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Effort involved in truly FAIR neuroimaging: Towards community-driven research

Camille Maumet

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Effort involved in truly **FAIR neuroimaging**

Towards **community-driven research**

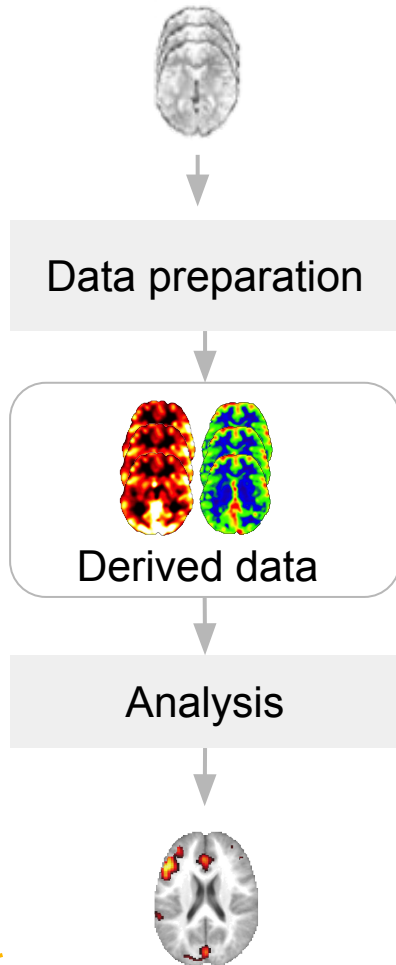


Camille Maumet

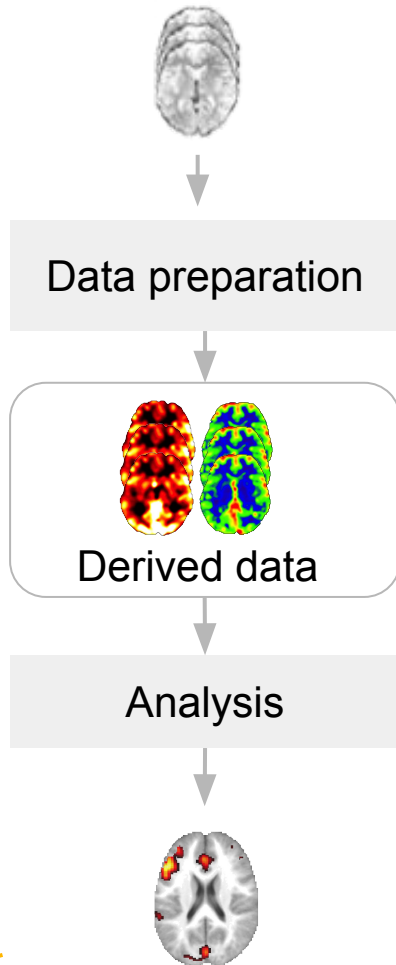
Univ Rennes, Inria, CNRS, Inserm



Why FAIR neuroimaging?



Why FAIR neuroimaging?



Reproducibility crisis

SCIENCE

A Waste of 1,000 Research Papers

Decades of early research on the genetics of depression were built on nonexistent foundations. How did that happen?

ED YONG MAY 17, 2019



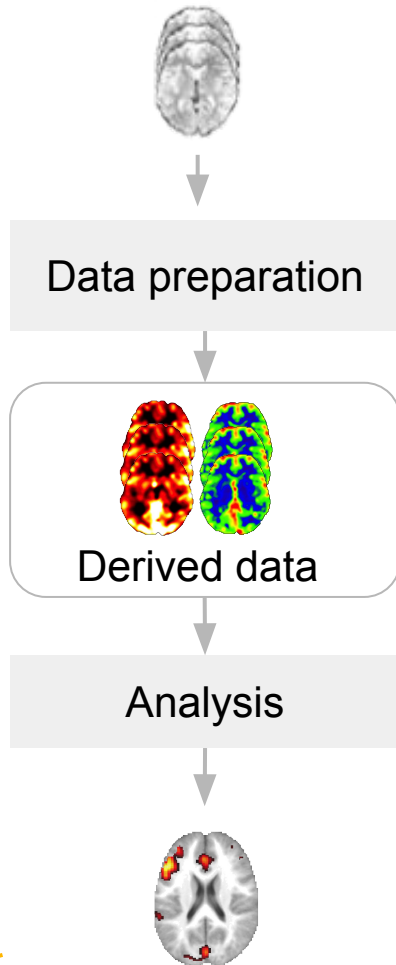
SEAN NEL / SHUTTERSTOCK

In 1996, a group of European researchers found that a certain gene, called *SLC6A4*, might influence a person's risk of depression.

