

Creating Data Apps using Python

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FOSDEM' 21

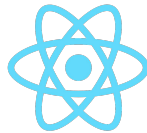
About Me

- Data Engineering ⚙️
- Like to Prototype 🔧
- Build in 🐍
- Organize PyData Munich
- Love to Travel ✈️
- Find me @nithishr



Wild West of Javascript

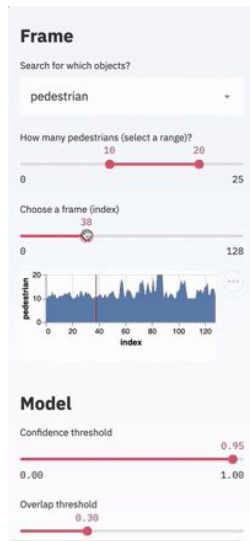
- Lots of Frameworks / Libraries
- Paradox of Choice



Streamlit

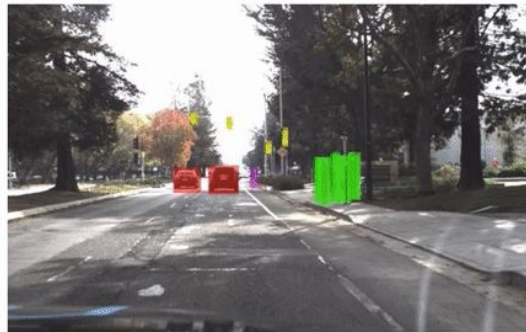


- Turn Data Scripts into Web Apps
- Interactive
- No Frontend Experience Required
- Easy to Deploy



Ground Truth

Human-annotated data (frame 38)



Real-time Computer Vision

YOLO v3 Model (overlap 0.3) (confidence 0.9)



Streamlit



Compatibility with Major Frameworks / Libraries



L^AT_EX



Vega-Lite



seaborn

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

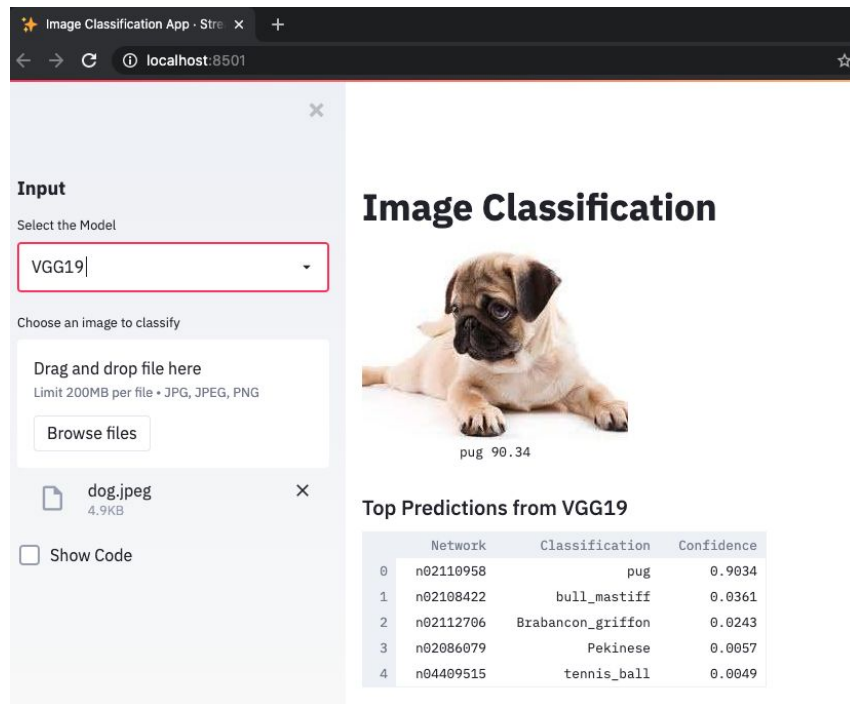
Interface for Machine Learning

- Interface for Image Net

Image Classification

- 3 Lines of Streamlit Magic ✨
- Similar to CLI Parser

Demo: <https://youtu.be/1y1o4XoFluA>



	Network	Classification	Confidence
0	n02110958	pug	0.9034
1	n02108422	bull_mastiff	0.0361
2	n02112706	Brabancon_griffon	0.0243
3	n02086079	Pekinese	0.0057
4	n04409515	tennis_ball	0.0049

