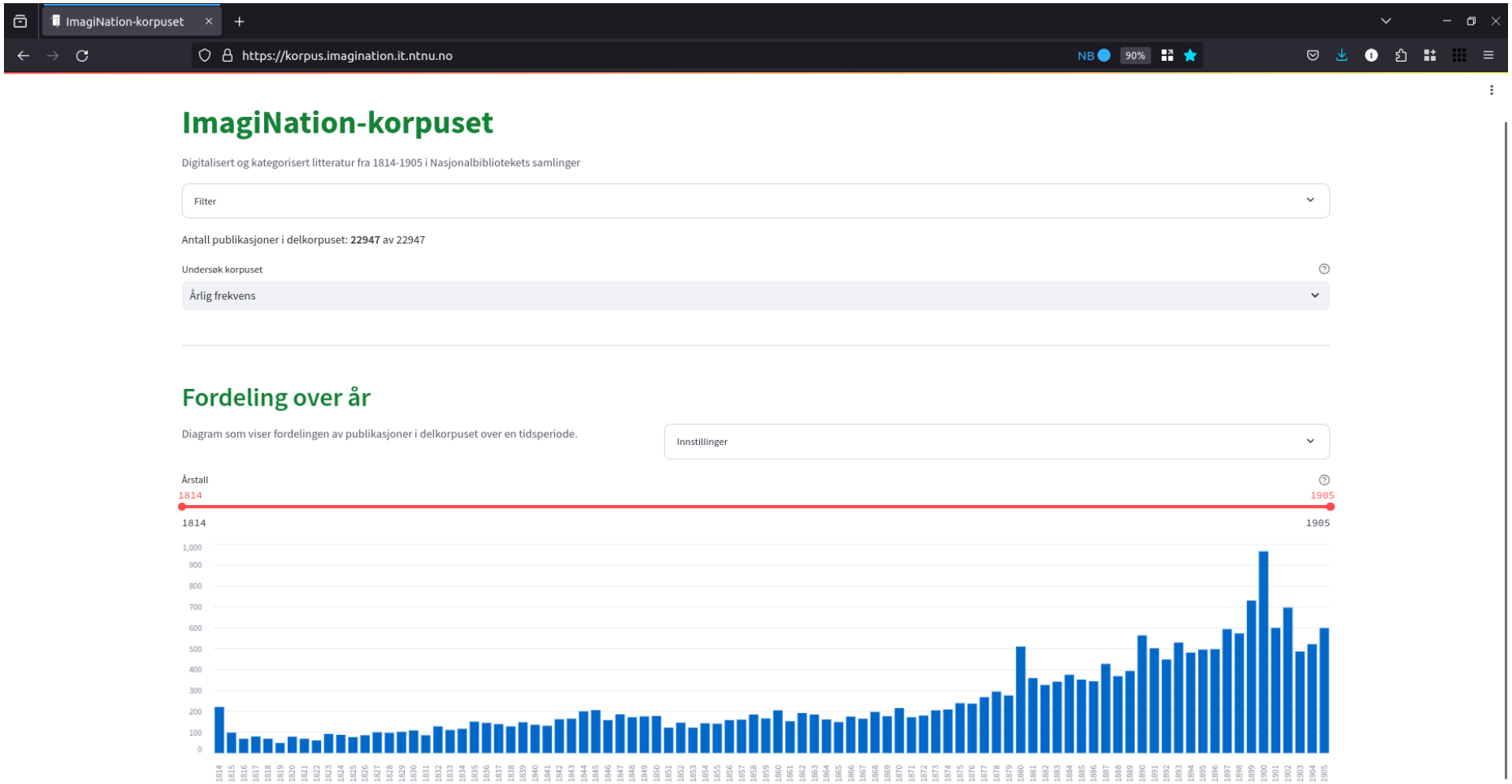


You can see more examples of streamlit functionalities in web apps from the DH lab



