

Available now at:

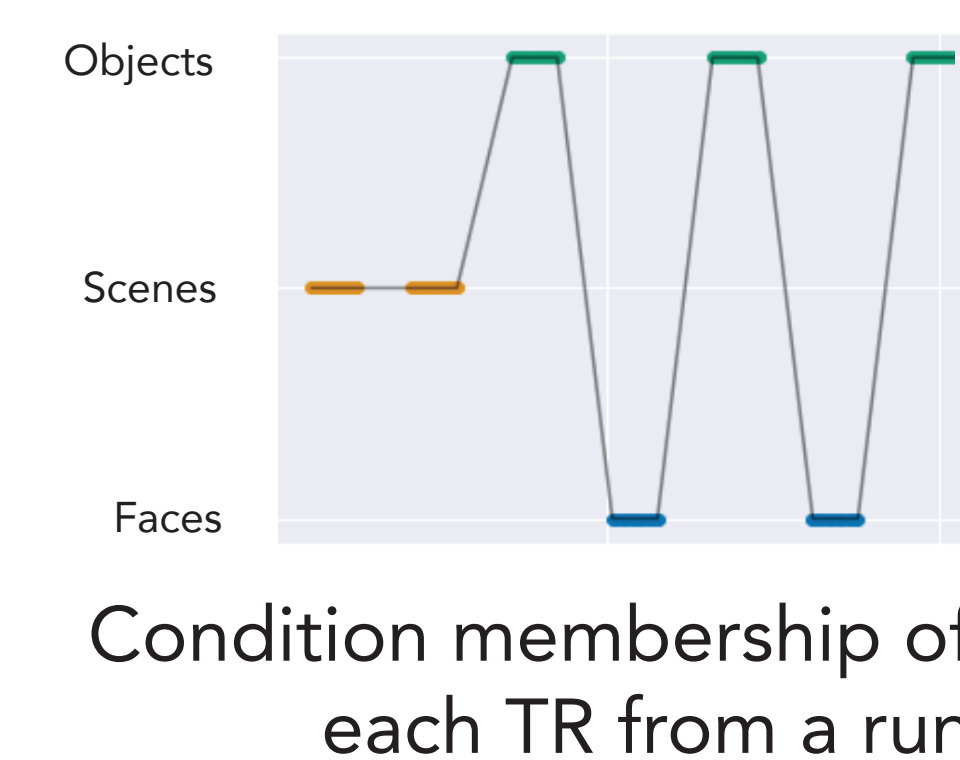
<https://brainiak.org/tutorials>



Getting started

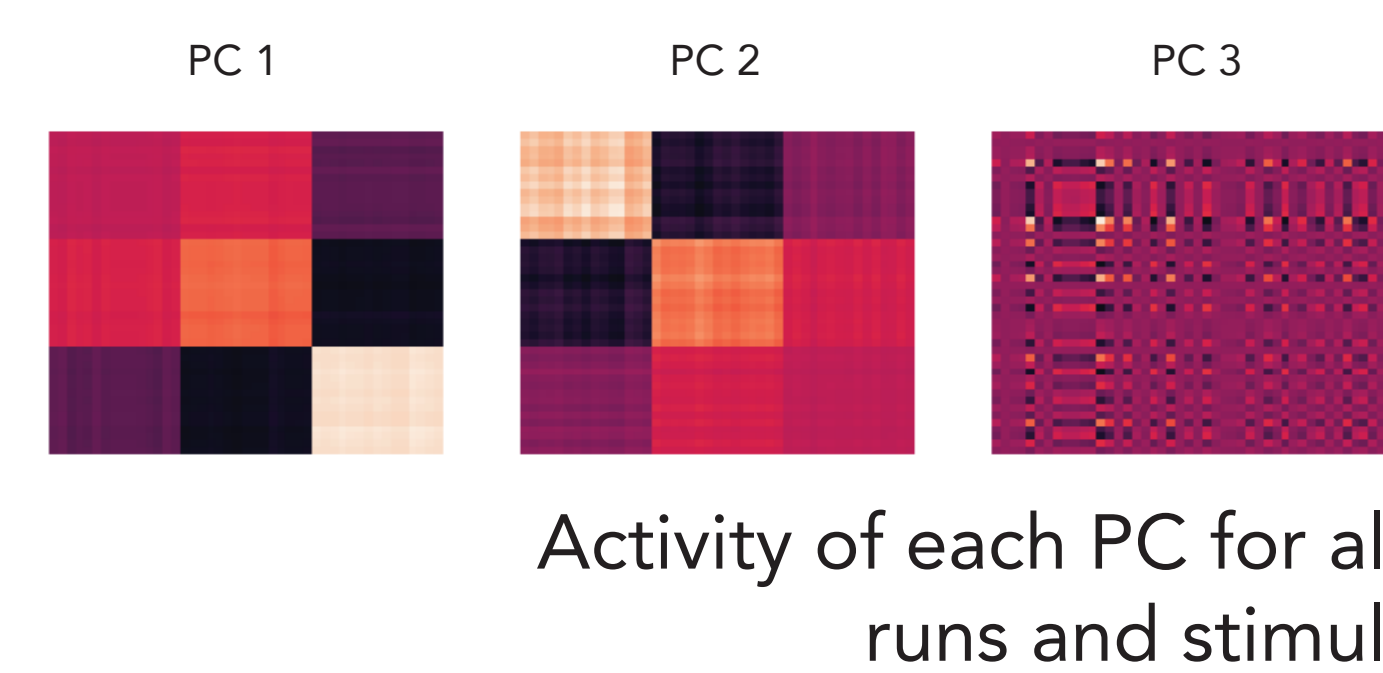
Data Handling

