Nilearn for new use cases: Scaling up computational and community efforts

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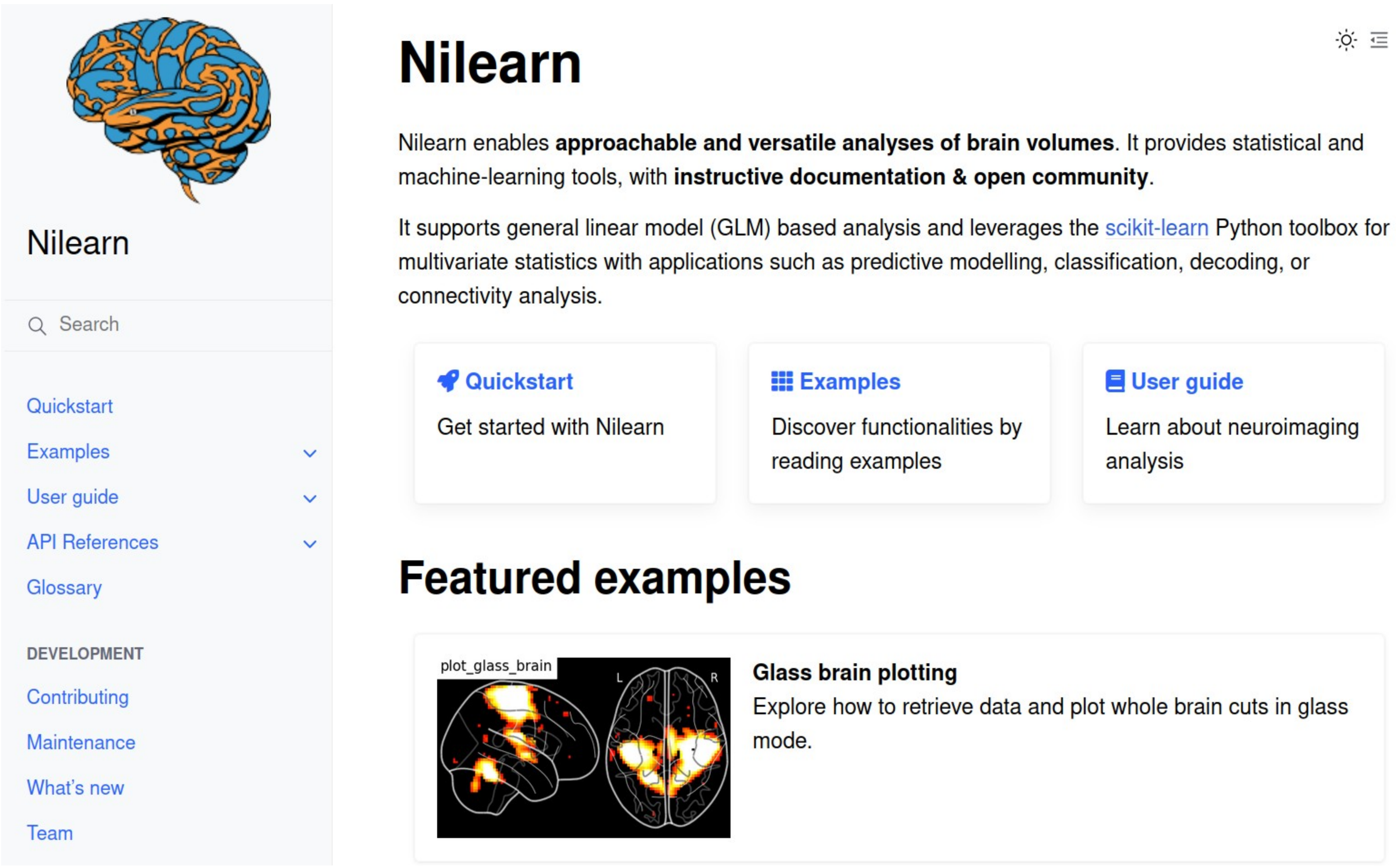
What is Nilearn?

- Python package for analysis of brain images
  - Connectivity analysis (resting-state)
  - Decoding (MVPA)
  - GLM (stats)
  - Plotting volumetric and surface data
  - Many image manipulation routines
- Well documented and supportive community make for an easy start
- Open-source and community-driven

Releases 0.10 and 0.10.1

- New maskers classes for multiple subjects
- Expanded FWER control
- Enhanced BIDS interfacing
- New theme and improved docs
- Improved API for background maps
- Flat maps for all resolutions and example showcasing activation on flat map
- Setting custom view angles for surface plotting

New documentation look



Nilearn

Nilearn enables **approachable and versatile analyses of brain volumes**. It provides statistical and machine-learning tools, with **instructive documentation & open community**.

