Flatiron CCN Software workshop

FENS Forum 2024 · Pynapple · fastplotlib · NeMoS

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Everyone installed and ready to go?

```
cd path/to/ccn-software-fens-2024
git pull
pip install -e .
```

What is Flatiron?

photo by Andre Benz
on Unsplash

What is Flatiron?
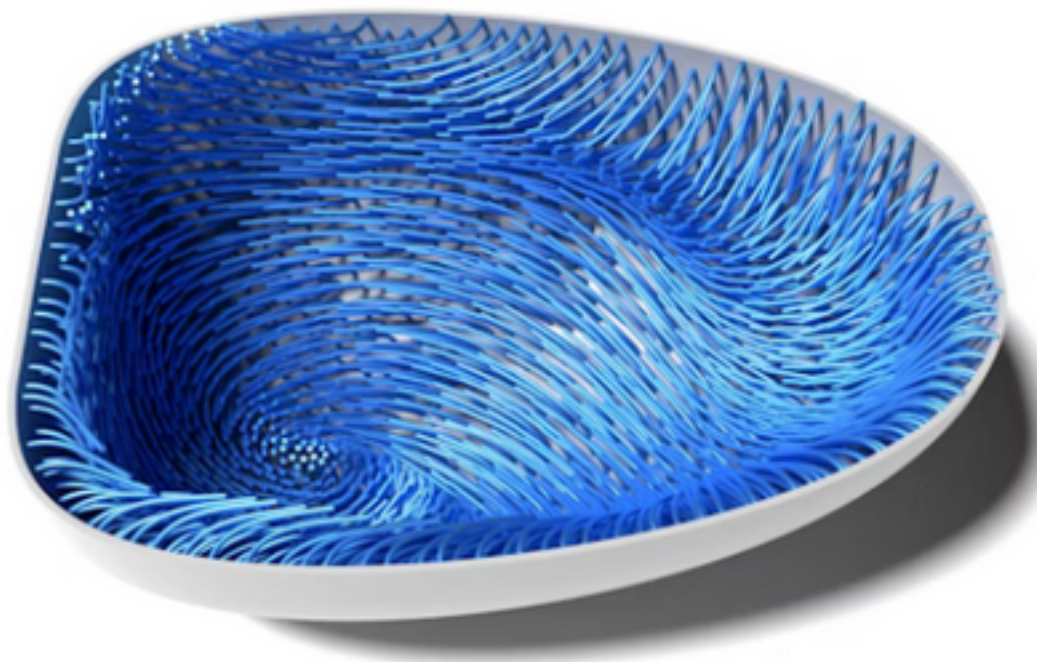

photo by Andre Benz
on Unsplash

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The Real Flatiron Institute

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Our Centers

Center for Computational Astrophysics

Astrophysical Data and Surveys
Astrophysical Gases and Fluids
Cosmology
Exoplanets
Galaxy Formation
Gravitational Wave Astronomy
Machine Learning X Astrophysics
Nearby Universe
Stars and Compact Objects

Center for Computational Biology

Biological Transport Networks
Biomolecular Design
Biophysical Modeling
Developmental Dynamics
Genomics
Structural and Molecular Biophysics

Center for Computational Mathematics

Image and Signal Processing
Numerical Analysis

Center for Computational Neuroscience

Computational Vision
Neural Circuits and Algorithms
NeuroAI and Geometric Data Analysis
Statistical Analysis of Neural Data

Center for Computational Quantum Physics

Dynamics and Control
Quantum Materials
Software Libraries
Theory and Methods

Scientific Computing Core

It develops, deploys and maintains computational infrastructure — from supercomputers to desktop PCs — dedicated solely to the use of Flatiron researchers.