https://korpus.imagination.it.ntnu.no/

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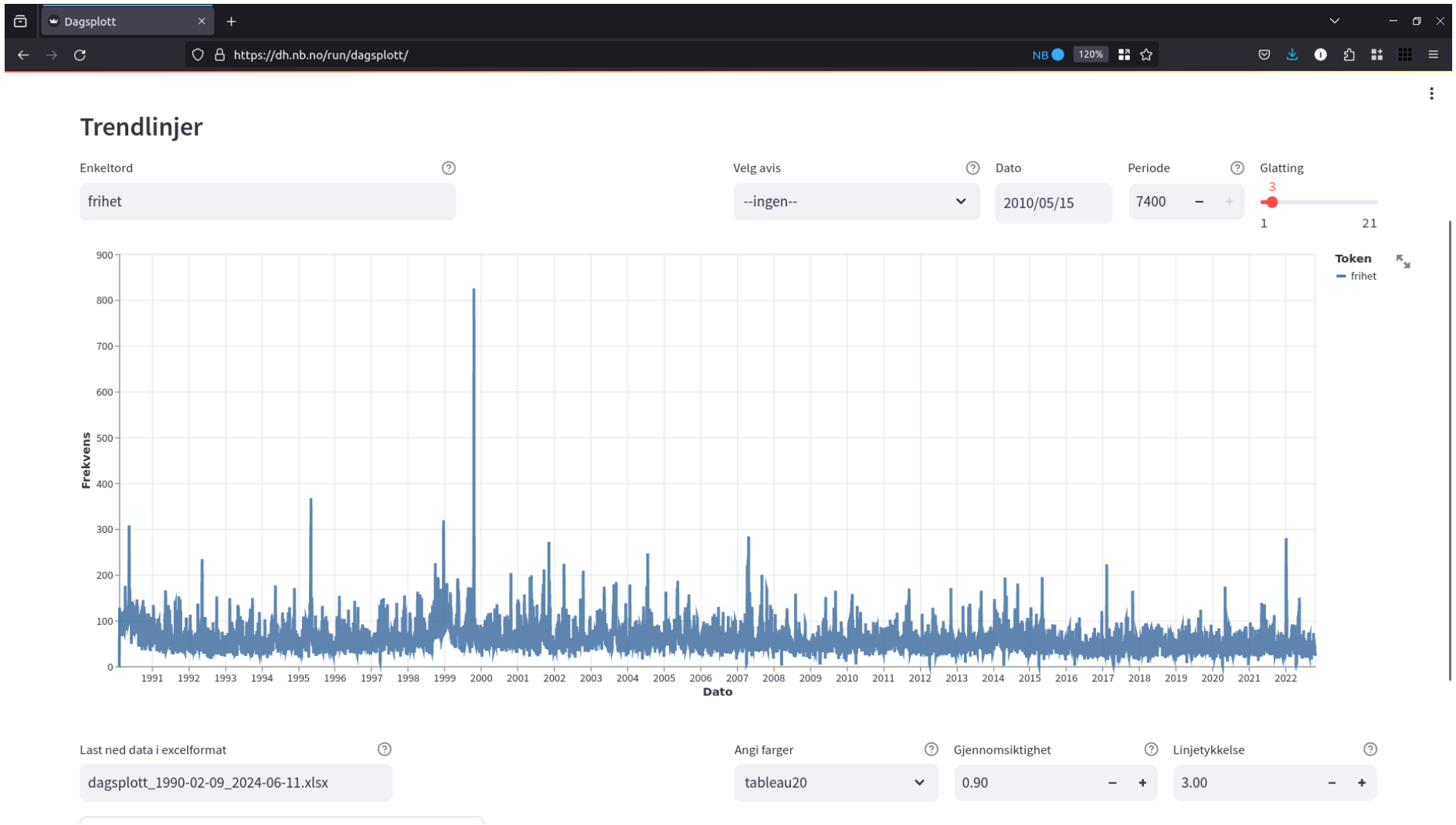