Load, reshape and normalize fMRI data in Python



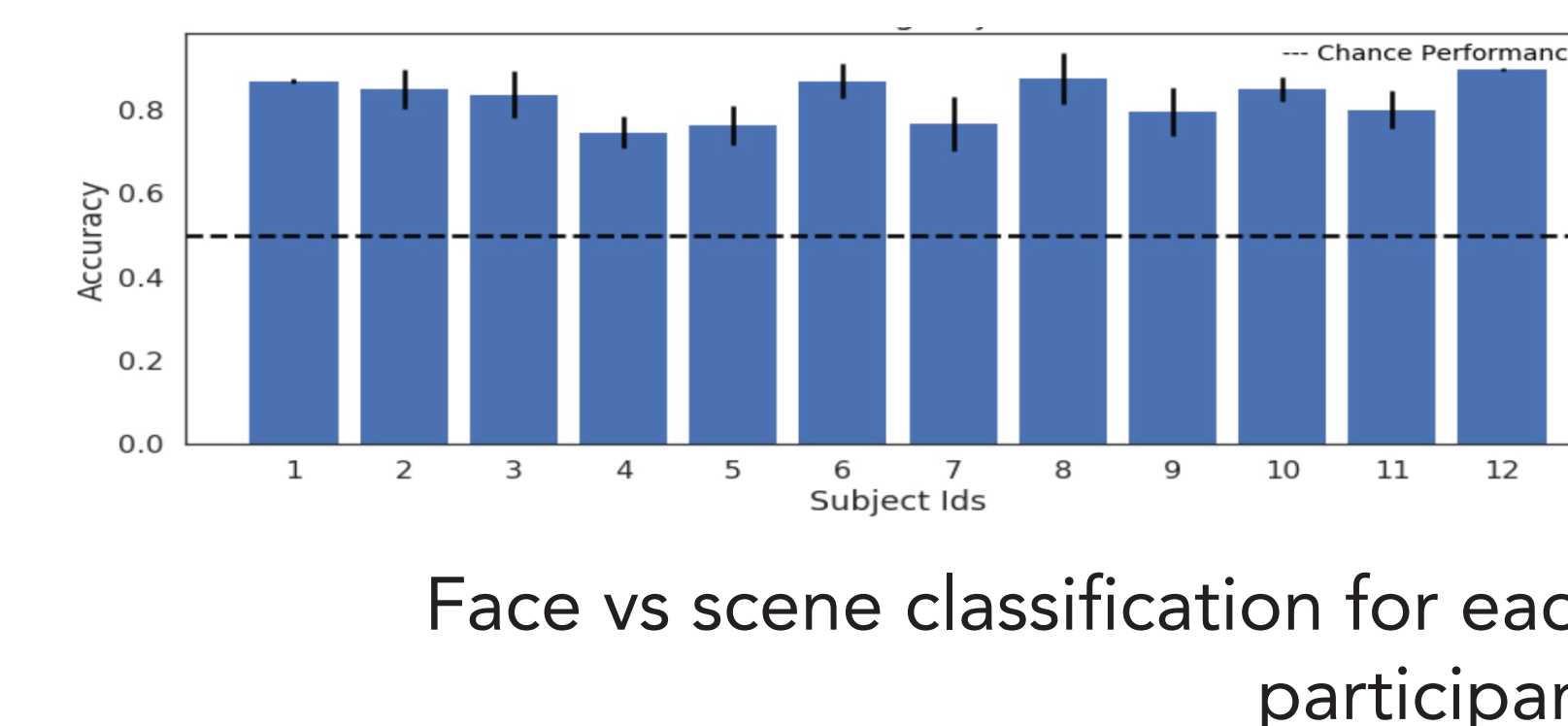
Dimensionality Reduction

Apply PCA and other feature selection techniques



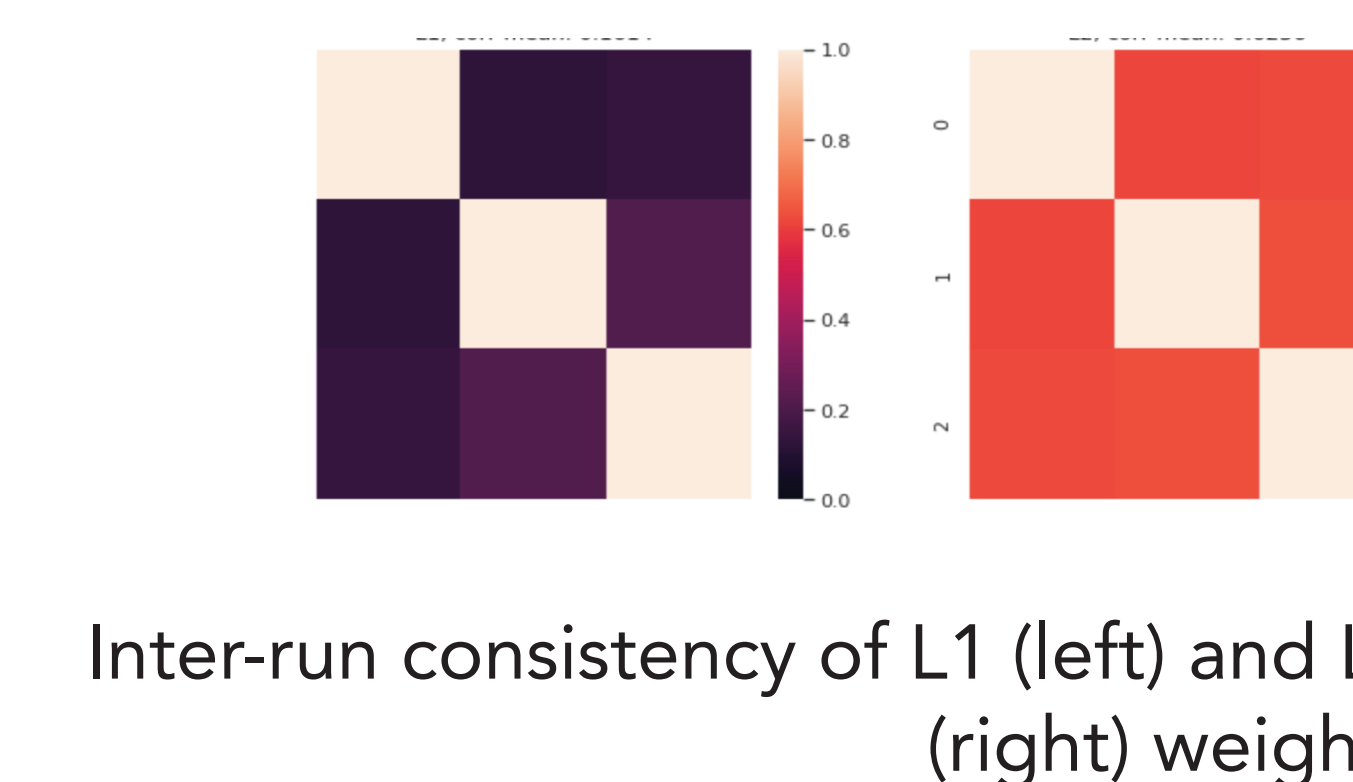
Classification

