Computational Neuroscience Hackathon: Python for Neuroimaging Data

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This workshop will equip participants with the skills to contribute to open-source neuroscience projects using Python and GitHub. Attendees will learn how to navigate open-source collaboration, use Python for neuroscientific analysis, and contribute to existing projects on GitHub. This workshop is designed for students, researchers, and neuroscience professionals interested in open-source collaboration and programming knowledge in Python and GitHub.

Agenda


Introduction to Python for Data Analysis:

- Learning data types, syntax and structures for programming in Python
- Principles for data visualization, data pipelines, and handling large datasets efficiently
- Introduction to exploratory analysis and statistical analysis techniques using Python
- Exposure to standard libraries for data processing like NumPy, Matplotlib and Pandas


Introduction to Open Source and Collaborative Coding with GitHub:

- Navigating and configuring GitHub/Git platforms
- Forking and cloning code repositories
- Making contributions to code through pull requests


Neuroscience Applications:

- Open-source libraries for neuroimaging, electrophysiology, and neuroinformatics
- Exploring applications with libraries like nibabel, open ephys, and/or nilearn
- Signal processing using Python for EEG and fMRI data.


Contributing to Open-Source Projects:

- Understanding the principles and best practices for open-source collaboration
- Identifying beginner-friendly open-source projects in neuroscience
- Hands-on guidance for making contributions

Key Takeaways

- Understanding of open-source principles and collaborative workflows
- Proficiency in using Python for neuroscientific analysis
- Practical experience in contributing to open-source projects on GitHub
- Insight into real-world applications of Python in neuroscience