DATA VISUALIZATION IN PYTHON

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PICSciE and OIT Research Computing
The Center for Statistics and Machine Learning
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Data Visualization in Python

- **Python** 2-D/3-D **plotting library** (virtually fully-customizable figures).

- **Create, analyze** and **manipulate** two-dimensional **data**.

- Plotting library based on matplotlib for **statistical graphics**.

- Serves to create and deploy **interactive** data **visualizations**.

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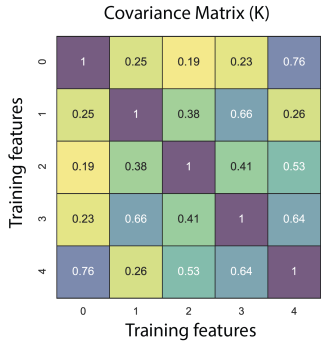
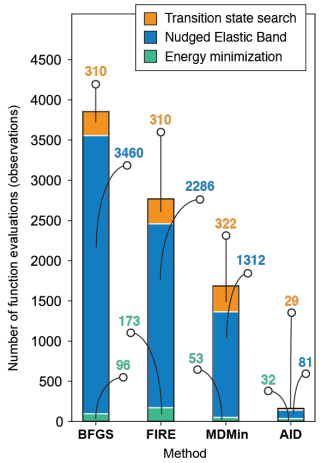
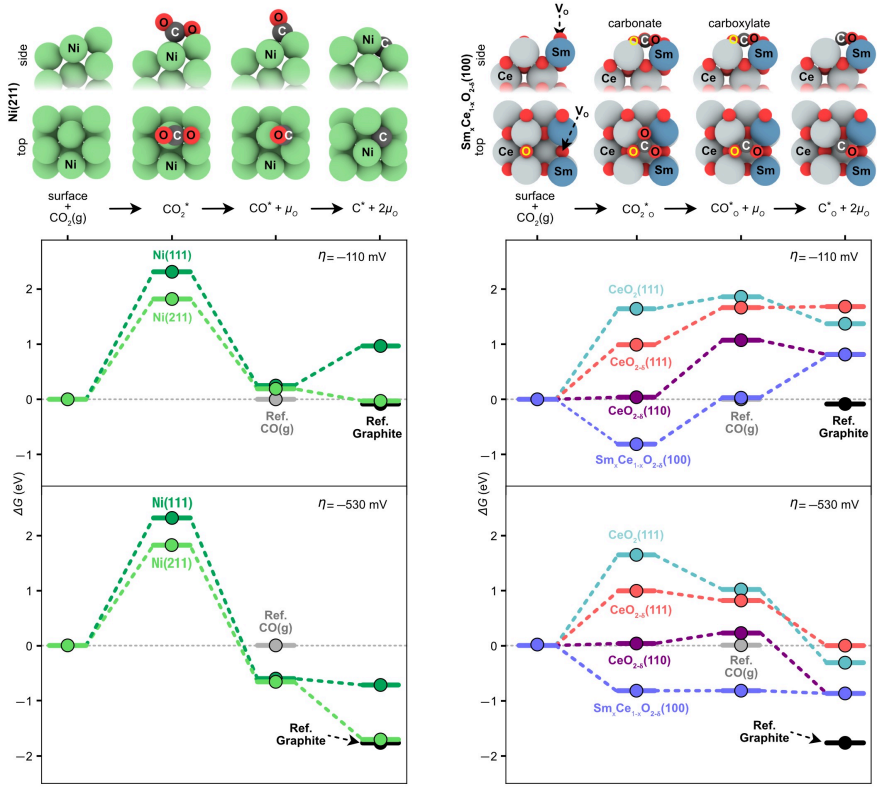
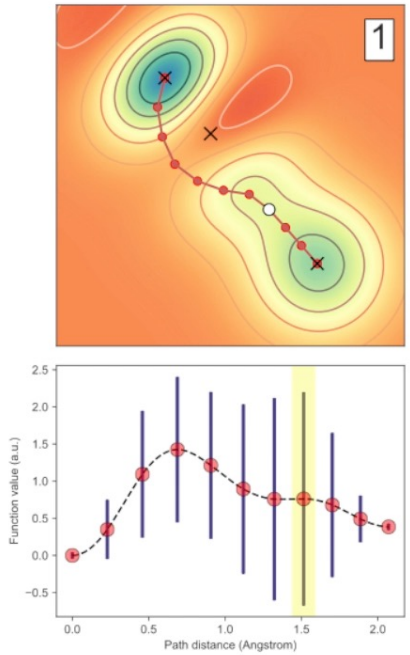
Motivation

- Engage the audience when presenting results through **attractive** and **effective** data **visualization**.