It supports general linear model (GLM) based analysis and leverages the scikit-learn Python toolbox for multivariate statistics with applications such as predictive modelling, classification, decoding, or connectivity analysis.

Quickstart
Get started with Nilearn

Examples
Discover functionalities by reading examples

User guide
Learn about neuroimaging analysis

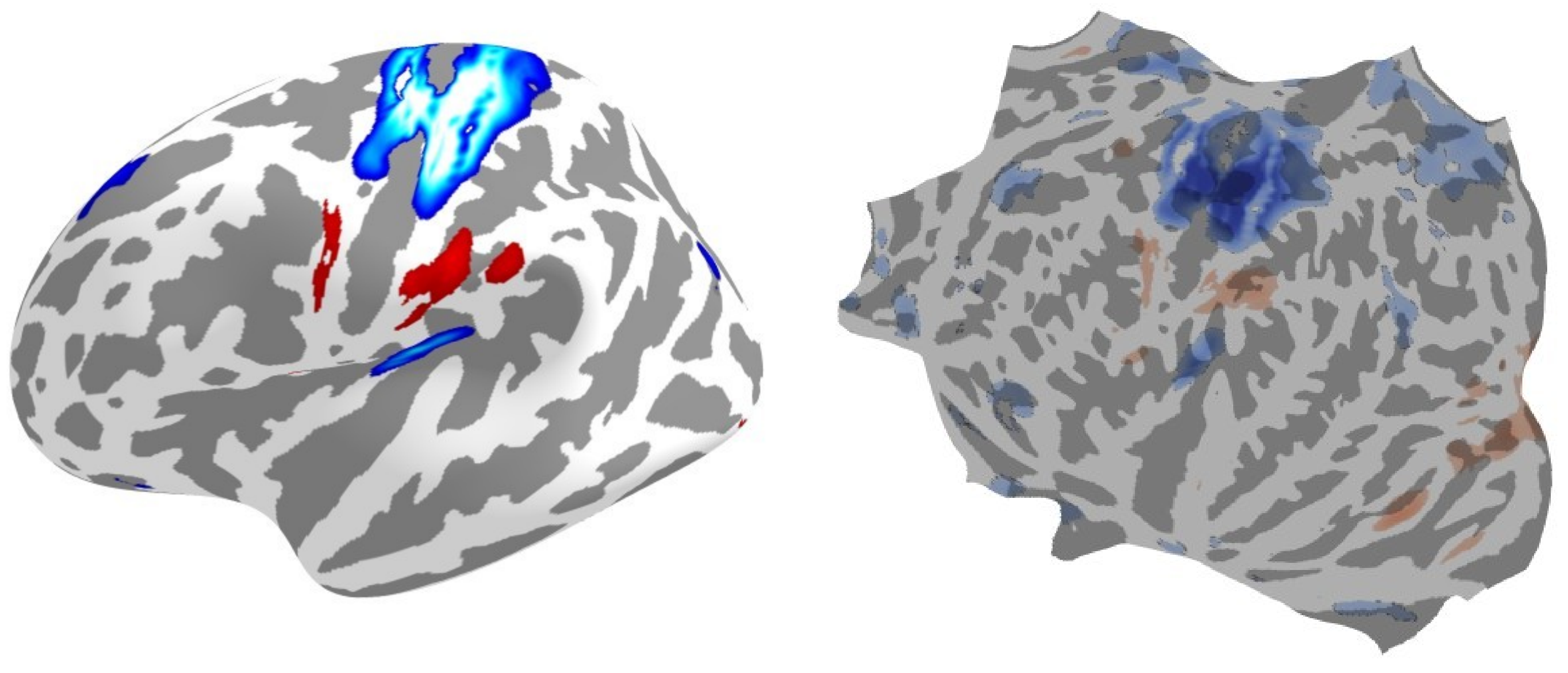
Featured examples

Glass brain plotting
Explore how to retrieve data and plot whole brain cuts in glass mode.