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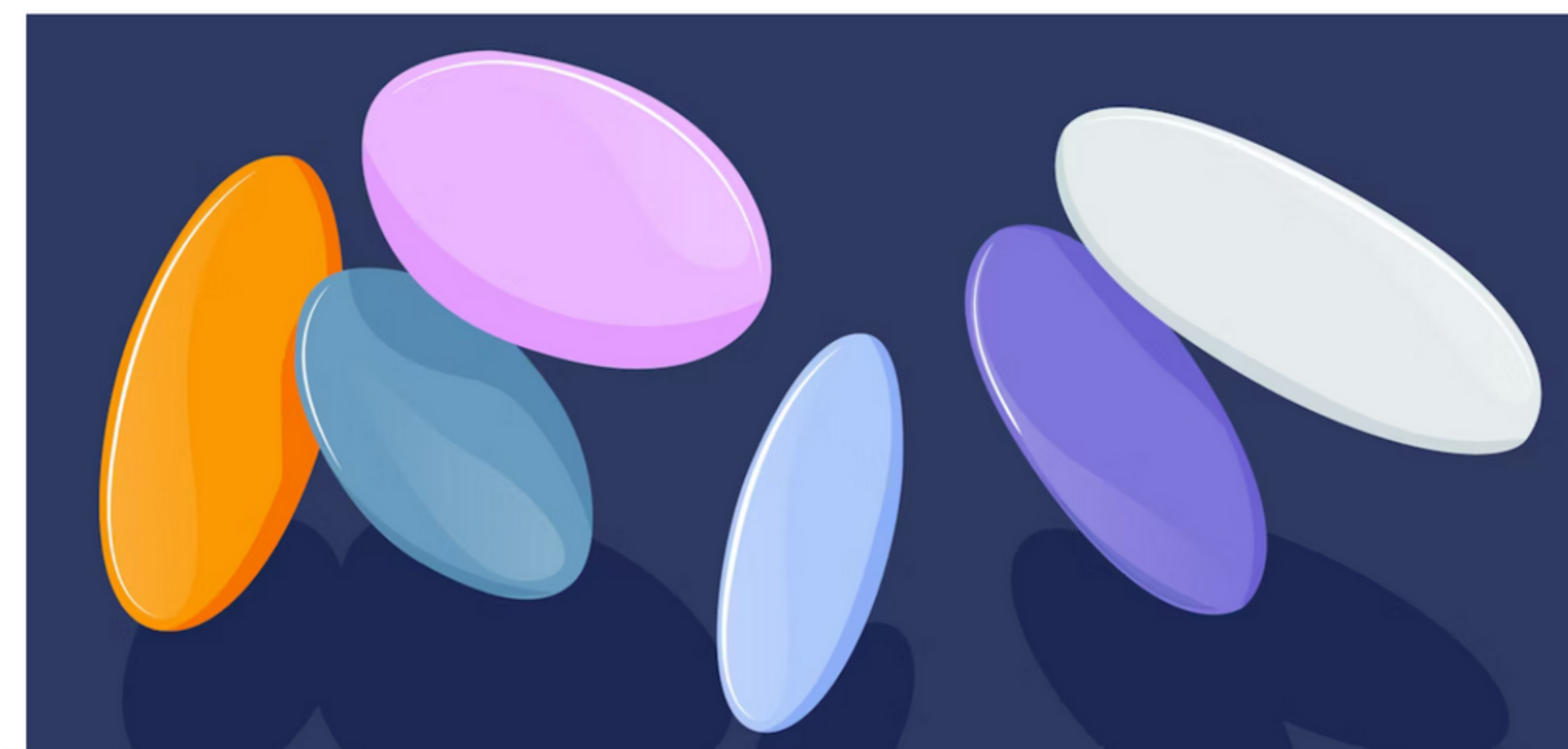
The Real Flatiron Institute

Center for Computational Neuroscience
NeuroRSE Group

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About

The NeuroRSE group at Flatiron Institute Center for Computational Neuroscience builds and maintains open source software for computational and systems neuroscience. We intend to create solid packages that can be relied and built upon, rather than chasing cutting-edge research.

What does RSE mean? A "research software engineer", which is defined by the US-RSE professional organization as someone "who regularly use expertise in programming to advance research".

News

Nov 17, 2023
Neuroscience Software Summer Internship

Workshops

June 2024
FENS 2024

February 2024
Nemos 2024

Our Projects

All of our projects are open-source python packages. We are always happy to get external contributors and happy to help new users get started!

NeMoS

A statistical modeling framework for systems neuroscience. NeMoS, our latest software package, specializes in GPU-accelerated optimizations. Its current core functionality

plenoptic

plenoptic is a python library for model-based synthesis of perceptual stimuli. The generated stimuli enable interpretation of model properties through examination of features that are

