Human Brain Project

3-6 February 2020 - Athens, Greece

Human Brain Project SUMMIT & OPEN DAY

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Developing pipelines for multi- scale/species/method analysis

adaptable, reusable, UseCase-driven

05.02.2020 HBP Summit, *Athens*

Robin Gutzen, *Institute of Neuroscience and Medicine (INM-6), FZJ*

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Where we are - Where we want to be

Open Access Article

Analysis and Model of Cortical Slow Waves Acquired with Optical Techniques

by Marco Celotto [1,2], Chiara De Luca [1,3,4], Paolo Muratore Francesco Resta [1,5,6], Anna Letizia Allegra Mascaro [6,7], Francesco Saverio Pavone [6,8], Giulia De Bonis [3,*] and Pier Stanislao Paolucci [3]

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Methods Protoc. **2020**, *3*(1), 14; **https://doi.org/10.3390/mps3010014**

Received: 12 November 2019 / Revised: 10 January 2020 / Accepted: 22 January 2020 / Published: 31 January 2020

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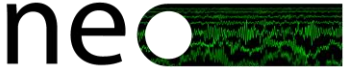
Slow Wave Analysis Pipeline (SP3 UseCase002)

There is no one-size-fit-all solution, but many small incremental ones

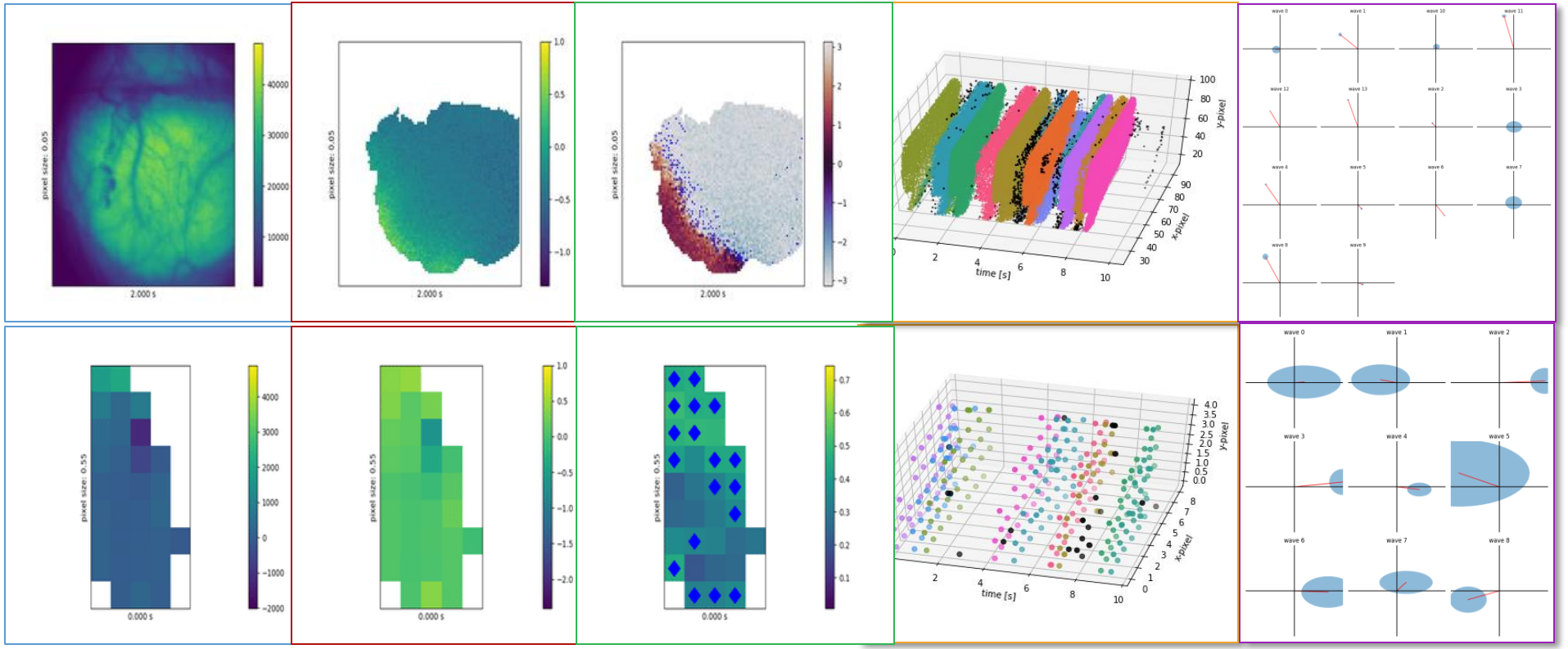
- identifying a generalized structure of analysis steps

  -> sequential *Stages*, and modular *Blocks*
- implemention with a workflow management sytem
- precisely defining the interfaces and (meta-)data requirements
- integrating existing analysis approaches & algorithms



