



Decoding with Nilearn

Introduction to Nilearn



Example : manipulating, plotting, atlases

[Plot nilearn 101](#)

[3D and 4D images handling and visualizing](#)

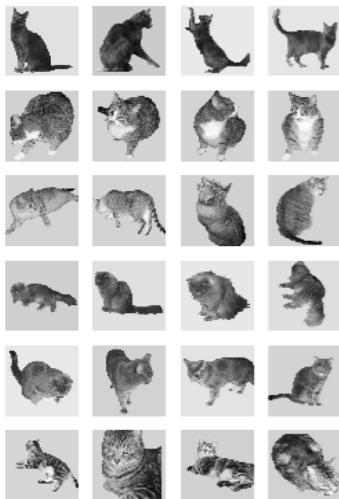
[Basic atlas plotting](#)

[Plotting tools in nilearn](#)

Introduction to decoding with Nilearn



The Haxby dataset



Cats



Face



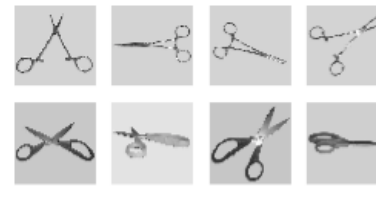
Chairs



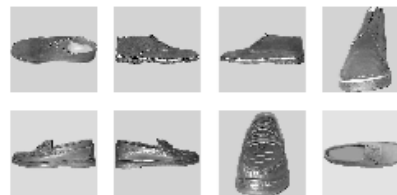
House



Bottles



Scissors



Shoes



Example : decoding Face vs Cat in visual cortex

Web : https://nilearn.github.io/auto_examples/plot_decoding_tutorial.html

Jupyter : [plot_decoding_tutorial.ipynb](#)



Overfit quizz

You try to decode a two sessions dataset.

Is it meaningful to :

- A) Train and test decoder on both sessions ?
- B) Train on all images but one and test on the remaining image ?
- C) Train on one session and test on the other one ?
- D) Train on one session plus half the other one and test on the remaining half ?
- E) To find on a Region of Interest (ROI) for decoding : from an atlas ? from all the data? from a session ?

In depth examples



Example : Feature selection to decode without a mask

Web : https://nilearn.github.io/auto_examples/02_decoding/plot_haxby_anova_svm.html

Jupyter : [plot_haxby_anova_svm.ipynb](#)



Example : Grid search on feature selection

Web : https://nilearn.github.io/auto_examples/02_decoding/plot_haxby_grid_search.html

Jupyter : [plot_haxby_grid_search.ipynb](#)



Example : Better decoding Haxby dataset using Space Net

Web : https://nilearn.github.io/auto_examples/02_decoding/plot_haxby_space_net.html

Jupyter : [plot_haxby_space_net.ipynb](#)



Example : Decoding Haxby with searchlight

Web : https://nilearn.github.io/auto_examples/02_decoding/plot_haxby_searchlight.html

Jupyter : [plot_haxby_searchlight.ipynb](#)



To go further

Regression (predict a continuous output instead of labels). Predict subject age on Oasis dataset

Web : https://nilearn.github.io/auto_examples/02_decoding/plot_oasis_vbm_space_net.html

More information on scoring metrics in scikit-learn :

Web : https://scikit-learn.org/stable/modules/model_evaluation.html