It was a blockbuster discovery at the time. The team found that a less active version of the gene was more common among 454 people who had mood disorders than in 570 who did not. In theory, anyone who had this particular gene variant could be at higher risk for depression, and that finding, they said, might help in diagnosing such disorders, assessing suicidal behavior, or even

By Ed Yong, The Atlantic Science, May 2019, [link](#).

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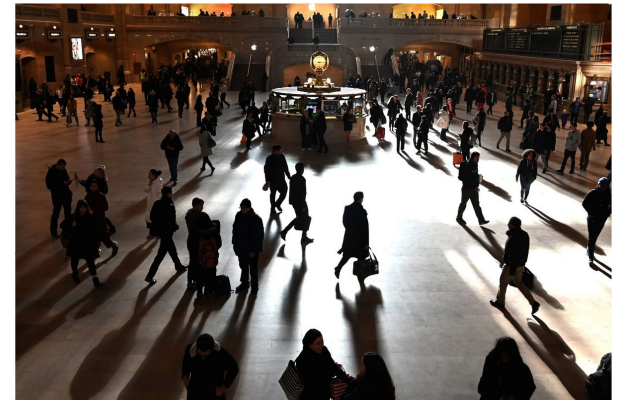
By Ed Yong, The Atlantic Science, May 2019, [link](#).

Algorithmic injustice

The New York Times

Many Facial-Recognition Systems Are Biased, Says U.S. Study

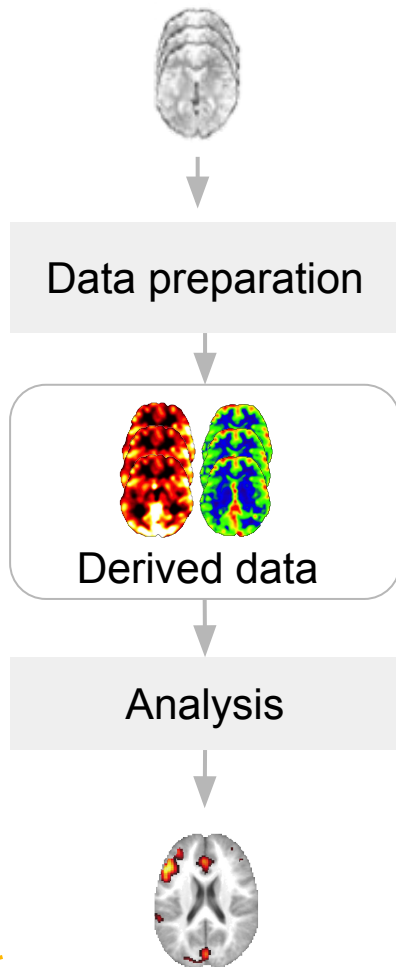
Algorithms falsely identified African-American and Asian faces 10 to 100 times more than Caucasian faces, researchers for the National Institute of Standards and Technology found.



Morning at Grand Central Terminal. Technology for facial recognition is frequently biased, a new study confirmed. Timothy A. Clary/Agence France-Presse — Getty Images

By Natasha Singer and Cade Metz, The New York Times, Dec. 2019, [link](#).

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As a **community**, we need to create and work on **bigger & more representative and diverse datasets**

FAIR neuroimaging?

Findable Accessible Interoperable Reusable



Technical challenges: Standards, Databases, Good practices (version control, etc.)

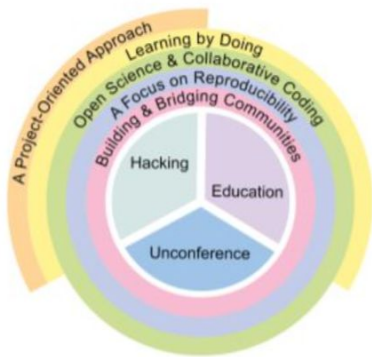
A culture change: towards community-driven research

- Making resources **available to the scientific community**
- **Reusing** existing resources (datasets, tools) that were created by others
- **Developing tools collaboratively** with a community of contributors