Run a classifier using leave-one-run-out cross-validation



Classifier optimization

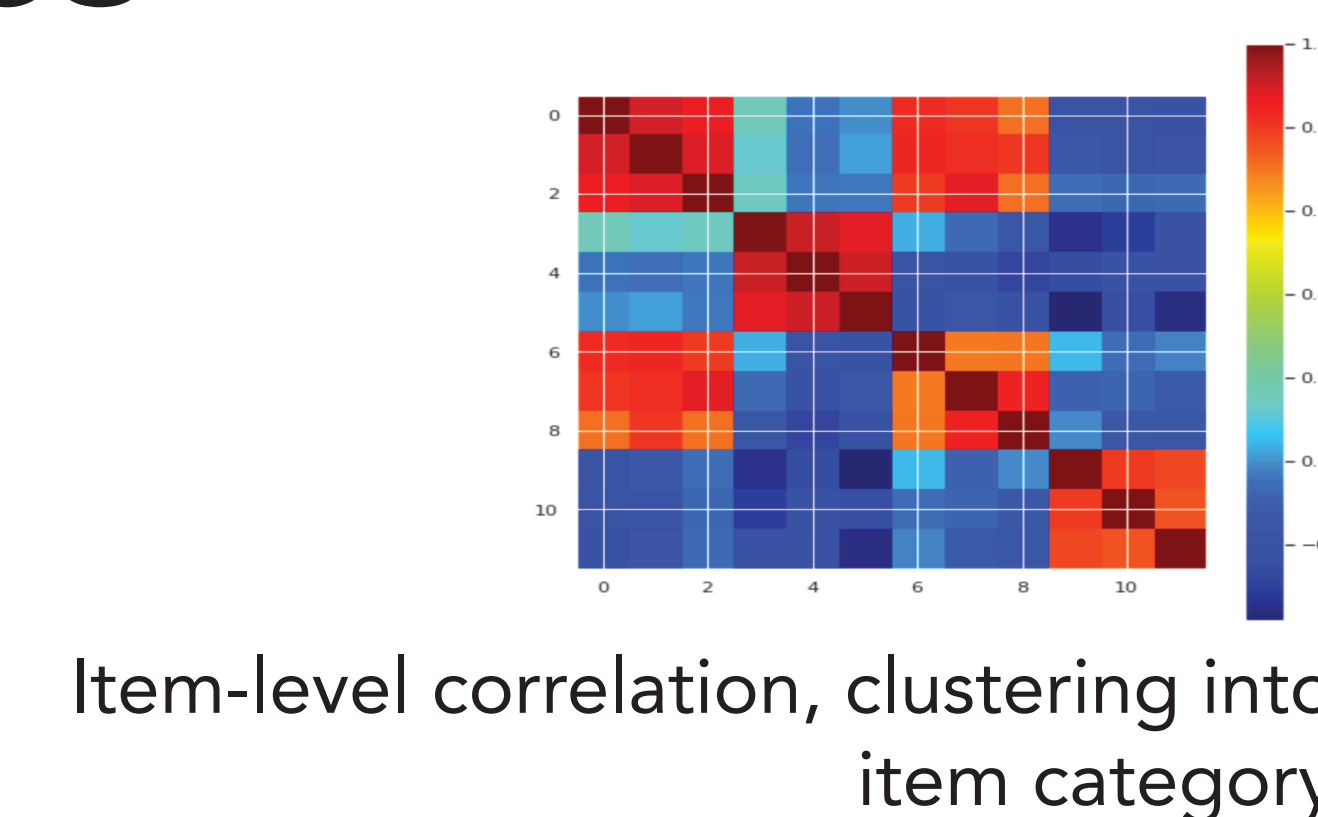
Use cross-validation to optimize classifier hyperparameters



