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# Open research: linking the bits and pieces with OpenAIRE-connect

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## Introduction

Open research is growing in neuroimaging. The community — supported by funders who want best use of public funding but also by the general public who wants more transparent and participatory research practices — is constantly expanding online resources including: data (e.g. [1–3]), code (e.g. [4]), materials (e.g. [5]), tutorials, etc. This trend will likely amplify in the future and is also observed in other areas of experimental sciences. Open resources are typically deposited in dedicated repositories that are tailored to a particular type of artefact (e.g. [6,7]). While this is best practice, it makes it difficult to get the big picture: artefacts are scattered across the web in a multitude of databases. Although one could claim that the publication is here to link all related artefacts together, it's not machine-readable and does not allow searching for artefacts using filters (e.g. all datasets created in relation with a given funder). Here, we present OpenAIRE-connect, an overlay platform that links together research resources stored on the web: <https://beta.ni.openaire.eu/>.

## Methods

Within the OpenAIRE-connect project, we developed, set up and made available an online dashboard to:

- Search: Look for research artefacts by funder, project, publication date, access mode, type, language, content provider or free text.
- Share: Deposit research artefacts (publication, code, data, etc.) in relevant existing repositories (e.g. institutional archives for publications; Zenodo for code)
- Monitor: View statistics about open research artefacts by type and funders.

Additionally logged in users can:

- Link: Select existing research artefacts, funders and/or communities and link them together.

Additionally administrators can:

- Customize display of the dashboard
- Specify content providers.

Source code:

<https://svn-public.driver.research-infrastructures.eu/driver/dnet40/modules/ua-connect-portal/trunk>

## Results

The portal is currently released in beta (<https://beta.ni.openaire.eu/>) and contains a total of: 22 060 publications, 789 datasets, 86 software, 1 735 other research products, 9 projects and is linked to 6 content providers.

### Use case 1: linking artefacts related to a publication

It is more and more widespread among researchers to release analysis code and the datasets that were used in a publication. With OpenAIRE, authors can link those together and have a single entry point for all the publication resources (cf. fig. 1).

### Use case 2: searching for artefacts related to a funded project

Researchers are often asked to write up report summarizing all the research outputs generated by a funded project. With OpenAIRE-connect they can have a single page summary where all contents related to a certain project can be found easily and quickly (e.g. fig. 1 includes a report for the project entitled "Enhancement of the 1000 Functional Connectome project").

## A. Publication Page

Neuroinformatics SEARCH MONITOR SHARE LINK XAVIER ROLLAND

### Objective Evaluation of Multiple Sclerosis Lesion Segmentation using a Data Management and Processing Infrastructure

Unknown, Preprint OPEN

Santos Wellington P; Istace Audrey; Mahbod Amirreza; Roura Eloy; Tomas-Fernandez Xavier; Wagner Franca; Styner Martin; Tourdias Thomas; Muschelli John; Malpica Norberto; Edan Gilles; Kerbrat Anne; Glatard Tristan; Camarasu-Pop Sorina; Girard Pascal; Bloch Isabelle; Cervenansky Frédéric; Dojat Michel; Yukusic Sandra; Barillot Christian; Doyle Senan; Farbes Florence; Laurent Baptiste; Simon Mathieu; Sweeney Elizabeth; Santos Michel M; Cotton Francois; McKinley Richard; Llado Xavier; Valverde Sergi ... [view all 45 authors](#) (2018)

**Publisher:** Cold Spring Harbor Laboratory

**Related identifiers:** doi: 10.1101/367557

**Subject:** open science | [ SDV.IB ] Life Sciences [q-bio]/Bioengineering | Image segmentation | Multiple sclerosis | [ SDV.NEU ] Life Sciences [q-bio]/Neurons and Cognition [q-bio.NC] | computing infrastructure | performance evaluation | distributed computing

We present a study of multiple sclerosis segmentation algorithms conducted at the international MICCAI 2016 challenge. This challenge was

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Download from

- 2018 via [scholExplorer](#) (Unknown) ?
- Hyper Article en Ligne via [Hyper Article en Ligne](#) (Preprint, 2018) 🔒
- Cold Spring Harbor Laboratory ?

**Link a publication to related contents (research results, projects, communities)**

Link this publication to...