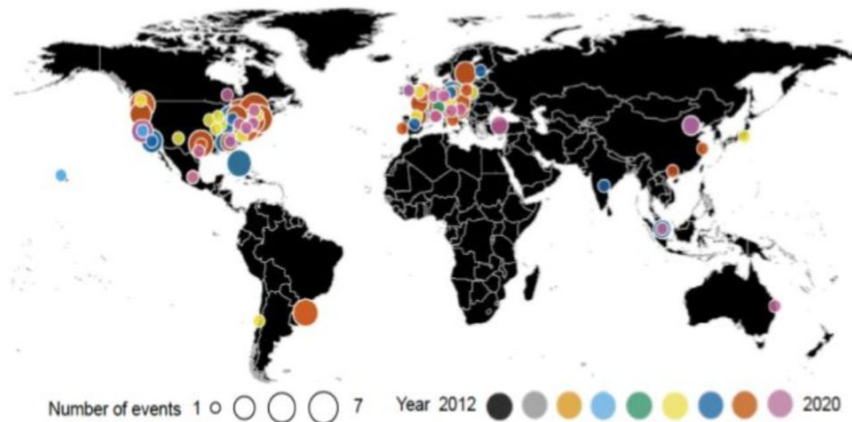
Community-driven research

Brainhack: project-based community science

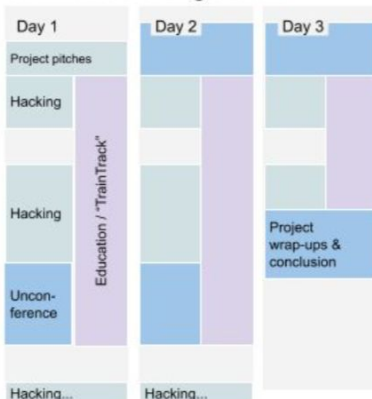
A. Anatomy of a Brainhack



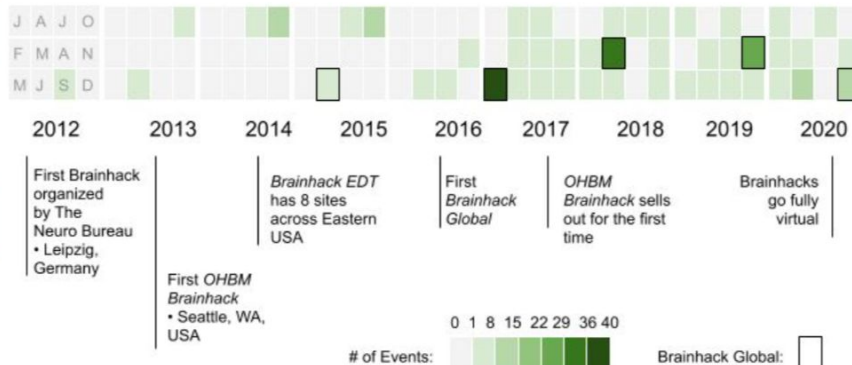
C. Brainhack Cartography



B. Timeline of a Single Event



D. Brainhack Timeline



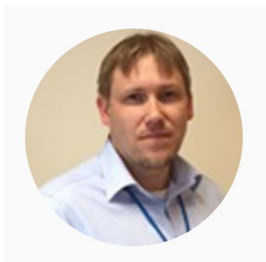
Gau*, R., Noble*, S., Heuer*, K., Bottenhorn*, K., Bilgin*, I. P., Yang*, Y. F., ... & Brainhack Community (2021). Brainhack: developing a culture of open, inclusive, community-driven neuroscience. <https://psyarxiv.com/rytjq/>

Open Brain Consent

<https://open-brain-consent.readthedocs.io/>

Informing participants and collecting their consent for data sharing

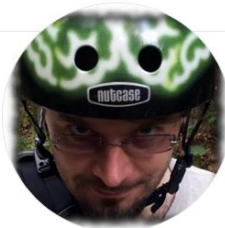
Compliance with European General Data Protection Regulation (GDPR)



Cyril
Pernet



Stephan
Heunis



Yarik
Halchenko

Translations

- Bosnian
- Czech
- German
- Greek
- Spanish
- Finnish
- French
- Italian
- Dutch
- Norwegian
- Turkish