Improved surface plotting

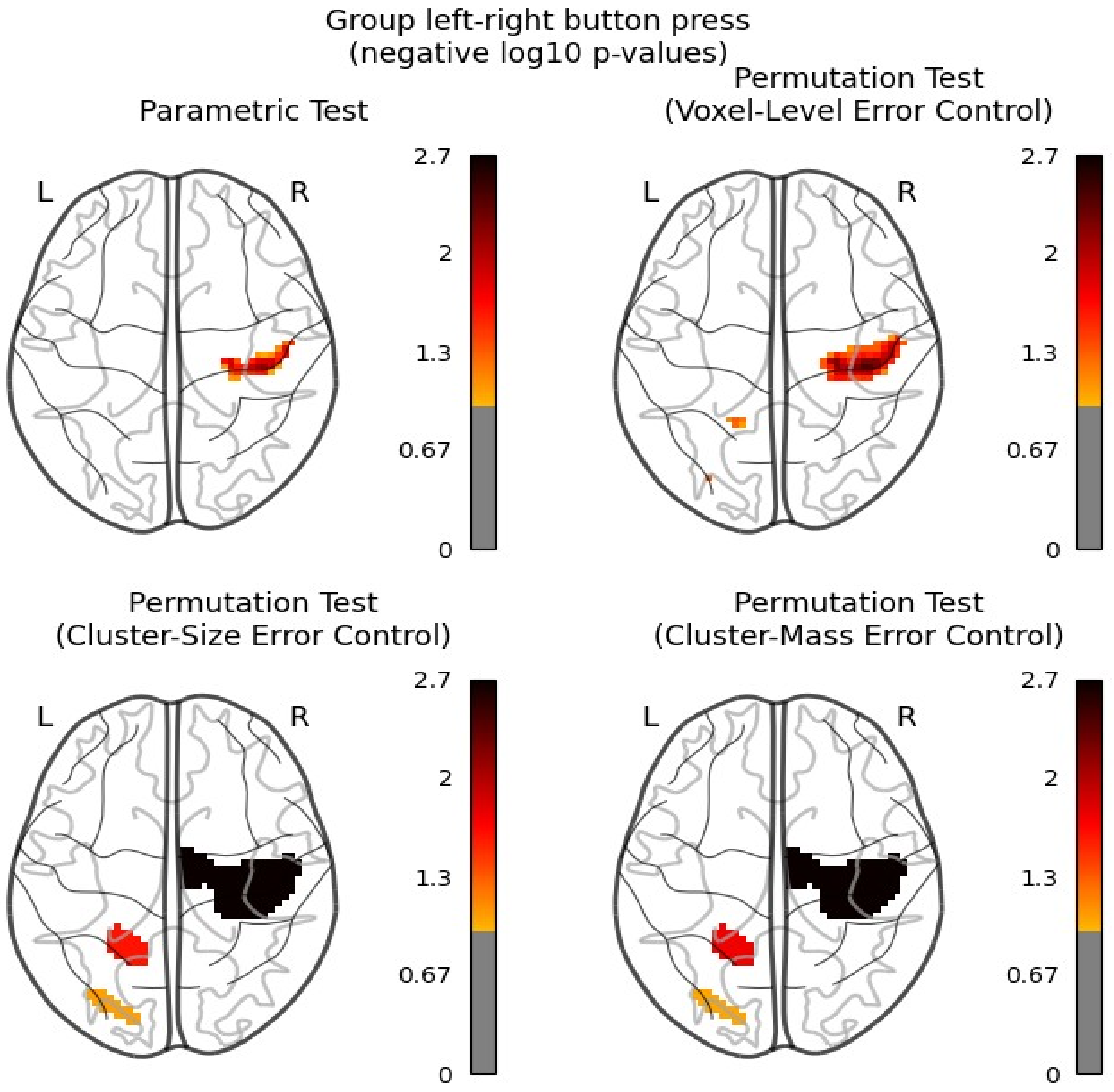
```
from nilearn import datasets, plotting, surface

stat_img = datasets.load_sample_motor_activation_image()
fsaverage = datasets.fetch_surf_fsaverage()
curv_left_sign = np.sign(surface.load_surf_data(fsaverage.curv_left))
texture = surface.vol_to_surf(stat_img, fsaverage.pial_left)
plotting.plot_surf_stat_map(fsaverage.infl_left, texture,
                            threshold=1., bg_map=curv_left_sign)
```



Motor cortex activation map plotted on an inflated and flat surface, both using curvature sign as a background map.

Voxel- vs cluster-level error control



Group left-right button press
(negative log10 p-values)
Parametric Test
Permutation Test
(Voxel-Level Error Control)
Permutation Test
(Cluster-Size Error Control)
Permutation Test
(Cluster-Mass Error Control)
L
R
2.7
2
1.3
0.67
0

Future directions

- Improving support for analyses on the cortical surface
- Further development of the BIDS interface
- Active community outreach to facilitate interactions with relevant community tools

Join the community!

- Check out the documentation at **nilearn.github.io**
- Ask usage questions on **neurostars.org/tag/nilearn**
- Report bugs, suggest new features, and contribute new code on **github.com/nilearn/nilearn**
- Join weekly drop-in hour, Wednesday 4pm UTC on **meet.jit.si/nilearn-drop-in-hours**