Think Open Rovereto Workshop 2020

Supported by the project: “Departments of excellence”

July 10-11, 2020

The event will be held entirely from remote and all the sessions will be streamed online.

Abstracts

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The way we were, the way we would like to be. Open science: a brief recap

Massimo Grassi
Friday, July 10th - 09.30

In this recap I will summarize the last 15 years of science: from the replication crisis (and its possible origins), to the practices that are now endorsed by the Open Science movement and community to improve the research standards. A brief glance towards some (possible) futures will be also given.

Open Research as a Quality Control Process

Marcus Munafò
Friday, July 10th - 10.40

There has been growing interest in the question of research quality in recent years, a situation amplified by the current COVID-19 pandemic. Here I argue that one benefit of adopting open research practices is that these act as an implicit quality control measure, which may serve to improve the quality of scientific outputs, and in turn the efficiency of the scientific process.

Building a more collaborative neuroimaging science

Camille Maumet
Friday, July 10th - 11.50

Neuroimaging is becoming increasingly open, effectively transforming the way we do science. But including open science practices in everyday research is still not straightforward. In this talk, I will discuss how recent neuroinformatics initiatives can help work more openly and how the research community can gather to work more collaboratively.
Brain research data and personal data privacy: practical tips to share and protect

Stephen Heunis
Friday, July 10th - 14.30

Personal data privacy and research data sharing seem, on the surface, to be at odds. On the one hand the European General Data Protection Regulation provides important regulations for protecting personal information to a high standard, something that we should uphold in multiple facets of life. On the other hand, current principles of transparency and reproducibility in research (in short, open science) suggests that we should publicly share the data underlying our scientific findings. This leaves us with a conundrum: how do we protect the individual's privacy, while allowing others to access and process their data? In this talk I will provide an overview of what has been done at several EU institutions to enable neuroimaging data sharing under GDPR. We will also look at the progress made with a collaborative and open project that aims to provide open templates and resources for informed consent forms, data anonymization techniques, data usage agreements, and more.

Pushing the Boundaries of Open Science at CERN

Kamran Naim
Friday, July 10th - 15.40

CERN, the European Organization for Nuclear Research, is the world's largest high-energy physics laboratory. The frontier research conducted at CERN has long embodied the values that have more recently come to be defined at the Open Science movement, which describes research and development that is collaborative, transparent and reproducible and whose outputs are publicly available (EU, 2018). Indeed these values were enshrined in 1953 in CERN's founding Convention, which states that “... the results of its experimental and theoretical work shall be published or otherwise made generally available,” providing the organization with an early Open Science manifesto. This presentation will provide an overview of CERN's activities to increase the accessibility, reuse and reproducibility of research in high energy physics, with a particular focus on the SCOAP3 program, which has transitioned 90% of literature in the discipline to Open Access, and a range of additional services, particularly relating to Open Data (CERN Open Data, REANA, CAP and Zenodo).
The effect of analytical choices on fMRI findings
Rotem Botvinik-Nezer
Friday, July 10th - 16.50

Have you ever wondered what would happen if 70 independent groups of researchers from around the world analyzed the same fMRI dataset to test the same hypotheses? In this talk, I will describe the Neuroimaging Analysis Replication and Prediction Study (NARPS; https://www.nature.com/articles/s41586-020-2314-9) and discuss the implications and potential solutions.

Why we should use Jupyter notebook in Medical Image Analysis
Serena Bonaretti
Saturday, July 11th - 9.30

I will introduce Jupyter notebook and explain why we should use it more in medical image analysis. In addition, I will mention my experience with it, how we are creating a Jupyter community in the MSK image analysis field, and how this could be translated to other communities.

Increasing the impact of your research by using rich, integrated and open-access communications
Vittorio Iacovella
Saturday, July 11th - 10.40

Communication of research outputs evolves, following both technological advancements and scientific demands. Once formal and static physical objects, research publications are currently combinations of text, code, data and several other digital products. Here I first introduce alternative ways to track the impact of your products (“alt-metrics”) in an open-access environment; then I show how to collect and integrate online different pieces of relevant information using twitter and twitter-related tools.
BIDS: a data standard to support the neuroimaging community

Guiomar Niso
Saturday, July 11th - 10.40

The Brain Imaging Data Structure (BIDS) is a community-led standard for organizing, describing and sharing neuroimaging data. Currently, it supports many neuroimaging modalities, such as MRI, MEG, EEG, iEEG and more to come. Multiple applications and tools have been released to make it easy for researchers to incorporate BIDS into their current workflows and to maximise data sharing opportunities (for example through OpenNeuro). This talk will share an overview of the BIDS current status and next stage of development. All Think Open Rovereto Workshop participants will be invited to share their priorities during the talk discussion.

brainlife.io: Advancing scientific discovery via cloud-based collaboration and open neuroscience methods.

Franco Pestilli
Saturday, July 11th - 14.30

Neuroscience is at the forefront of science by promoting research across traditional disciplinary boundaries. Transdisciplinary research can facilitate discovery by tackling scientific questions in novel ways and merging output from theoretical and experimental neuroscience, as well as computer science and engineering. As scientific practice changes, new mechanisms to facilitate discovery and ensure scientific reproducibility must be developed. Open software development and data sharing are an essential element of this process. We present brainlife.io, a platform that supports scientific collaboration, open neuroscience, and results reproducibility. A central mission of brainlife.io is to accelerate neuroscientific discovery by integrating automated data management, large-scale analyses, and data visualization using cloud computing technology.

brainlife.io has focused on magnetic resonance imaging (MRI) data and is financially supported by the National Science Foundation [USA]. It uses multiple cloud-based resources, including the computer clusters at Indiana University. brainlife.io can allow researchers worldwide to collaborate by supporting data organization and sharing (privately or publicly), as well as publishing analysis methods via reproducible cloud computing applications. Multiple faculty, postdocs, and students currently use brainlife.io in applications devoted to network neuroscience, human aging, traumatic brain injury, plasticity, and studies of cognition/perception. We are in the process of expanding brainlife.io’s functionality to support the storage and analysis of the electrical activity of the brain (recorded non-invasively and invasively) so that these data can co-exist with MRI data within a single integrative ecosystem. This is an essential next step in transdisciplinary neuroscientific research.
Sequential analyses on open datasets: problems and possible solutions.
William Hedley Thompson
Saturday, July 11th - 15.40

Open data allows researchers to explore pre-existing datasets in new ways. However, if many researchers reuse the same dataset, multiple statistical testing may increase false positives. I will discuss that sequential hypothesis testing on the same dataset by multiple researchers can inflate error rates. After that, I will discuss a number of correction procedures that can reduce the number of false positives, and the challenges associated with these correction procedures.

Building next-generation preprocessing pipelines: the fMRIPrep experience
Oscar Esteban
Saturday, July 11th - 16.50

The NiPreps (NeuroImaging PREProcessing tools; www.nipreps.org) framework is an extension of the fMRIPrep design to new data modalities (e.g., diffusion MRI) and populations (e.g., rodent imaging, or infant cohorts). This session will cover the aspects that have made fMRIPrep a popular tool and identify those that are key to set up the foundations for next-generation neuroimaging analyses.