
Organization for Human Brain Mapping Open Science Hackathons: Accessible and Inclusive Neuroinformatics

Elizabeth DuPre

McGill University
Montréal, QC Canada
elizabethm.dupre@gmail.com

R. Cameron Craddock

University of Texas at Austin
Austin, TX USA
cameron.craddock@gmail.com

Felix Hoffstaedter

Forschungszentrum Jülich
Jülich, Germany
f.hoffstaedter@fz-juelich.de

Jean-Baptiste Poline

McGill University
Montréal, QC Canada
jbpoline@gmail.com

Kirstie Whitaker

Alan Turing Institute
London, UK
kw401@cam.ac.uk

Gregory Kiar

McGill University
Montréal, QC Canada
greg.kiar@mcgill.ca

Chris Gorgolewski

Stanford University
Stanford, CA USA
krzysztof.gorgolewski@gmail.com

Anisha Keshavan

UW eScience Institute
Seattle, WA USA
anishakeshavan@gmail.com

**Matteo Visconti di Oleggio
Castello**

Dartmouth College
Dartmouth, NH USA
matteo.visconti@gmail.com

Pierre Bellec

Université de Montréal
Montréal, QC Canada
pierre.bellec@criugm.qc.ca

Abstract

As leaders of the Organization for Human Brain Mapping's (OHBM) Open Science Special Interest Group, we host an annual hackathon to teach and promote open science among neuroimaging researchers. We have endeavored to design our hackathon events such that existing open-source software projects receive attention and support from experienced users while new adopters can gain familiarity with these tools. However, we have received community feedback that our events are still perceived as exclusionary to code-nervous researchers, and we have had difficulty quantifying overall outcomes to assess how to make improvements. We are applying to the CHI workshop with the hope of learning how to better design and organize our events to be more inclusive, and provide concrete evidence upon which we can advertise the successes of OHBM hackathon events and continuously improve.

Author Keywords

neuroscience; informatics; software development; education

Background

The [Organization for Human Brain Mapping \(OHBM\)](#) is an annual, international meeting of neuroimaging researchers dedicated to understanding the structure and function of the brain and their pathologies in health and disease. Since 2013, the [OHBM Open Science Special Interest Group](#) has

hosted a hackathon adjacent to the annual meeting to promote open science for replicability, collaboration, and innovation in neuroscience research.

The hackathon and its adopted structure have grown out of the [Brainhack initiative](#) [2]. Brainhack has three core aims: 1) educating new community members on open scientific best practices, 2) encouraging the development and maintenance of open-source software, and 3) promoting the free exchange of ideas to encourage future collaborations. These ideas are operationalized as short educational courses such as *Brainhack 101*, hackathons, and brief, informal presentations to share research ideas (see Figure 1).

Motivations for joining the workshop

This format has seen significant success within the OHBM community, providing many neuroscientists with an [initial exposure to hackathons](#). As we continue to grow in attendance, however, the authors—as leaders of the Open Science Special Interest Group—hope to refine our workshops to better engage the OHBM membership and encourage the adoption of open science within our community.

This direction is largely driven by feedback that our hackathons are perceived to be oriented towards "power users" who are already strong coders, rather than all members of the community. We therefore hope to explicitly target less code-experienced and junior neuroscientists in future OHBM hackathons. A concern this introduces is how best to measure event success if not with direct outcomes (such as lines coded or papers written), since these measures are likely to miss the collaborative and educational aspects we hope to emphasize. For this reason, we are applying to the CHI 2018 Workshop: *Hacking and Making at Time-Bounded Events* in order to better design for and measure outcomes of future OHBM hackathons.

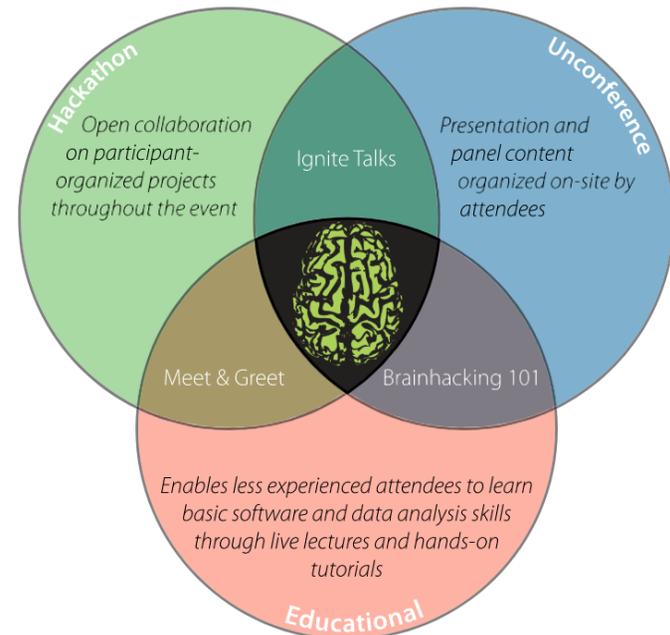


Figure 1: The Brainhack recipe combines education, hacking, and informal presentations into short-format events. Figure adapted from [2].

Themes of Interest

There are two themes in particular which the authors believe will be especially valuable towards accomplishing our goals: *Design Variations* and *Outcome Measurement*.

While we benefit from a well-defined application area and a wealth of experience running both local and distributed workshops, we've been limited by our ability to engage a broad community of scientists and create/evaluate measurable event outcomes.

Design variations

The OHBM community consists of scientists from a wide range of backgrounds, including (but not limited to): physicians, physicists, statisticians, psychologists, and informaticians. Although these diverse skills enable interdisciplinary efforts, they also create ideological silos that the OHBM Brainhack aims to break down. An additional challenge in creating Brainhack events is that these scientists arrive with varying levels of comfort in creating and using code.

We have considered variations in the design of our event, such as designing around a theme and on-boarding attendees to that topic, ensuring that all participants have a minimal background in the Brainhack focus. However, it is difficult to find a topic with which at least one scientific background is not already overly familiar, and this approach still does not address the concern of varying technical experience.

We therefore wish to learn how variations in the design or presentation of future OHBM Brainhacks can be made more accessible, increasing the attraction of these events to additional members of our community, without detracting from the experience of established participants.

Outcome measurement

Although previous OHBM hackathons have resulted in published collaborations (e.g., [1]), it is unclear that publications are the best outcome by which to measure hackathon success. Related outcomes, such as lines of code written or git commits generated, are not sensitive to attendees' varying levels of experience.

We have considered alternative short-term outcome measures such as participants' self-reported satisfaction after the event or relative increase in comfort with new programming languages and/or tools; however, it is unclear if these provide an appropriate index of success. Long-term outcomes, such as building an inclusive, open-science-focused neuroimaging community, are similarly in need of quantification. One option that has been proposed would be to aim to increase the number of institutions represented at each year's hackathon; however, due to space limitations, at some point this metric would cease to be meaningful. We are therefore interested in exploring alternative methods for quantifying the impact of future OHBM hackathons.

Conclusions

In designing for and evaluating future OHBM Brainhacks, we believe that the feedback and learning opportunities provided at the CHI 2018 workshop will be invaluable for our success. We would therefore be thrilled to participate in this year's event, and thank you for your consideration.

REFERENCES

1. 2016. Brainhack Proceedings. Website. (2016). <http://www.brainhack.org/proceedings/> Retrieved January 10, 2018.
2. R C Craddock and others. 2016. Brainhack. *GigaScience* 5, 1 (2016), 1–8. DOI : <http://dx.doi.org/10.1186/s13742-016-0121-x>