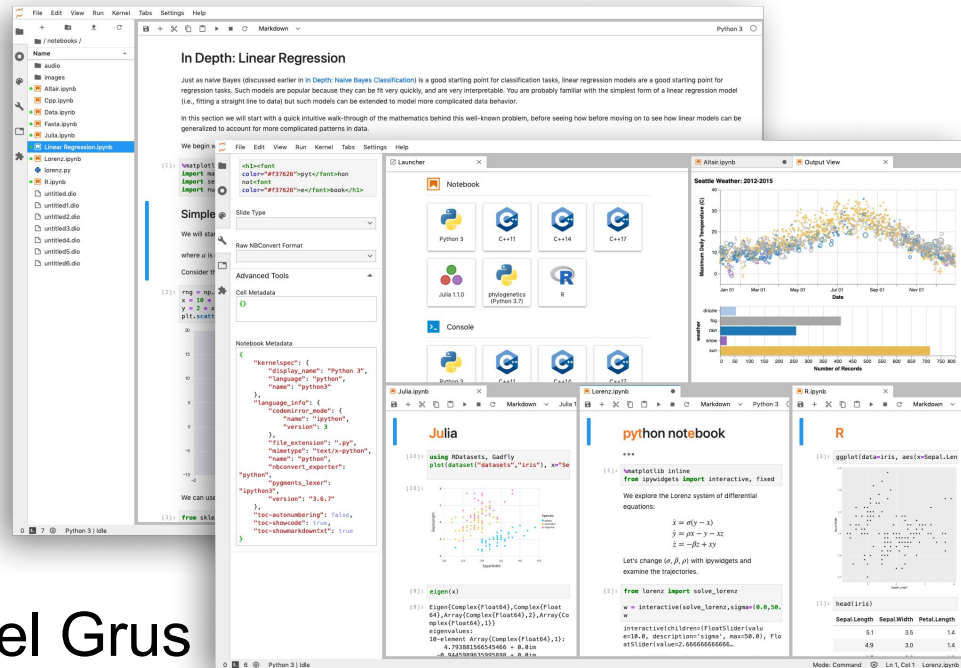
Visualizing Data

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

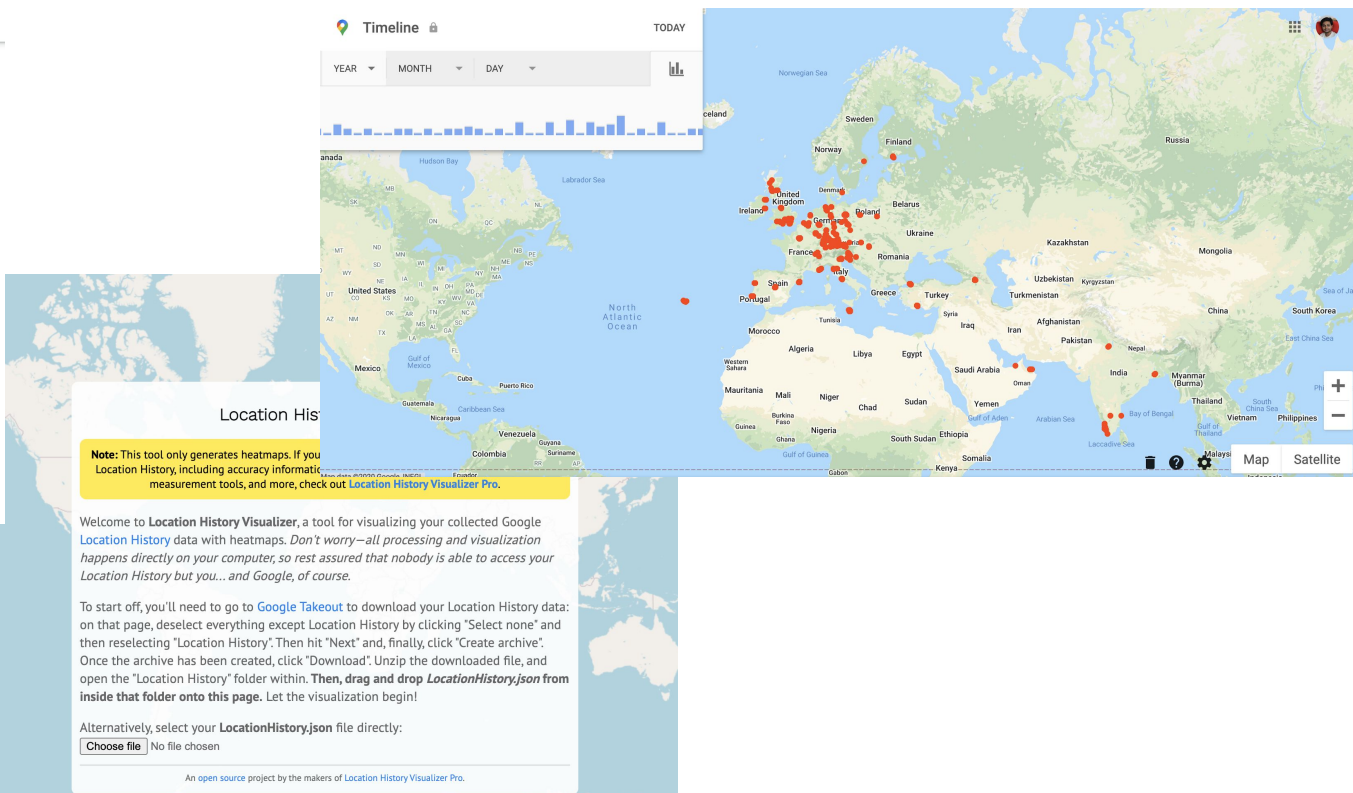
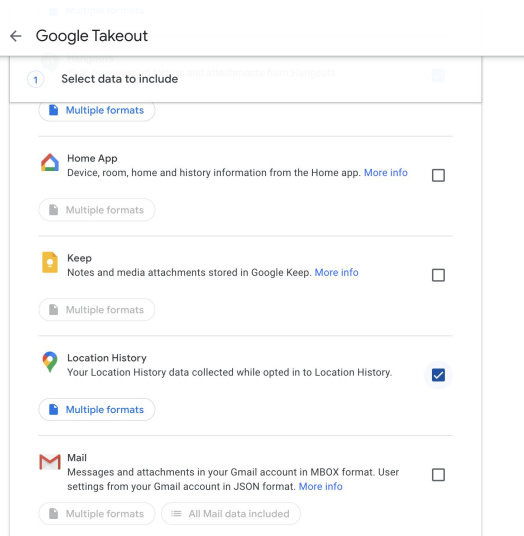