https://dh.nb.no/run/dagsplott/

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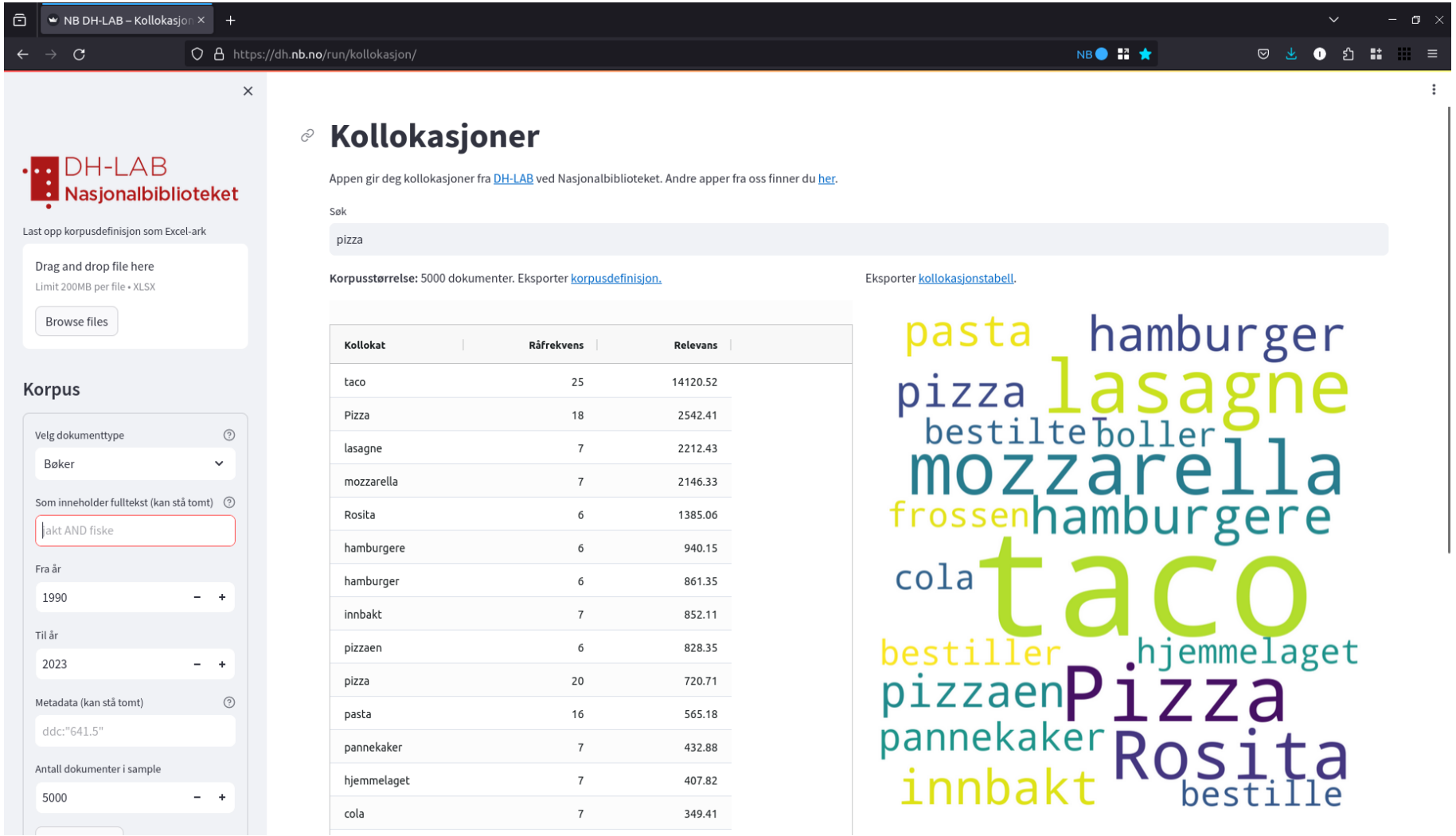

