Creating Data Apps using Python

Nithish Raghunandanan
@nithishr
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About Me

- Data Engineering 🔄
- Like to Prototype 🛠
- Build in 🌈
- Organize PyData Munich
- Love to Travel ✈
- Find me @nithishr
Wild West of Javascript

● Lots of Frameworks / Libraries

● Paradox of Choice
Streamlit

- Turn Data Scripts into Web Apps
- Interactive
- No Frontend Experience Required
- Easy to Deploy
Streamlit Compatibility with Major Frameworks / Libraries

- Altair
- bokeh
- scikit-learn
- Keras
- plotly
- OpenCV
- PyTorch
- seaborn
- TensorFlow
- NumPy
- Python
- matplotlib
- pandas
- Latex
- Vega-Lite
- Deck.gl
Streamlit Use Cases

- Creating an Interface for Machine Learning
- Visualizing Data
Interface for Machine Learning

Normal Workflow

- Build Model
- Light Wrapper in Flask / FastAPI
- Frontend in HTML / JS / CSS

Streamlit Workflow

- Build Model
- Integrate Streamlit Components for UI
Interface for Machine Learning

- Interface for Image Net
- Image Classification
- 3 Lines of Streamlit Magic 🌟
- Similar to CLI Parser

Demo: [https://youtu.be/1y1o4XoFluA](https://youtu.be/1y1o4XoFluA)
Visualizing Data

- Notebooks
- Presentations
- Scripts
- Code
- Reports in Tableau
- Web Apps?
Jupyter Notebooks

- Great for Experimentation
- Graphs & Visualizations
- Storytelling using Data
- Customize with Code
- “I don’t like notebooks” - Joel Grus
Can you Visualize your Google Maps Data?

Welcome to Location History Visualizer, a tool for visualizing your collected Google Location History data with heatmaps. Don’t worry—all processing and visualization happens directly on your computer, so rest assured that nobody is able to access your Location History but you... and Google, of course.

To start off, you’ll need to go to Google Takeout to download your Location History data. On that page, deselect everything except Location History by clicking “Select none” and then reselecting “Location History.” Then hit “Next” and, finally, click “Create archive.” Once the archive has been created, click “Download.” Unzip the downloaded file, and open the “Location History” folder within. Then, drag and drop LocationHistory.json from inside that folder onto this page. Let the visualization begin!

Alternatively, select your LocationHistory.json file directly:

Choose file | No file chosen
Can you Visualize your Google Maps Data?

- Clean / Standardize Data
  - Latitude, Longitude, Timestamps
- Add Background Information
  - Images from flickr
    - Random Images based on Location
- Histograms
- Heatmaps
Can you Visualize your Google Maps Data?
Can you Visualize your Google Maps Data?

Demo: https://youtu.be/ZFIviSiB4ZA
Alternatives

voilà

plotly

bokeh

Panel

Pick your friend
Observations

Pros

- Interactive
- Customizable
- Deployment is easy
- Active Community

Cons

- No built in Authentication
- Early stages of Streamlit Sharing

Good to have for Data Scientists
Conclusion

● Great for Data Scientists
● Showcase Solutions
● No need to worry about Javascript
References

● Code:
  ○ Machine Learning UI
    https://github.com/nithishr/streamlit-ml-demo
  ○ Travel Data Visualization
    https://github.com/nithishr/streamlit-data-viz-demo

● Examples:
  ○ Streamlit Gallery

Nithish Raghunandanan
hi@nithishr.com
blog.nithishr.com
@nithishr