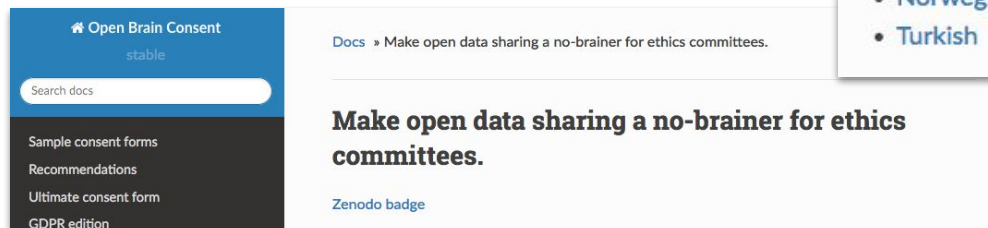
French version



Anne
Hespel

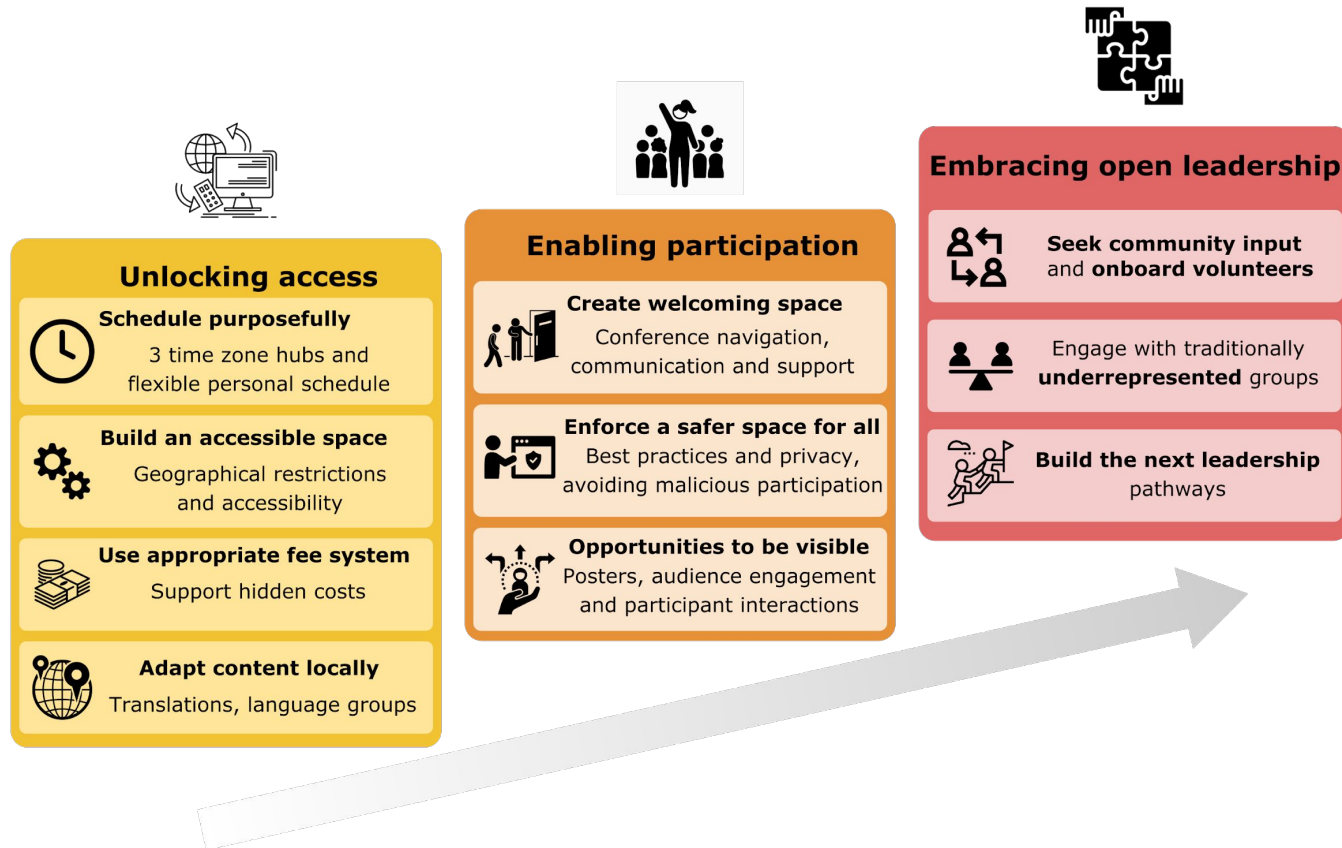


Elise
Bannier



The Open Brain Consent working group (2021). The Open Brain Consent: Informing research participants and obtaining consent to share brain imaging data. <https://psyarxiv.com/f6mnp/>

Designing online conferences for inclusivity



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Thank you!

