U19 SENSATION Data Science Core (Maunsell PI)

Data Science & Technology

- Wolfgang Losert
  - Technology Core
  - Image Analysis
- Behtash Babadi
  - Granger Causality

Data Analysis
Data Sharing
Validation (of Data and analysis)

Theory

- Stefano Panzeri
  - Intersection Information
- Dante Chialvo
  - Criticality

Experiment

- Postdocs and Students from each experimental lab

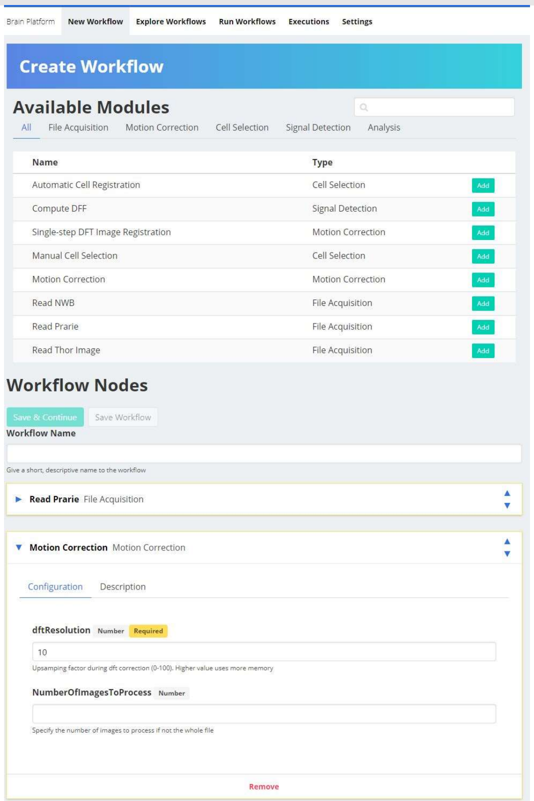
Systems Software Engineering

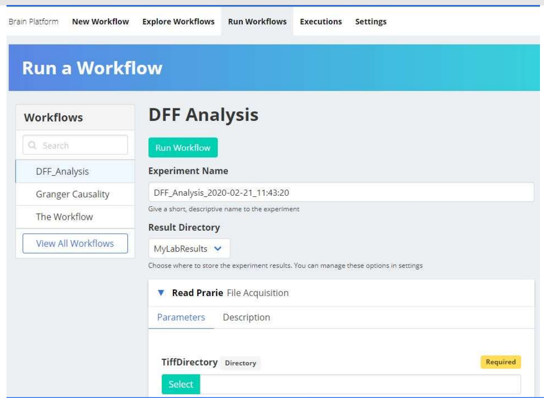
- Madeline Diep, Fraunhofer CESE

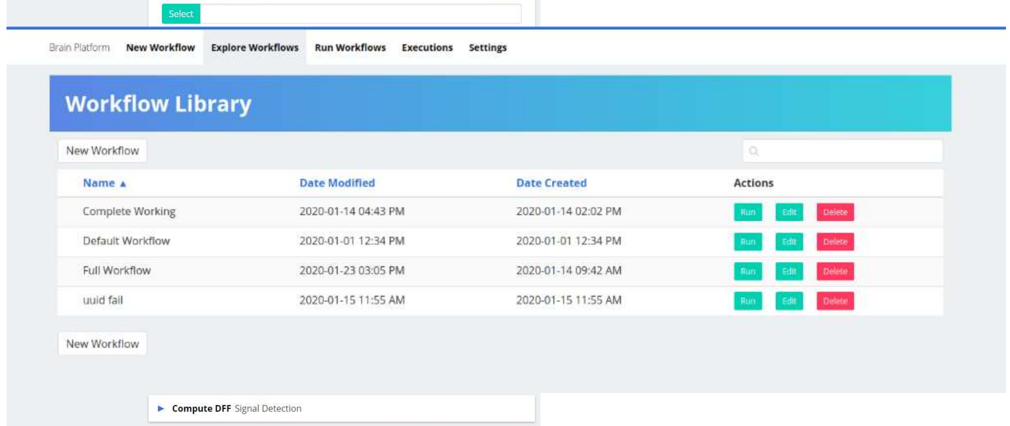
Shared Software and Data Analysis Platform

Fraunhofer CESE leads development

<u>BRAIN Platform GUI</u>: *Manage, Share &Validate Workflow*







<u>Key Features</u>

Streamlines the process of collaborating and sharing data, algorithms and analysis pipelines

Adaptive workflow management: Integrates multiple open source and custom built calcium imaging tools in multiple languages