https://dh.nb.no/run/kollokasjon/

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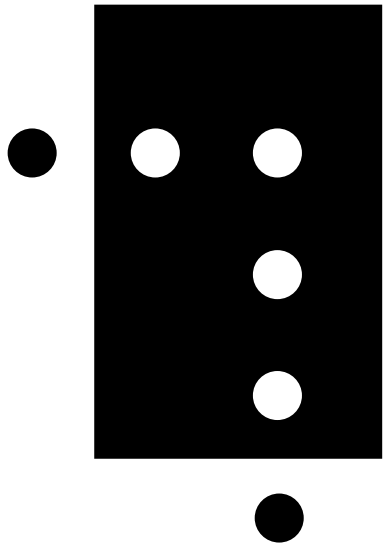


https://www.nb.no/dh-lab/apper/

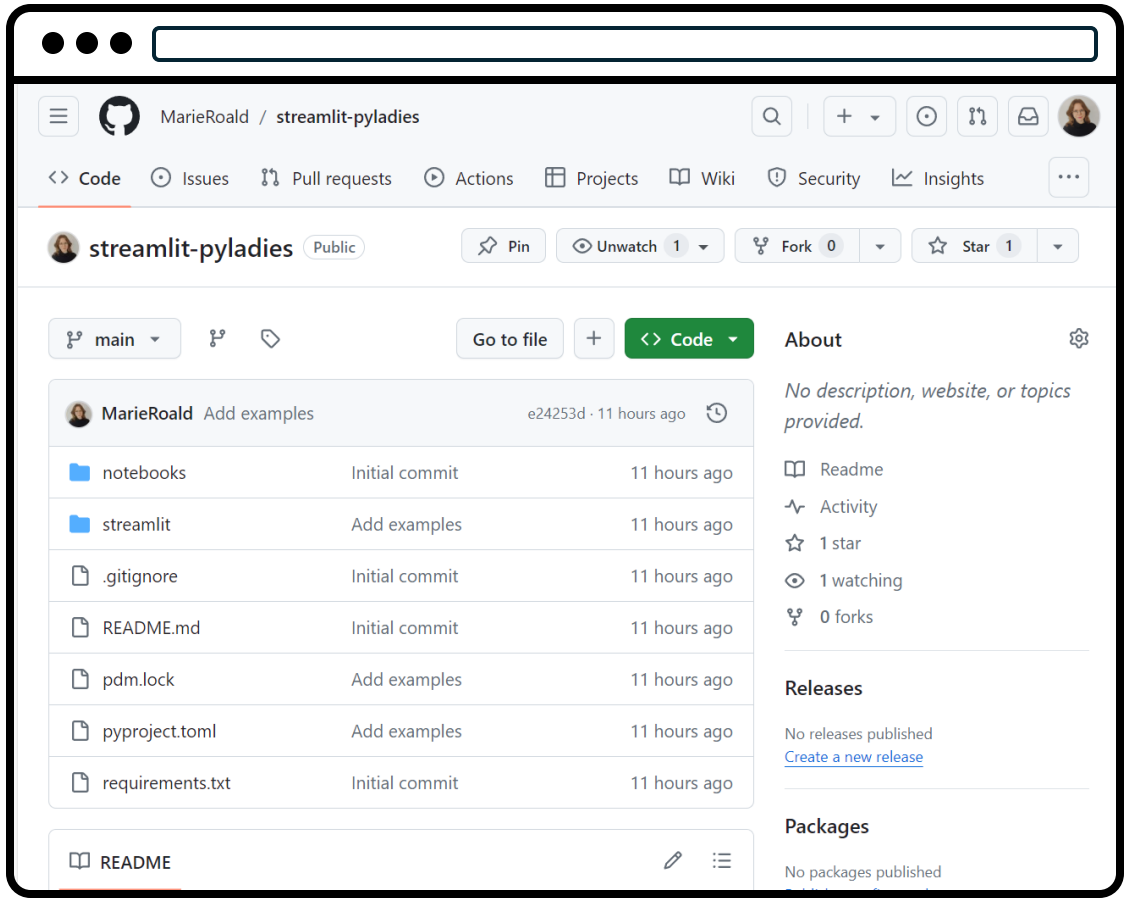
Main takeaways

- Streamlit lets you craft apps similar to how you would write a Python script
- Streamlit apps are stateless by default: user input invokes a complete re-run of the app
- https://streamlit.app/ lets you deploy apps from a GitHub repository