Other research results

## B. Project Page

Neuroinformatics SEARCH MONITOR SHARE LINK XAVIER ROLLAND

### Enhancement of the 1000 Functional Connectome Project (1R03MH096321-01A1)

Project NIH

**Funding:** NATIONAL INSTITUTE OF MENTAL HEALTH

**Start Date:** 2012-01-16

**End Date:** 2013-11-30

**Open Access mandate for Publications:** no

**Open Access mandate for Research Data:** no

**Organization:** NATHAN S. KLINE INSTITUTE FOR PSYCH RES

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Application Box

Publications Research Data

- <> Include in your site (HTML)
- ≡ Get NIH report (HTML)
- ↓ Get NIH report (CSV)
- ↑ Deposit

Link this project to...

**List of resources (Publications, Software, Research Data, etc) generated by the project**

Publications (8)

Sex differences in structural organization of motor systems and their dissociable links with repetitive/restricted behaviors in children with autism

Supekar, Kaustubh; Menon, Vinod; (2015)

Unknown, Article English OPEN

Project: NIH | Translational Development... (1K23MH087770-01), NIH | Mathematical Cognition In... (5R01MH084164-05), NIH | Enhancement of the 1000 F... (1R03MH096321-01A1)

Fig. 1: Example of pages on the OpenAIRE-connect portal: publication page (A) and project page (B).

<https://docs.google.com/drawings/d/10aVBbXI-p1WsmGi5ovHubVo3UQmeqN7G-HOnTaOV9TM/edit?usp=sharing>

### Use case 3: adding new artefacts to the portal

The neuroinformatics portal on OpenAIRE lists all the research artefacts related to the neuroscience community. With OpenAIRE, users can add artefacts to a community. To do so, they can either use the resource page and add a link with the community (similarly to the procedure used to link related content as shown on fig. 1), or they can go to the link page, where they first choose a community and then search for the resource they want to link to these communities (fig. 2)

Once an artefact has been added to a community, it can be accessed through the community's search engine, which also allows them to filter the data they are looking for by specific criteria (year of publication, language, etc) (fig. 2).

## A. Search Page

Neuroinformatics SEARCH MONITOR SHARE LINK XAVIER ROLLAND

Advanced search

Search for Publications

↓ (CSV) **Filters**

**Funder (20)**

- National Institu... (2,405)
- Wellcome Trust (1,114)
- European Com... (689)
- Research Coun... (307)
- National Scienc... (294)

[View more](#)

**Project (99+)**

- Alzheimers Dis... (107)
- CORE-- CLINICAL (53)
- fMR Morphome... (49)
- Core support fo... (42)
- HBP (41)

Results in OpenAIRE →

Results per page: 10

Sort by: Relevance

22,887 publications, page 1 of 2,289

1 2 3 4 5 >

**Activation and connectivity patterns of the presupplementary and dorsal premotor areas during free improvisation of melodies and rhythms**

Article English OPEN

de Manzano, Órjan; Ullén, Fredrik; (2012)

Abstract Free, i.e. non-externally cued generation of movement sequences is fundamental to human behavior. We have earlier hypothesized that the dorsal premotor cortex (PMD), which has been consistently implicated in cognitive aspects of planning and selection of spat...

**Inferring changepoint times of medial temporal lobe morphometric change in preclinical Alzheimer's disease**

## B. Link Page

Neuroinformatics SEARCH MONITOR SHARE LINK XAVIER ROLLAND

## Link your research results

1 Select Projects or Communities 2 Select Research Results 3 Review metadata

< Previous Next >

Search for research results

in OpenAIRE Title, doi, author, orcid...

Search

Or

Upload a DOI csv file

Select a file: Select

Fig. 2: Search page where users can browse and filter publications (A). Link page where users can associate a resource to other resources (e.g. a paper to analysis code) (B).

[https://docs.google.com/drawings/d/1LswnTOldMb2kLykcqwnEv2U6fVNF6aXhTHG3N\\_Jh4gs/edit?usp=sharing](https://docs.google.com/drawings/d/1LswnTOldMb2kLykcqwnEv2U6fVNF6aXhTHG3N_Jh4gs/edit?usp=sharing)

## Conclusions

We have introduced OpenAIRE-connect, a new overlay platform to: search, share, monitor and link open research resources. We hope that this platform will support researchers and funders in getting a better understanding of the open resources landscape and that, in the future, this will lead to more data reuse and collaborative research.

## Acknowledgments

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