Advanced Techniques

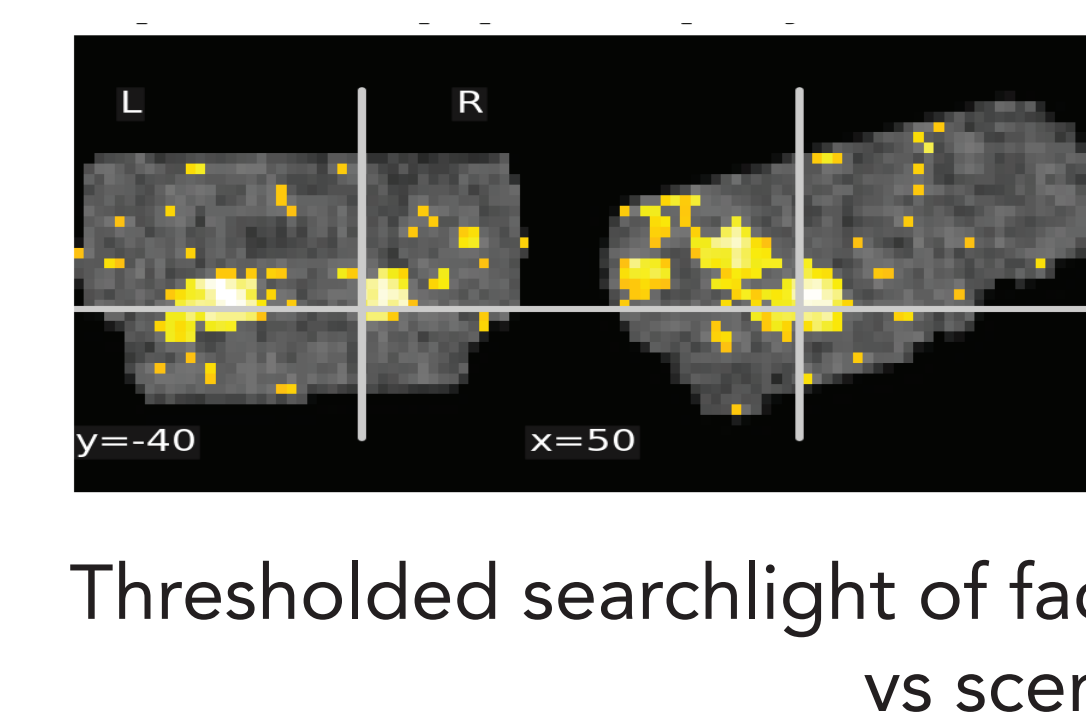
RSA

Compare pattern similarity for human and non-human data



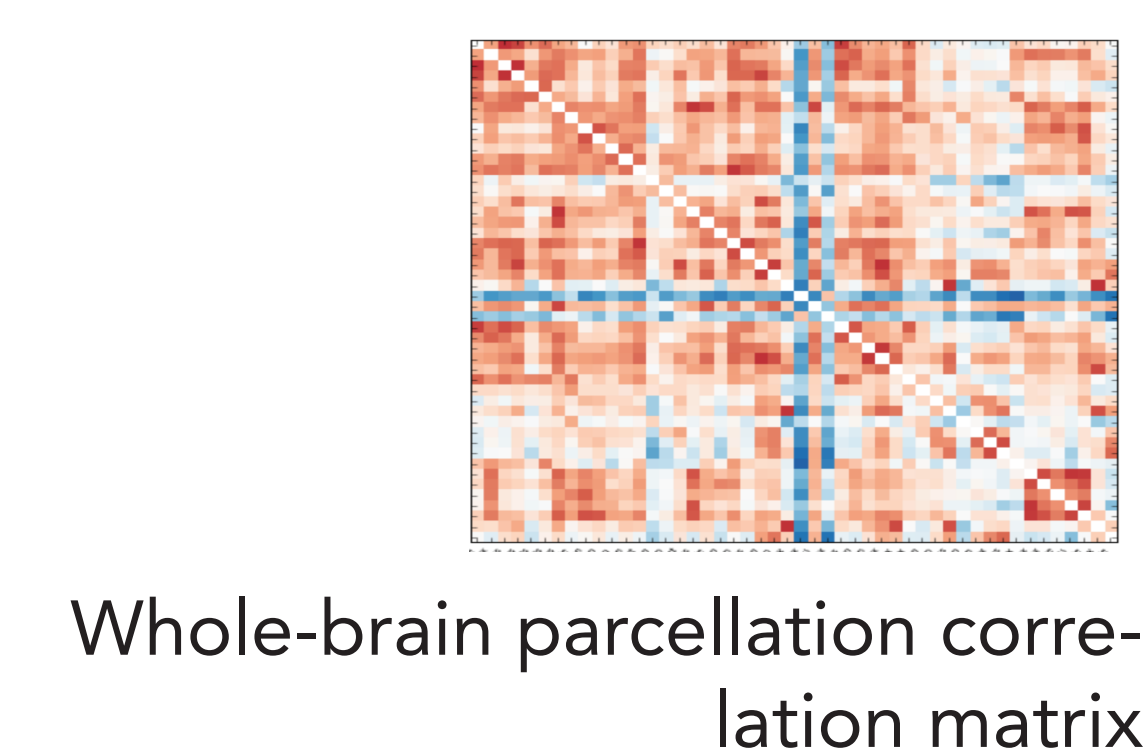
Searchlights

Setup and run a parallelized searchlight analysis



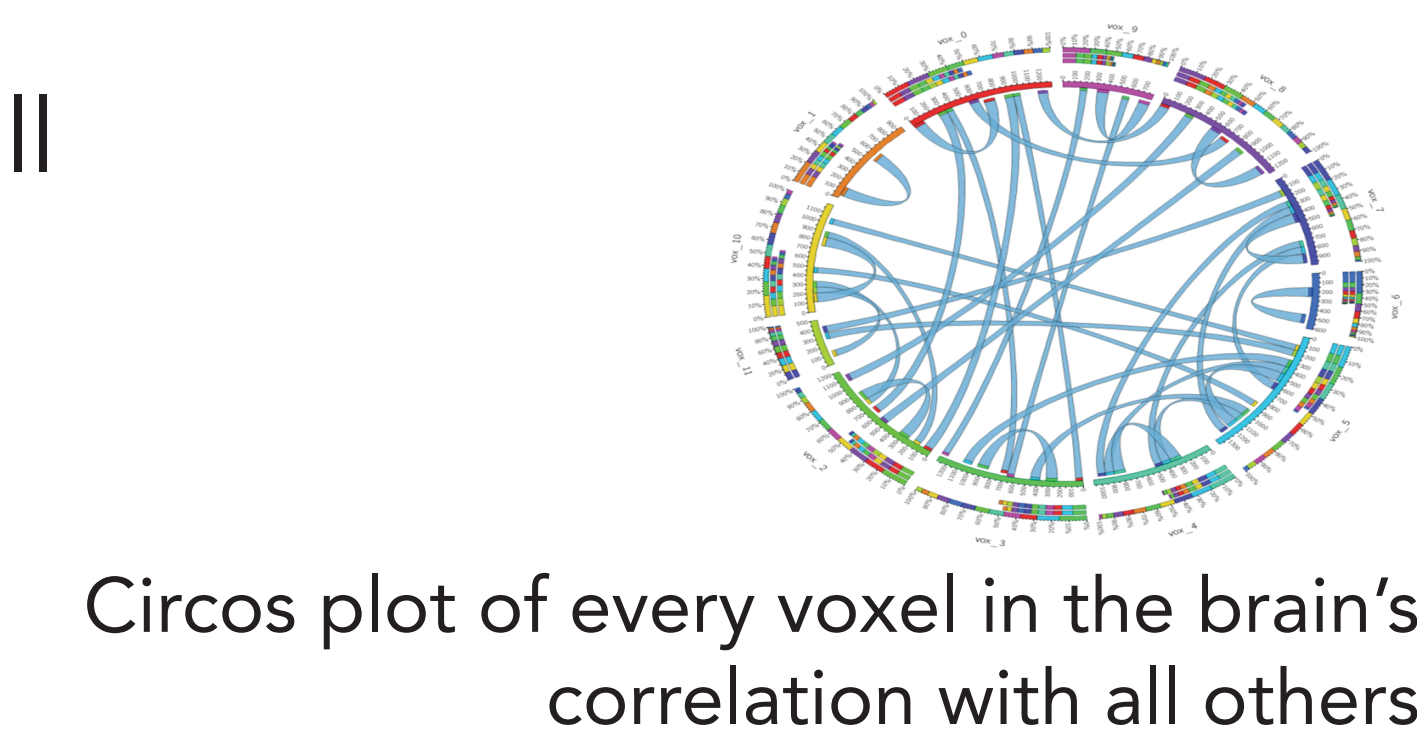
Seed-based Connectivity

Define seeds and compute functional connectivity



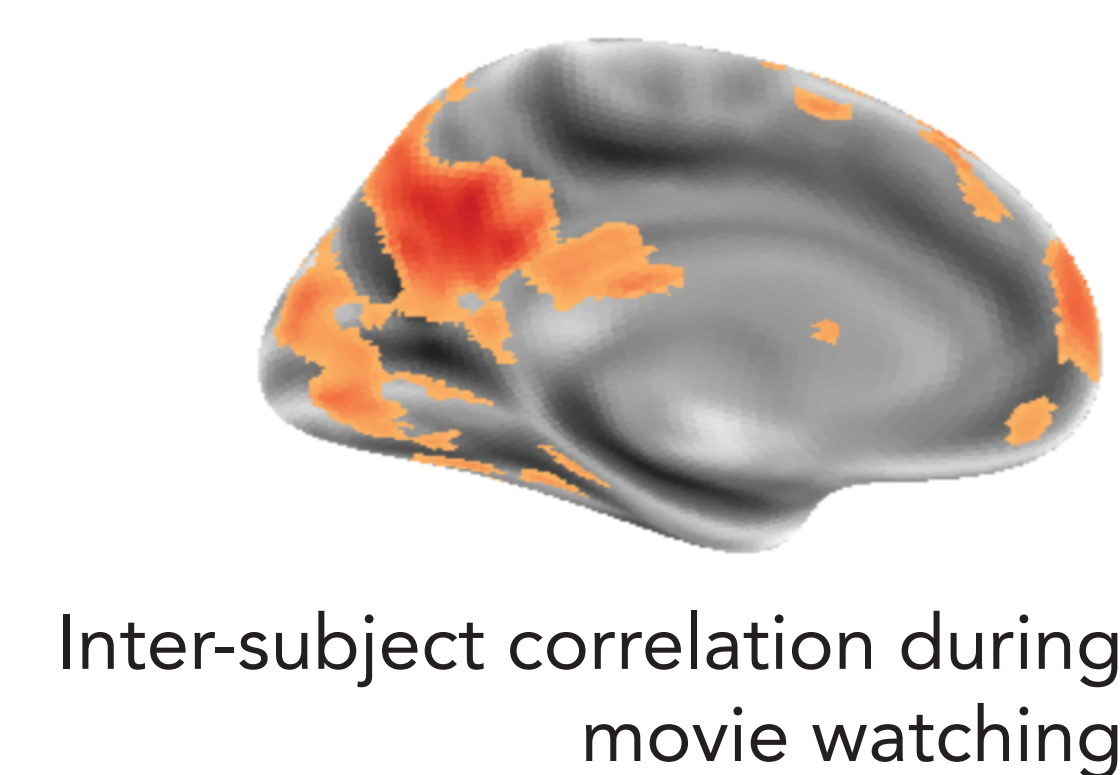
Full Correlation Matrix analysis