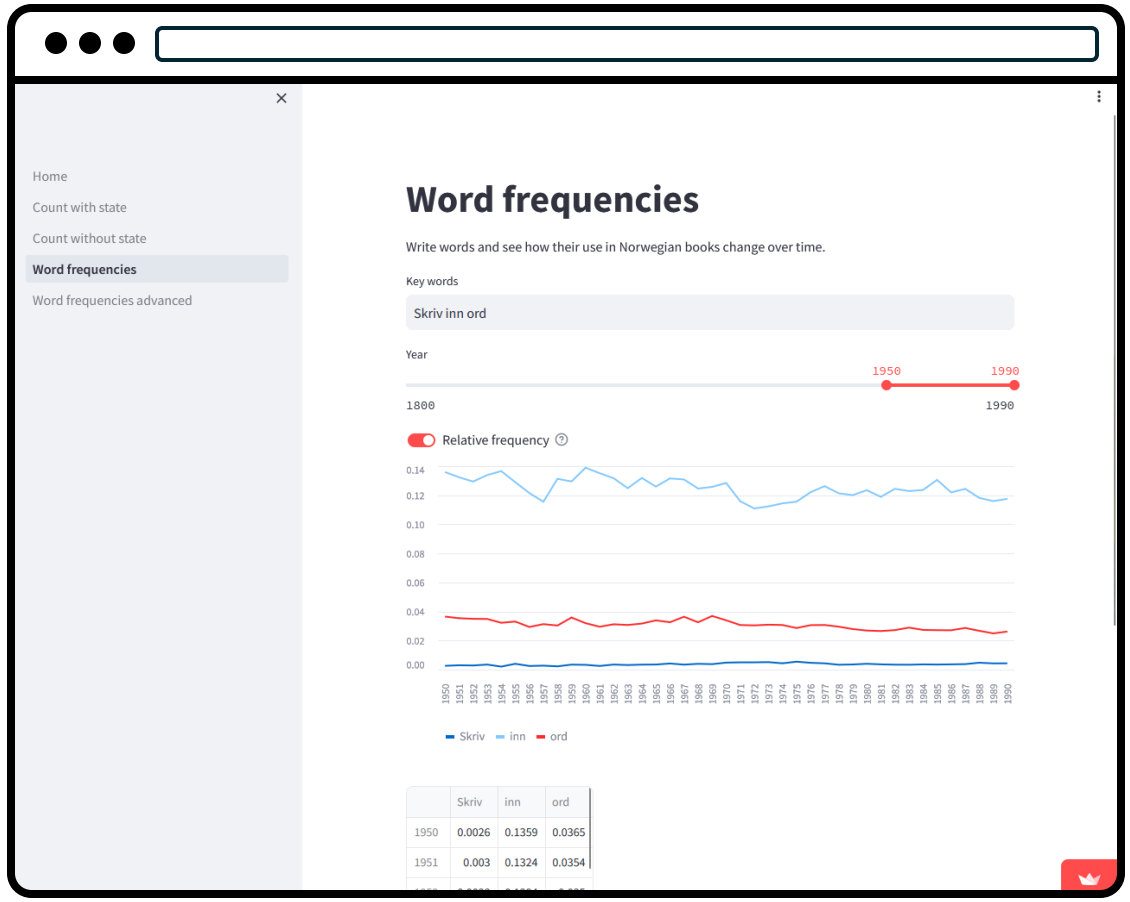
There are many great resources for learning Streamlit available online

- The documentation: https://docs.streamlit.io/
- The Streamlit app gallery: https://streamlit.io/gallery
- Streamlit tutorial at PyCon US 2023: https://youtu.be/cw44529_OU8
- Streamlit cheat sheet: https://cheat-sheet.streamlit.app