Stage Outputs

Data Entry → Preprocessing → Trigger Detection → Wave Detection → Wave Characterization



Data curtesy of: F.S. Pavone Lab, LENS, Florence, Italy / M.V. Sanchez-Vives Lab, IDIBABS, Barcelona, Spain

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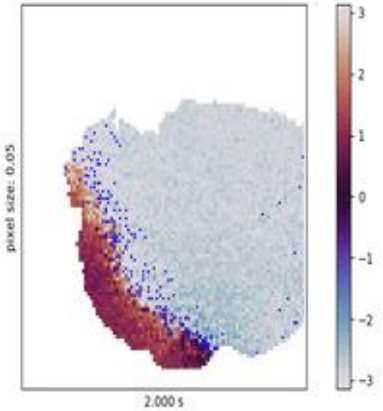
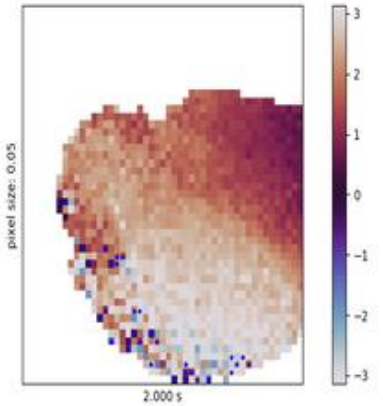
The Payoff

- Direct comparability between different data types
- Benchmarking of analysis algorithms
- Basis for meaningful validation tests

Experiment



Simulation



Model by Cristiano Capone

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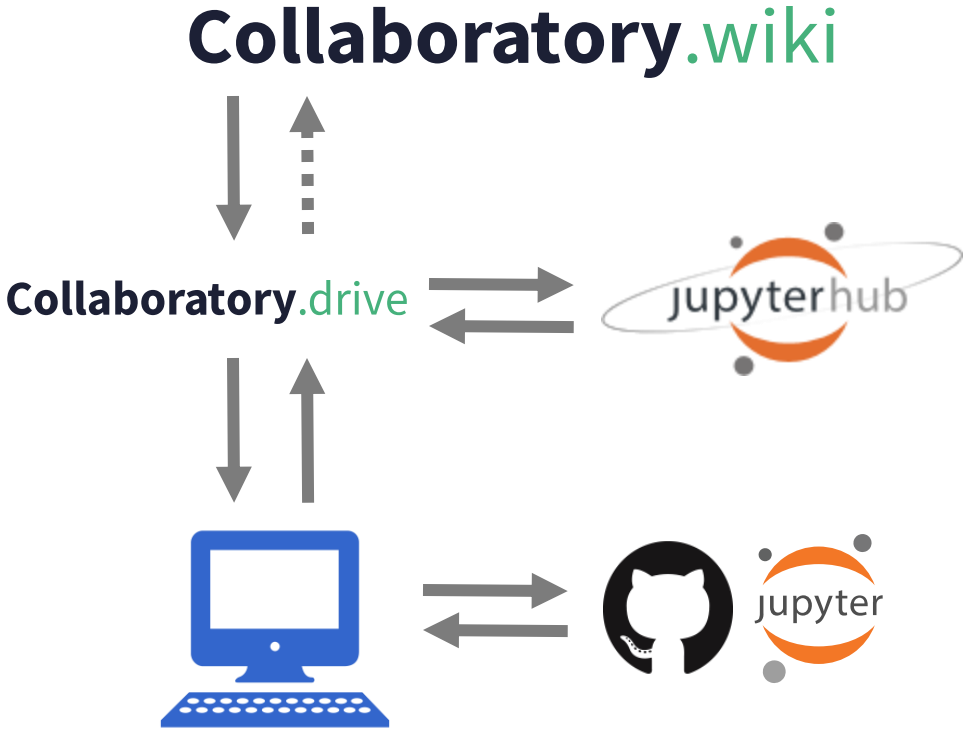
Collab Integration



Wishlist

- GitHub Integration / Version Control
- (Python) Environment Management
- Easy HPC Access
- Workflow Engine

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Thank you!

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Cristiano Capone

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Pier Stanislao Paolucci

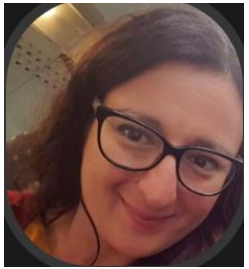
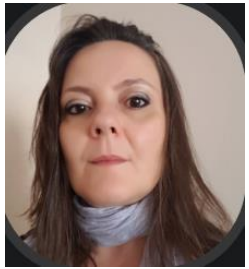
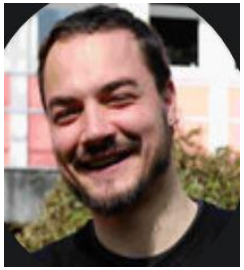
Yann Zerlaut

Glynis Mattheisen

Andrew Davison

Robin Gutzen

Michael Denker

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