Perform an unbiased, seedless, full brain correlation analysis



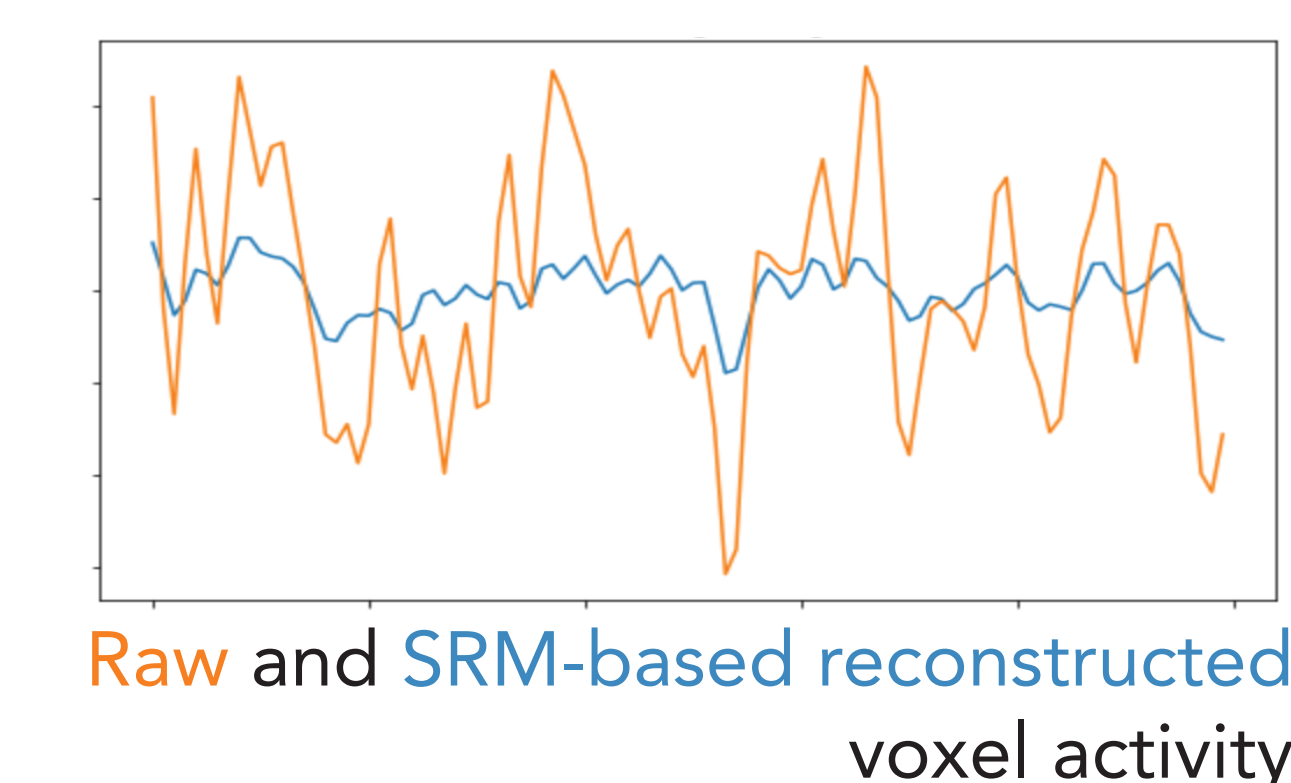
Inter-Subject Correlation

Calculate correlations between subjects to estimate task-specific signal



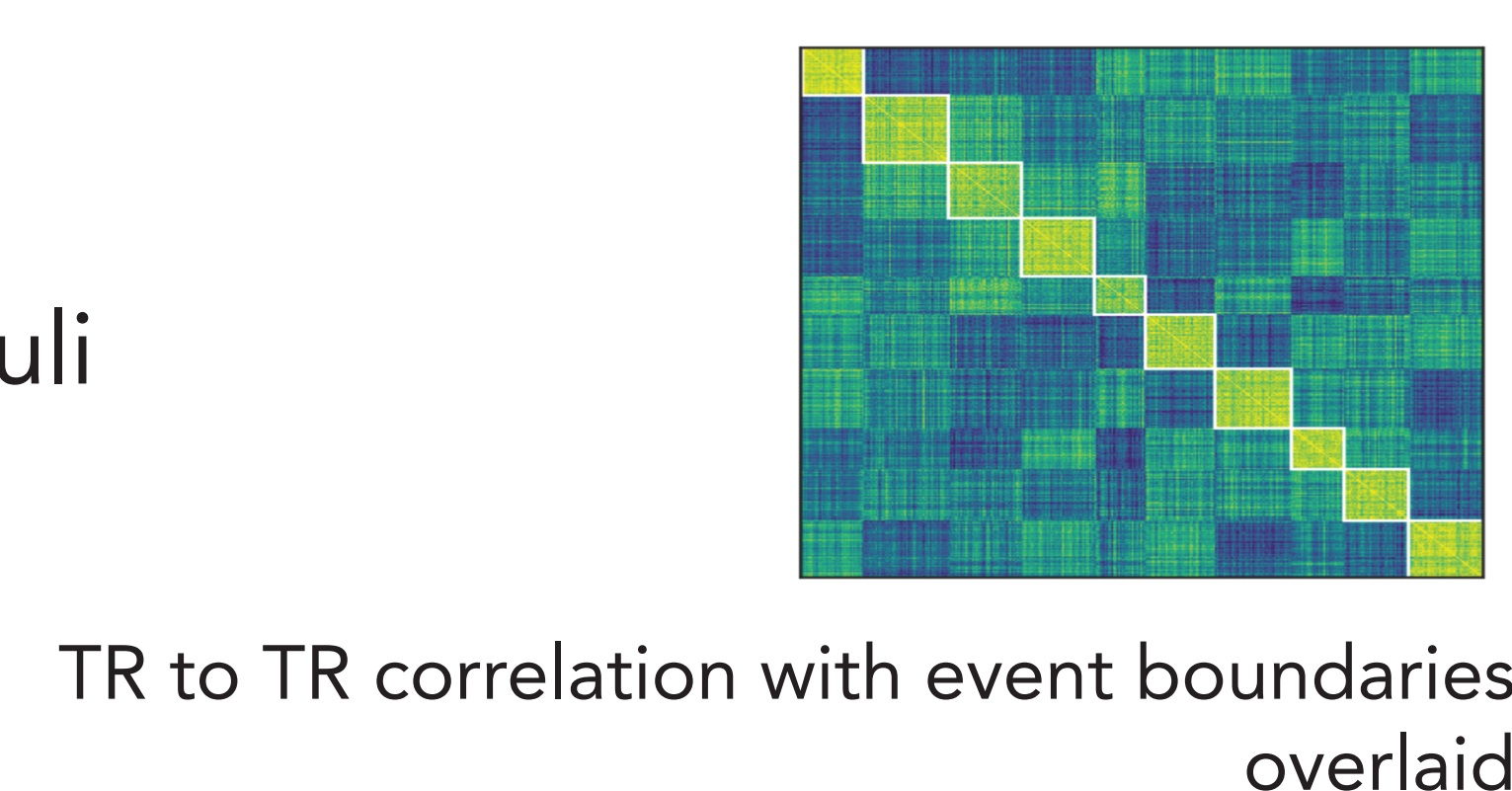
Shared Response Modeling

Use a common stimulus to project subjects into a shared functional space



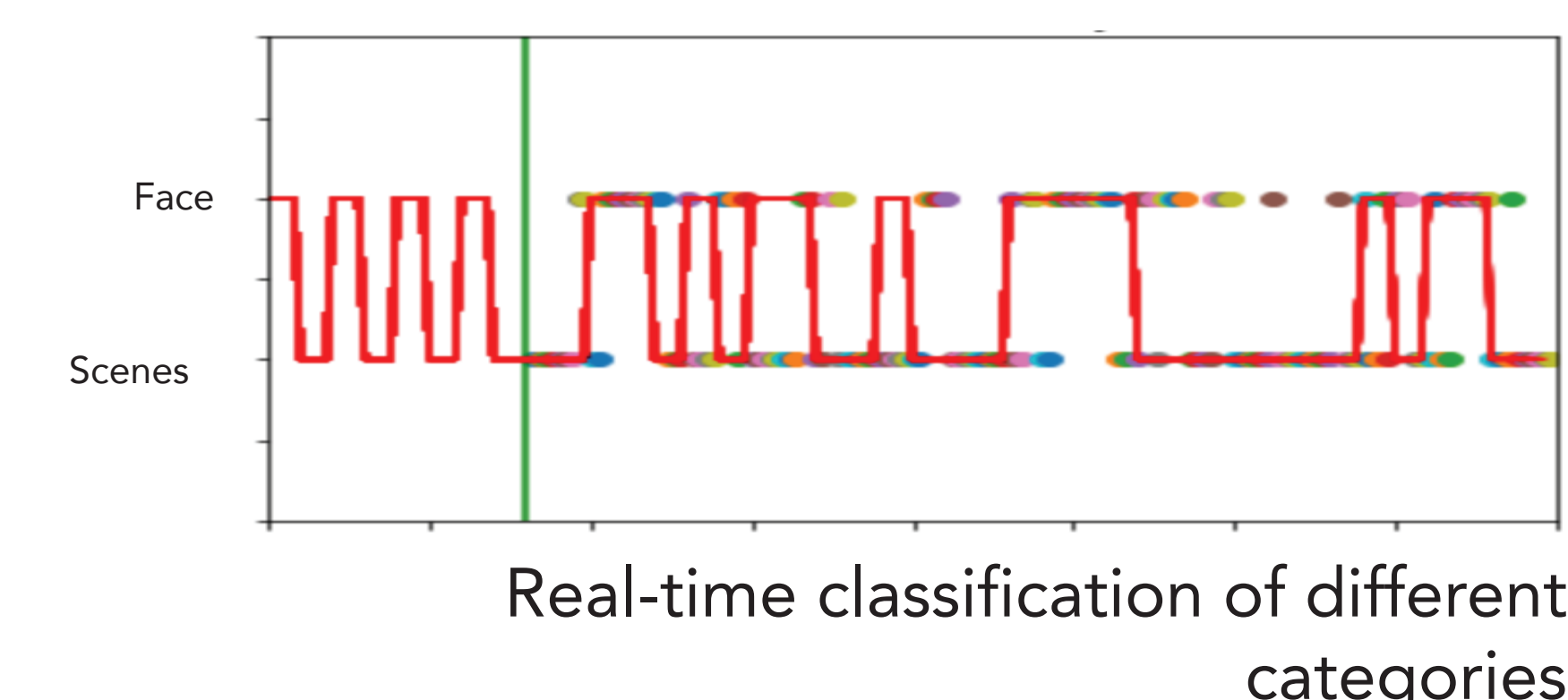
Event Segmentation