J. A. Garrido Torres, P. C. Jennings, M. H. Hansen, J. R. Boes, and T. Bligaard, Phys. Rev. Lett., **122**, *156001, 2019.*
T. L. Skafte, Z. Guan, M. Machala, C. Gopal, M. Monti, L. Martinez, E. Stamate, S. Sanna, J. A. Garrido Torres, E. Crumlin, M. Garcia-Melchor, M. Bajdich, W. Chueh, C. Graves, Nature Energy, **4**, *846–855, 2019.*

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Motivation

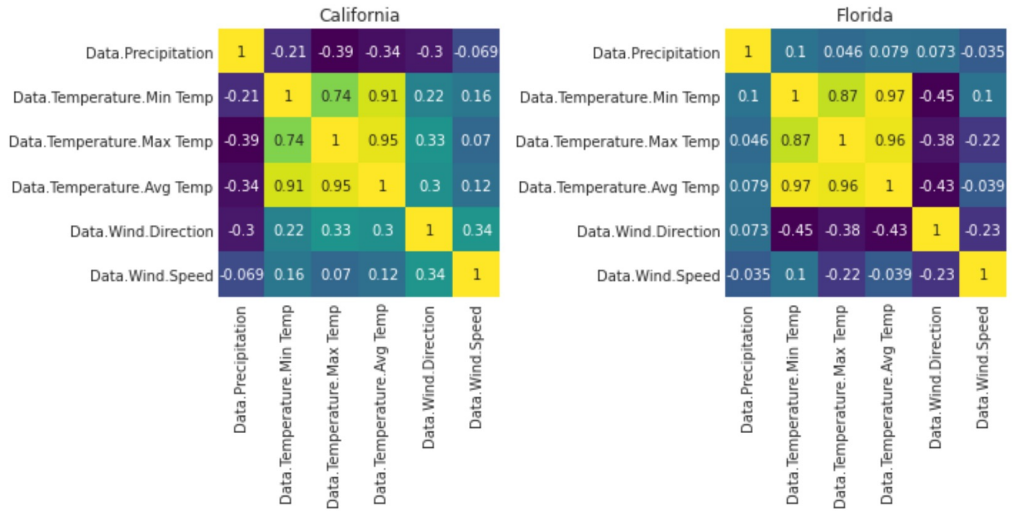
- **Scientific programming** helps overcoming **reproducibility** issues.

```
states = ['California', 'Washington', 'Florida', 'New York']

fig, ax = plt.subplots(nrows=1, ncols=len(states))
fig.set_size_inches(5 * len(states), 5)

for i in range(0 , len(states)):
  subset_i = df3[df['Station.State'] == states[i]]
  corr_i = subset_i.corr()
  sns.heatmap(corr_i, cmap='viridis', annot=True, ax=ax[i], cbar=False)
  ax[i].set_title(states[i])

plt.tight_layout()
```



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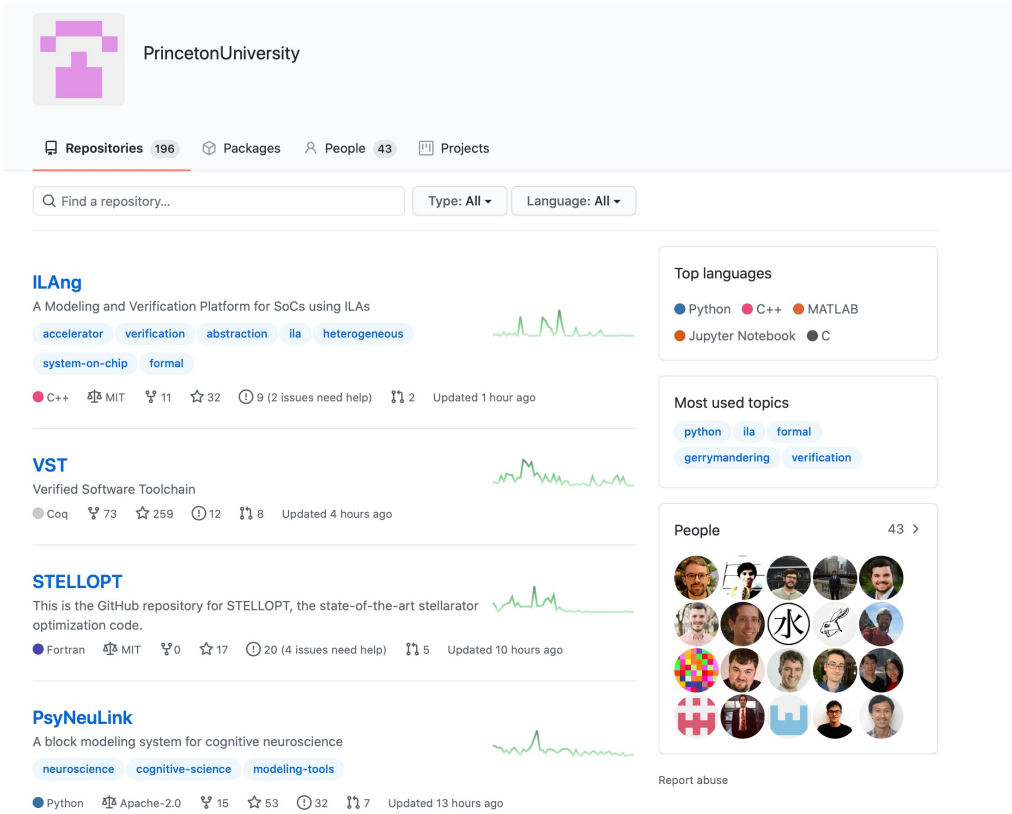
Motivation