CCN Software packages
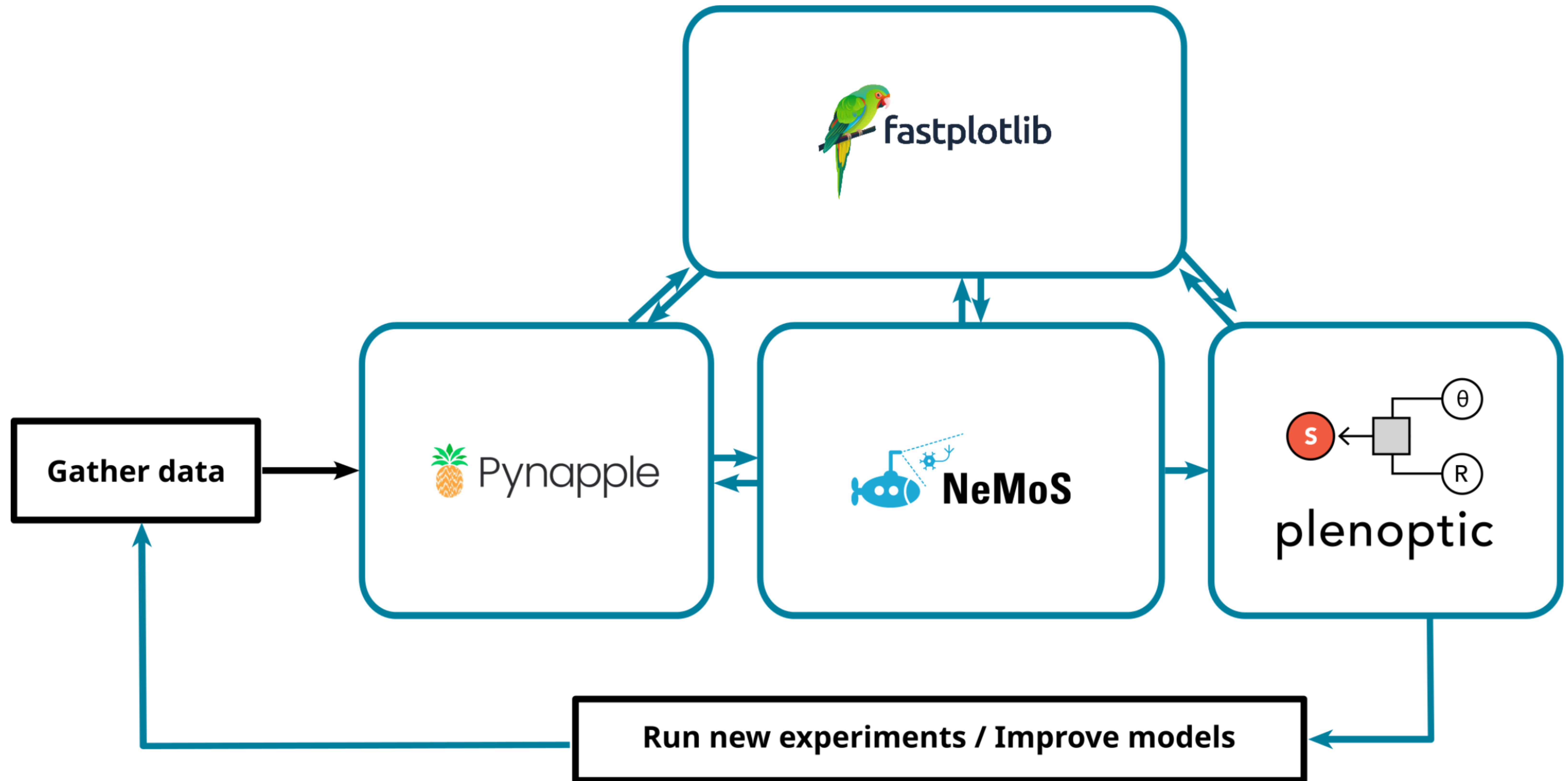
Workshop staff
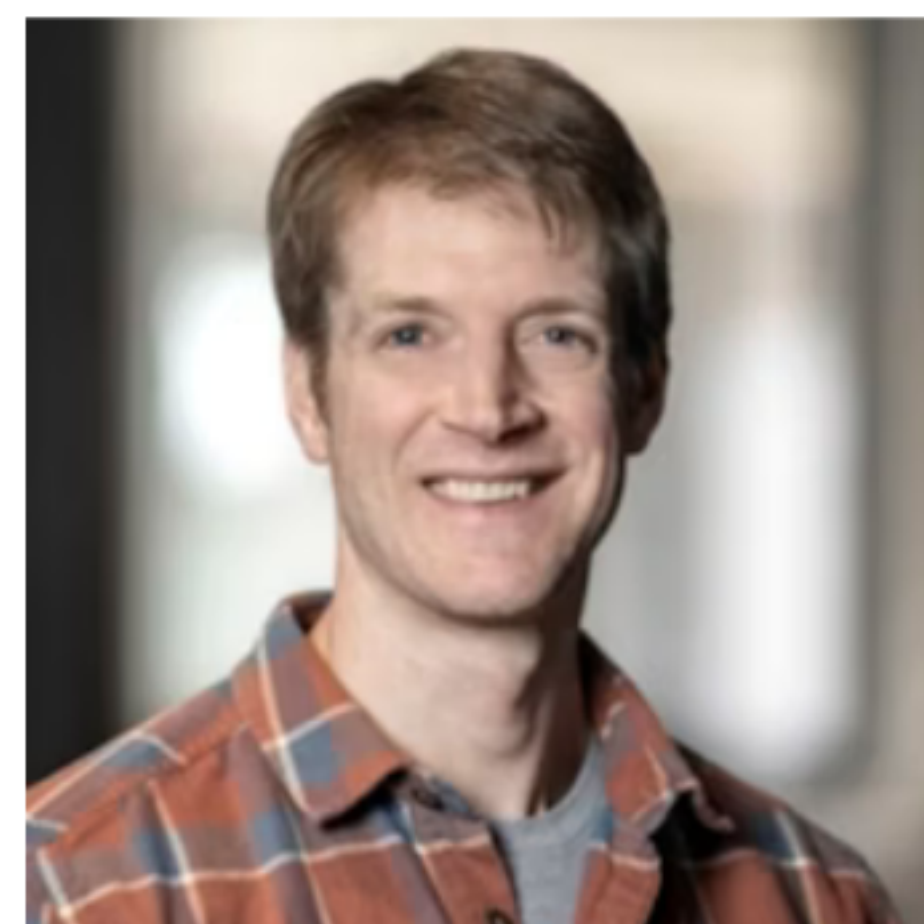
Admin

