Neuroimaging in Python

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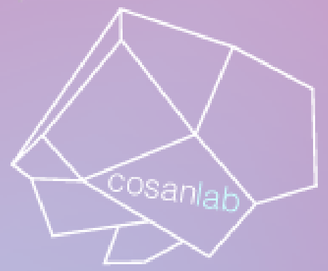
Nipype:
Neuroimaging in Python
Pipelines and Interfaces



there are lots of neuroimaging tools for python

why python?

scripting fMRI analyses using Python has a number of benefits

flexibility

You have more control over different analysis patterns and techniques compared to other analysis software.

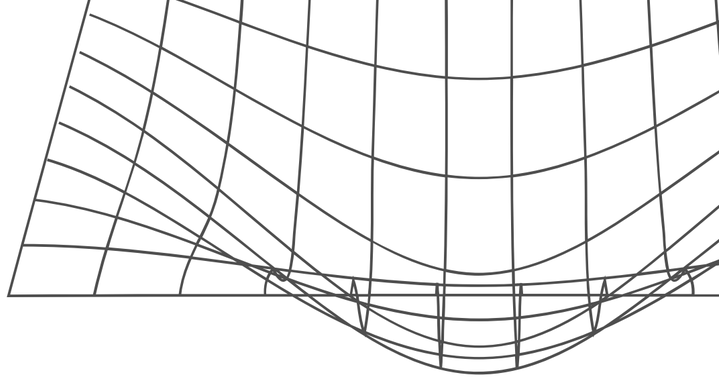
version control

By scripting analyses in python, you're able to track changes in your analysis pipeline as well as keep your entire analysis procedure in a single notebook or series of notebooks.

reproducibility

Scripting your analyses in python makes sharing code with other researchers much easier with tools like GitHub as well as promoting reproducibility efforts.

why *not* python?



01

learning curve

Because there is so much more analytic flexibility, as well as many more software libraries available, the learning curve can be pretty steep -- especially when troubleshooting can be challenging.

02

it's really new

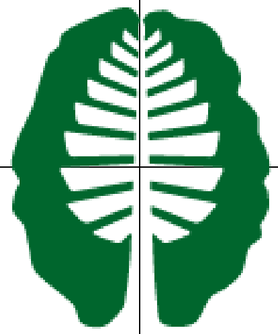
Not all of the software packages available today are well documented, and many are still considered to be under development.

Download data using DataLad

Using the *Localizer* dataset from Pinel and colleagues.

Generate design matricies

Create a design matrix that accounts for each condition of our *Localizer* task.

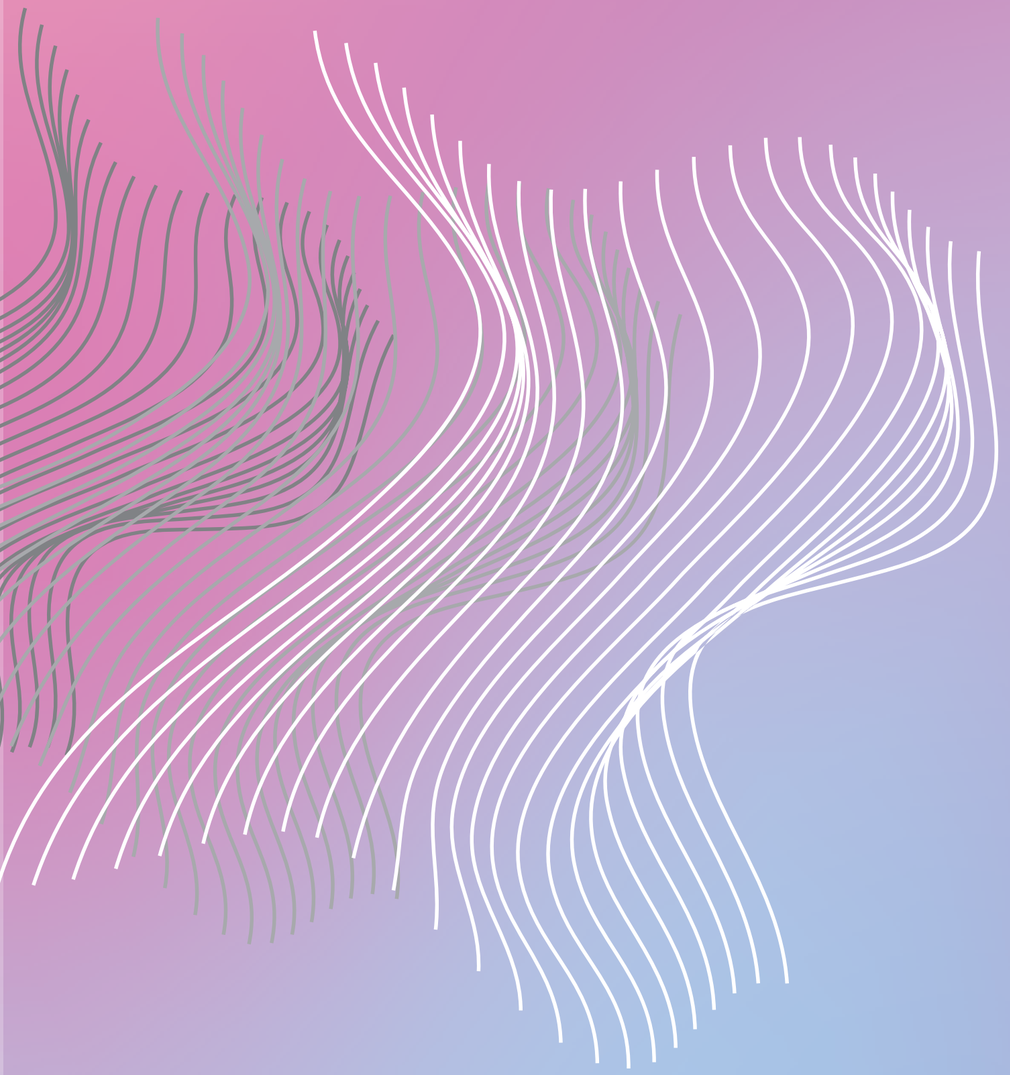


Run single-subject models

Estimate the model we create across all voxels for a single subject and compare conditions.

Run group-level models

Average activation across all subjects using a random-effects model.



Let's get started!