

### PORcupine Creates Ur PipelINE Tim van Mourik

Hil I am a PORCUPINE

DONDERS

#### • A year from now, ...

- Could you reproduce your own results?
- Could someone else reproduce your results without your help?
- Could someone else replicate your analysis on a new data set?





- We agree that our science is not reproducible enough...
  - ... but don't know how to solve it.
- More data sharing initiatives
  - OpenFmriData, OpenNeuro, Donders Data Sharing Collection
- More standardisation initiatives
  - BIDS format, Nipype
- ... but little pipeline and code sharing



### Barriers for reproducibility

- Big time investment, few benefits
- Benefits science, hurts the individual
- "Without Hope, Without Witness, Without Reward" The Doctor
  - Frustrating journey, many technical requirements
  - Most of the time, people only see the results
  - Output is rewarded, not the process
  - Takes time
    - ... and more time, because you're suddenly asked to help out

"The time investment pays of in a period longer than a PhD trajectory"

#### • A year from now, ...

- Could you reproduce your own results?
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- Yes! With Porcupine!



#### Porcupine in a nutshell

- Graphical editor for your analysis
- Generates readily executable analysis code
- Generates a sharing environment (Docker)





### The idea

- 1. Workflow editor
  - Visual representation of pipeline
- 2. Node editor
  - Orderly list of functions and parameters
- 3. Parameter editor
  - Important parameters
- 4. Code window
  - Created code

<DEMO>



### Porcupine

- Gives you an intuitive pipeline structure
- Gives you a way to communicate your analysis
  - .. to peers, community, or supervisor
- Potential to link to online data set
- Emphasis on the conceptual analysis...
- ... by removing the *implementational* burden
- Gives you a scaffold to start sharing your analysis

### Sharing

- Docker: minimal operating system to run your analysis
- Automatically adds software from used packages
- Allows you to run save/run/export entire working environment





### Future directions

- Embedded workflows, Prezi style
- Addition of more tools
  - A nudge for developers to write tools Porcupine proof
- Expand to (M)EEG analysis, *ft\_trip2pork*





#### The Porcupine team



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Github  $\star$   $\star$  are greatly appreciated  $\odot$ 



### https://timvanmourik.github.io/Porcupine

www.ru.nl/donders