Future vision: share workflow configuration with ease

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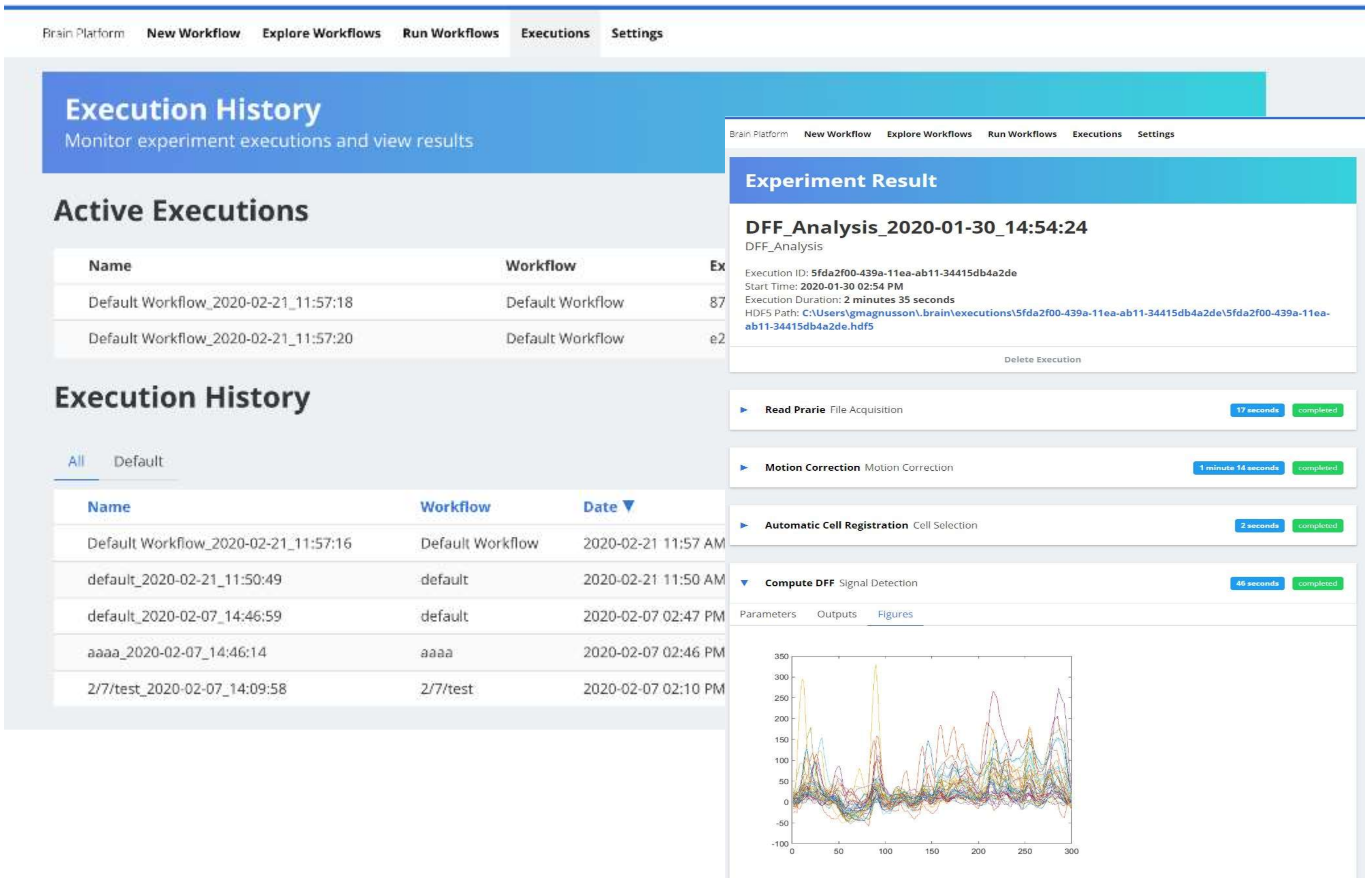


Ability to "queue" up execution

Track execution progress in real time and maintain history of executions: including workflow configuration used

Shows execution result in detail

Easily shares results with team members

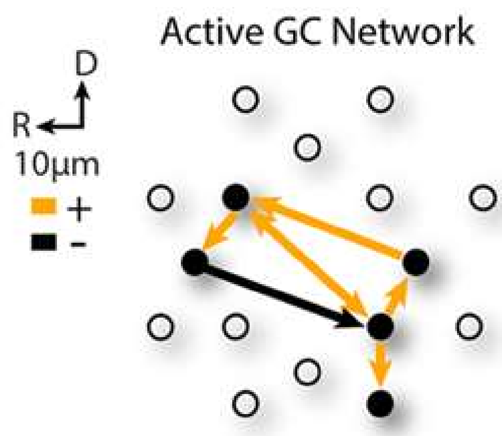
Leverages HDF5 to store intermediate and final results

Automatically save and organize Matlab figures

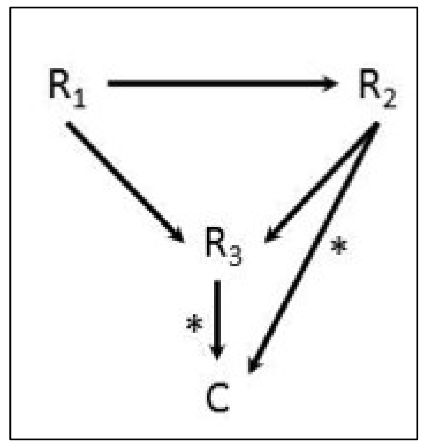
Aim 3: Theory Guided Experiment Design

- Integrate multiple approaches to analysis of experimental data

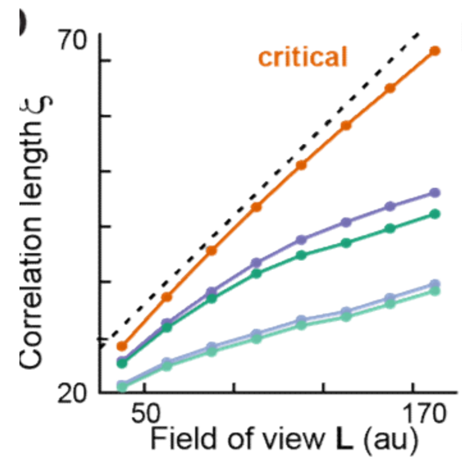
Babadi: Granger Causality (GC)



Panzeri: Intersection Information (II)



Chialvo: Criticality



Ongoing:

- **Integrating GC and II Analyses.**
- **Computational Speedup, Real Time Analysis of Imaging Data**

Core Activities

Data Science Hackathons:

Students/Postdocs working on Ca data shared their analysis workflow with each other and systems software engineers and theory groups

Data Sharing:

AWS

NwB Hackathon Participation

May 2019

Oct 2019