Jupyter Notebooks

- Great for Experimentation
- Graphs & Visualizations
- Storytelling using Data
- Customize with Code
- "I don't like notebooks" - Joel Grus



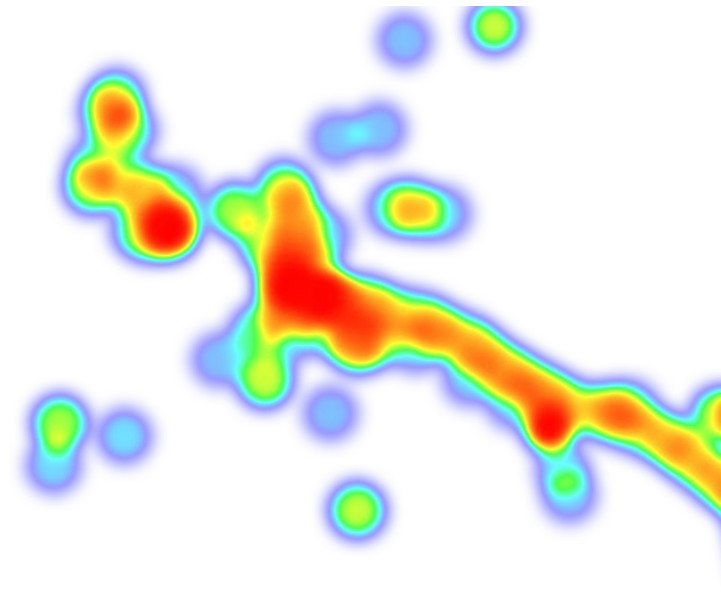
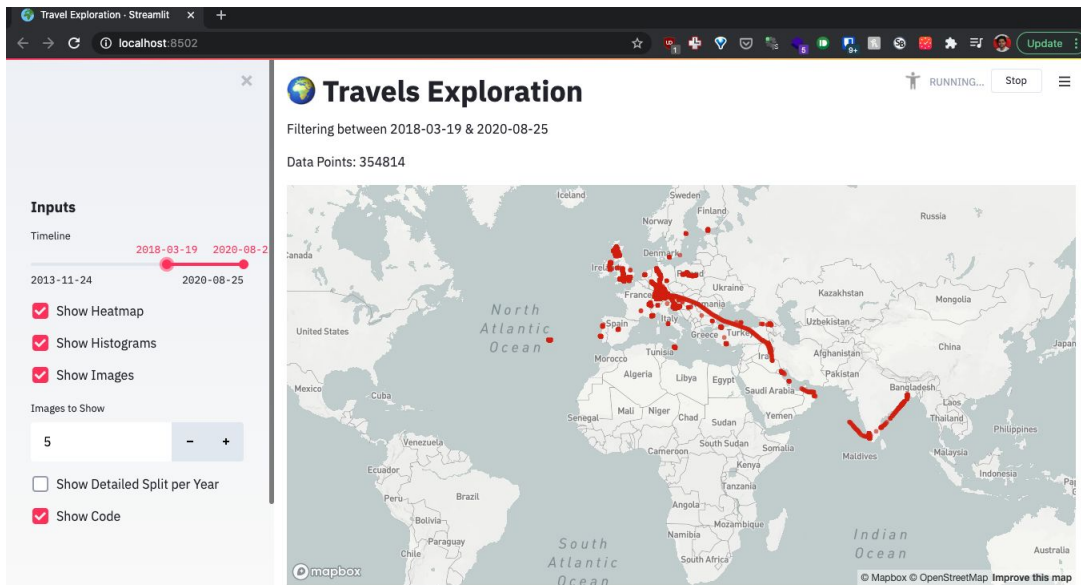
Can you Visualize your Google Maps Data?