The code for this tutorial is also available on GitHub



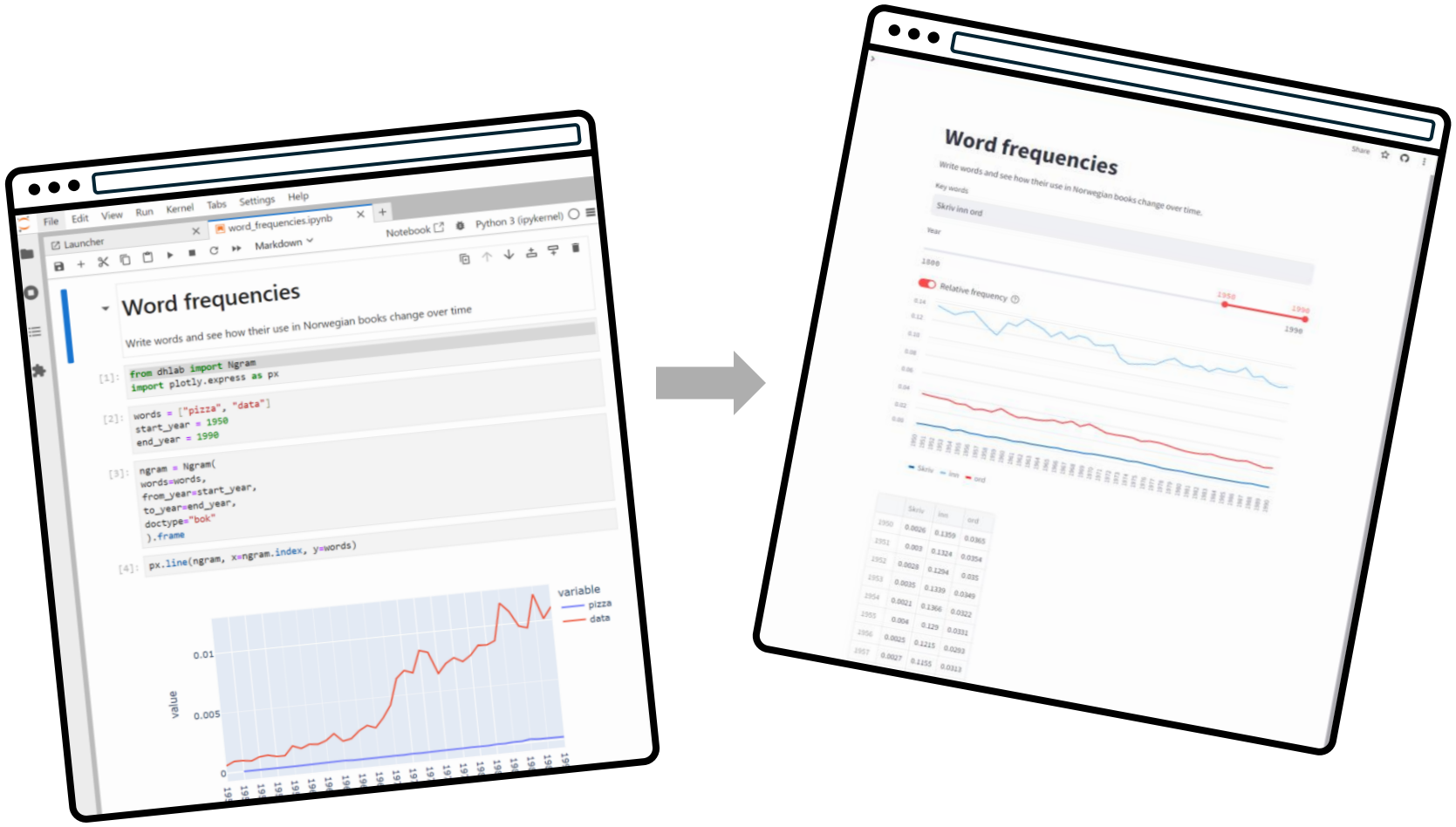
https://github.com/MarieRoald/streamlit-pyladies



http://pyladies-oslo-2024.streamlit.app/

In summary, Streamlit makes it easy to turn your Python scripts into interactive web applications

Thank you!



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And thanks to the PSF for sponsoring!