- Keeping **track** of the **changes** (version control) you make to your code.

GitHub

GitLab



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Motivation

- **Coding** is **fun**! It offers a large variety of tools to solve problems in an efficient manner.

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Motivation

- Engage the audience when presenting results through **attractive** and **effective** data **visualization**.
- **Scientific programming** helps overcoming **reproducibility** issues.
- Keeping **track** of the **changes** (version control) you make to your code.
- **Coding** is **fun**! It offers a large variety of tools to solve problems in an efficient manner.

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- Engage the audience when presenting results through **attractive** and **effective** data **visualization**.
- **Scientific programming** helps overcoming **reproducibility** issues.
- Keeping **track** of the **changes** (version control) you make to your code.
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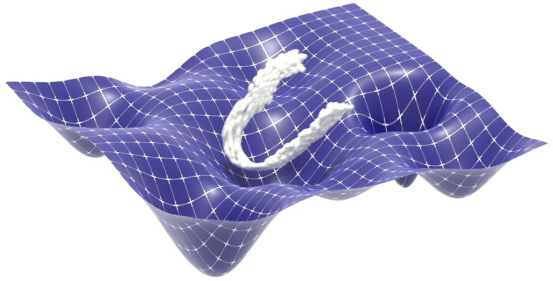

This is a review of my motivation for data visualization in Python but… how about you?!

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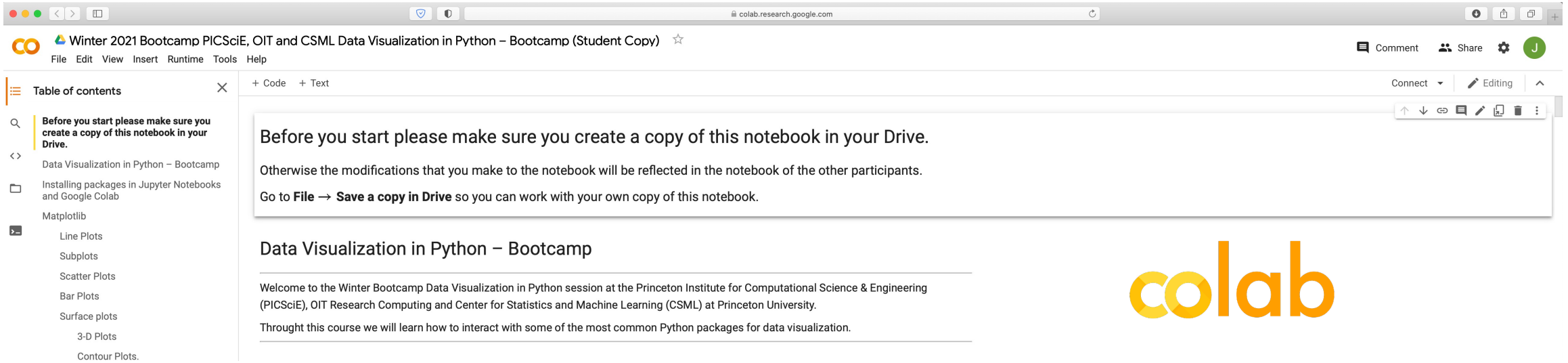
Framework of this session



- Notebook for the **Hands-on session** (including short-exercises).
- Notebook with **Exercises** (for practicing after the session).
- Notebook with the **Answers** for the previous Exercises.

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