Jessica Hauser

TAs

Kushal Kolar

Erik Schomburg

Sofia Skromne Carrasco

Aramis Tanelus

Speakers

Edoardo Balzani

Billy Broderick

Caitlin Lewis

Oliver Rübel

Guillaume Viejo

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Introduce yourselves!

Name, Lab, What you work on

One non-science fact about yourself

Schedule

Workshop Schedule

Sunday, June 23rd, 2024

All meetings will be held in Palais Sachsen Coburg IV and V.

Breakfast
Vienna Marriott Hotel Restaurant
8:00 AM
9:00 AM

Welcome and Introduction to data standards : NWB & DANDI
BIlly Broderick , Oliver Rübel
9:00 AM
10:00 AM

Coffee Break
Foyer
10:00 AM
10:30 AM

Pynapple Core
Guillaume Viejo
10:30 AM
11:00 AM

Exercises : Manipulating time series with core functions.
TAs
11 :00 AM
12 :00 PM

Lunch
Palais Sachsen Coburg III room
12 :00 PM
1 :00 PM

Standard Analyses in System Neuroscience with Pynapple
Guillaume Viejo
1 :00 PM
1 :30 PM

Exercises : Analyzing Real Neuroscience Dataset with Pynapple / Bring your own Data
TAs
1 :30 PM
2 :30 PM

Coffee Break
Foyer
2 :00 PM
2 :30 PM

Ultrafast visualization with fastplotlib
Caitlin Lewis
2 :30 PM
3 :00 PM

Exercises : Efficient Visualization with Pynapple and Fastplotlib
TAs
3 :00 PM
4 :00 PM

Exercises : Bring your own data
TAs
4 :00 PM
5 :00 PM

Reception
Palais Sachsen Coburg III room
6 :15 PM
7 :15 PM

Group Dinner
Palais Sachsen Coburg III room
7 :15 PM
8 :30 PM

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Schedule

Workshop Schedule

Monday, June 24th, 2024

All meetings will be held in
Palais Sachsen Coburg IV and V.

Breakfast
Vienna Marriott Hotel Restaurant

8:00 AM
9:00 AM

Analyzing dataset in Neuroscience with
Generalized Linear Model - Introduction to nemos
Edoardo Balzani

9 :00 AM
10 :00 AM

Coffee Break
Foyer

10 :00 AM
10 :30 AM

Hands- on introduction to GLM Basics :
Fitting single neuron patch-clamp recordings
Bllly Broderick and TAs

10 :30 AM
12 :00 AM

Lunch
Palais Sachsen Coburg III room

12 :00 PM
1 :00 PM

Hands-on excercise :
Functional connecttivity analysis of head- direction neurons
Edoardo Balzani and TAs

1 :00 PM
2 :00 PM

Coffee Break
Foyer

2 :30 PM
3 :00 PM

Hackathon : Bring your own data, replicate a figure,
contribute to the codebase.
The choice is yours!
TAs

3 :00 PM
5 :00 PM

Group Dinner

Zum Weissen Rauchfangkehrer
Weihburggasse 4, 1010 Wien, Austria

7 :00 PM
8 :00 PM

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one link to rule them all

https://neurorse.flatironinstitute.org/workshops/fens-2024/