Can you Visualize your Google Maps Data?

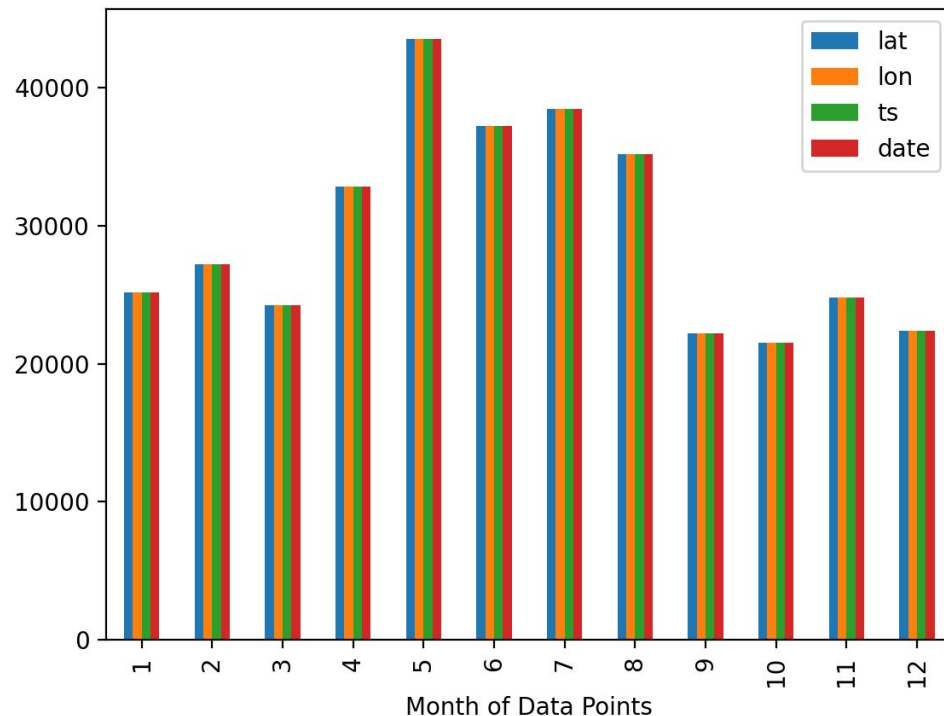
- Clean / Standardize Data
 - Latitude, Longitude, Timestamps
- Add Background Information
 - Images from **flickr**
 - Random Images based on Location
- Histograms
- Heatmaps

Can you Visualize your Google Maps Data?



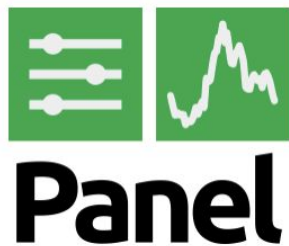
Can you Visualize your Google Maps Data?

Image Highlights



Demo: <https://youtu.be/ZF1viSIB4ZA>

Alternatives



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](#)

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