Find latent event states in continuous, naturalistic stimuli



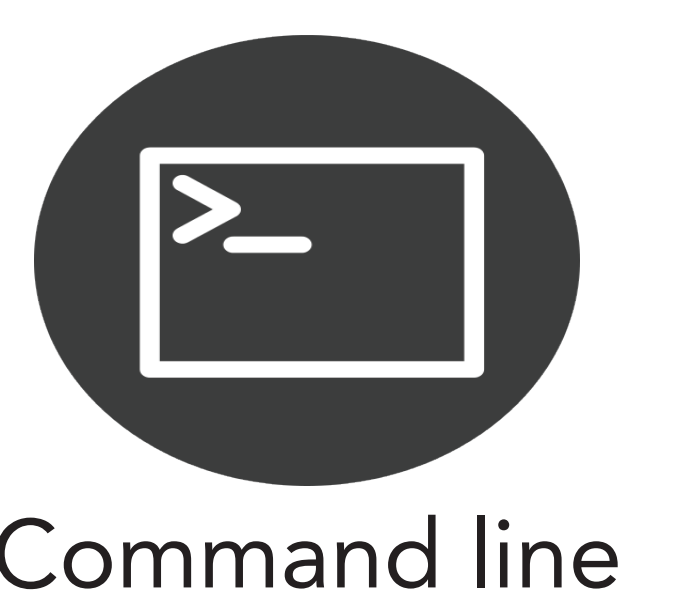
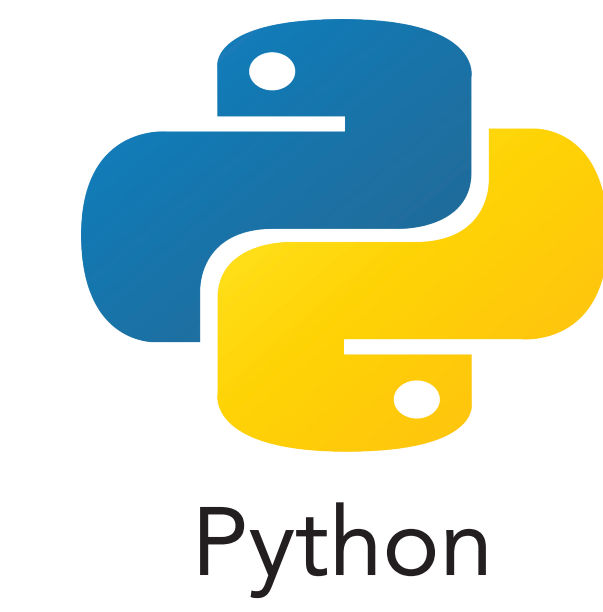
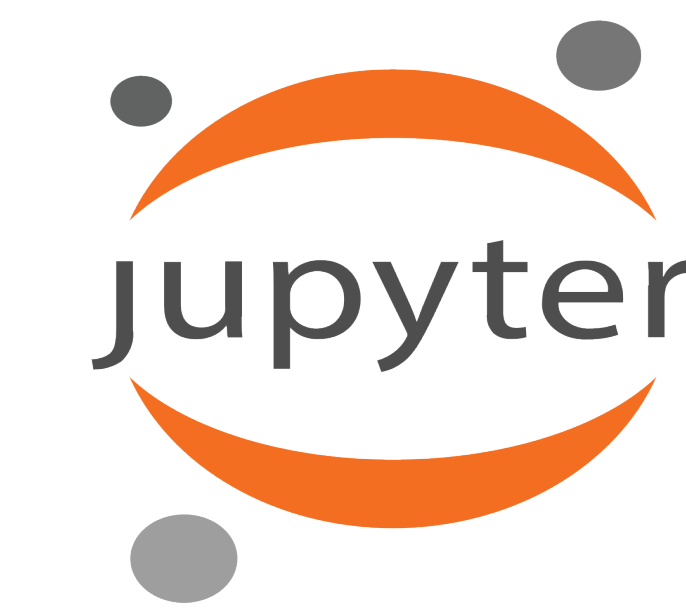
Real-time

Handle and classify fMRI data generated in real-time



Tools

Integrates numerous free resources



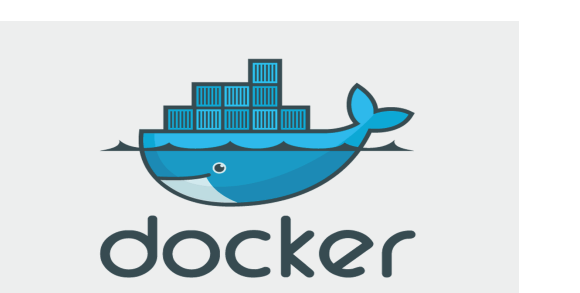
Installation

Several installation options:

Cloud for running on mobiles/laptops

Docker and Conda for local installation on Mac, Windows and Linux

Server and cluster installation for job submission



Data

Uses publicly available datasets, including block, event-related and movie designs

Preprocessing has been completed to minimize startup

Can be adapted to your datasets easily

Contribute



We welcome contributions to the BrainIAK methods and tutorials.

Completely free and open-source. The tutorials, data, and preprint are available here: <https://brainiak.org/tutorials>

Chat with us on Gitter

Acknowledgements

Funding for this project was provided by Intel labs

We would like to thank the many contributors to the BrainIAK code base, BrainIAK examples, and all the tutorial testers and students for their contributions

Plot Credit: Clara Colombatto, Jacob Prince, Sreejan Kumar, and Paula J. Brooks

