Research Software Directory

Dr. Jason Maassen
Netherlands eScience Center

ESCAPE-OSSR Meeting
15/06/2023

netherlands eScience center

National center for the development and application of research software

Founded in 2012 by NWO and SURF

Science Park Amsterdam

netherlands eScience center

~270 projects

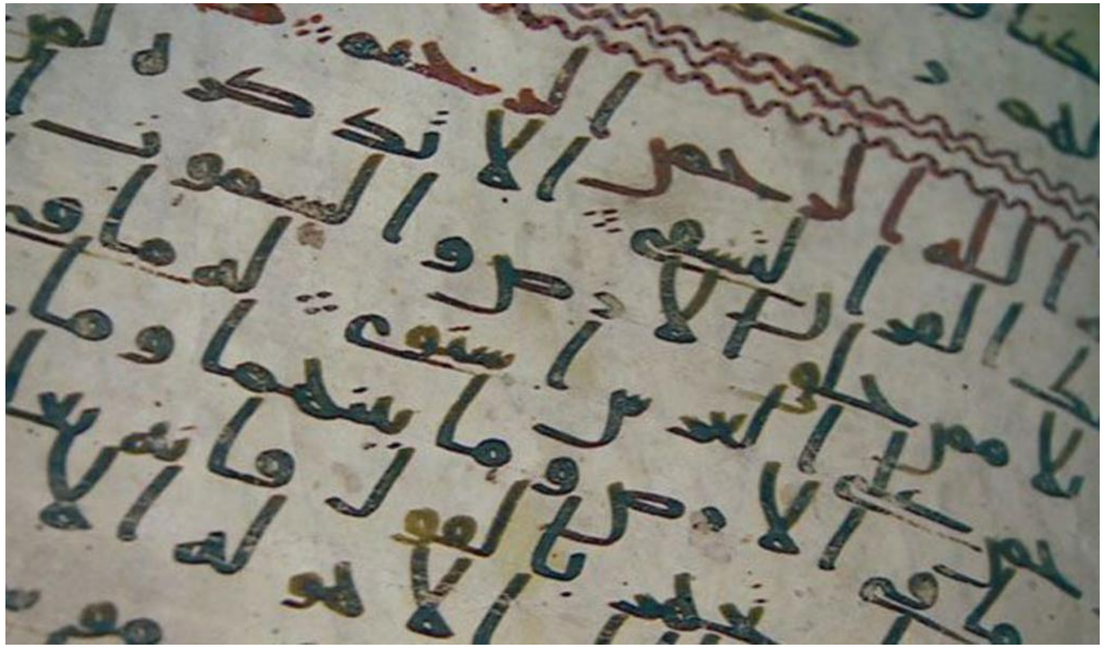
(on many different topics)

Astronomy: fast radio bursts

In collaboration with ASTRON & UvA

Digital Humanities: Arabic-Islamic corpus

In collaboration with Utrecht University



https://research-software-directory.org/organisations/netherlands-escience-center

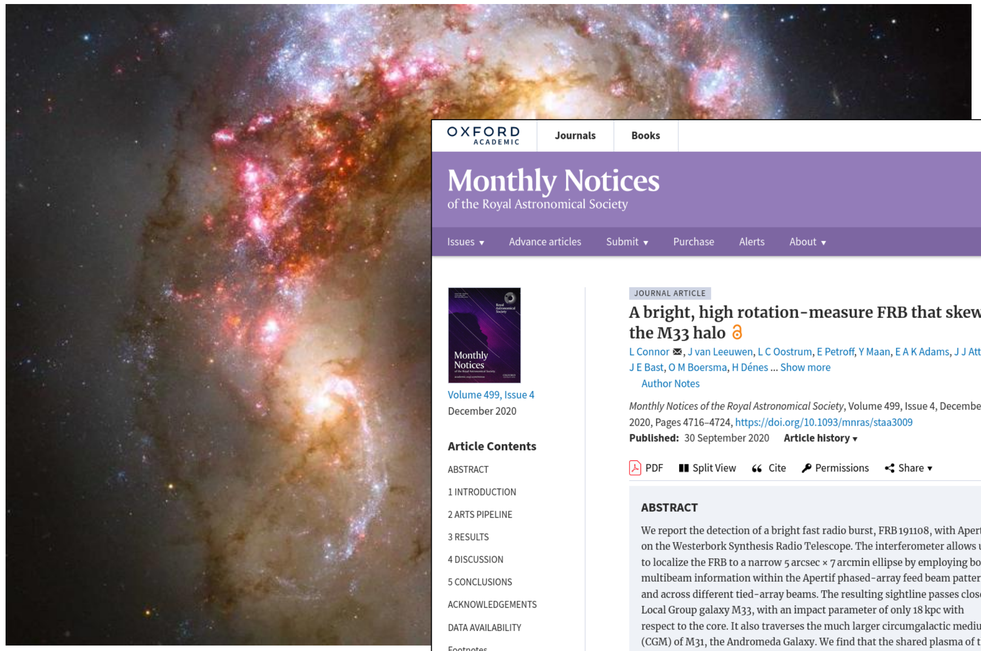
netherlands eScience center

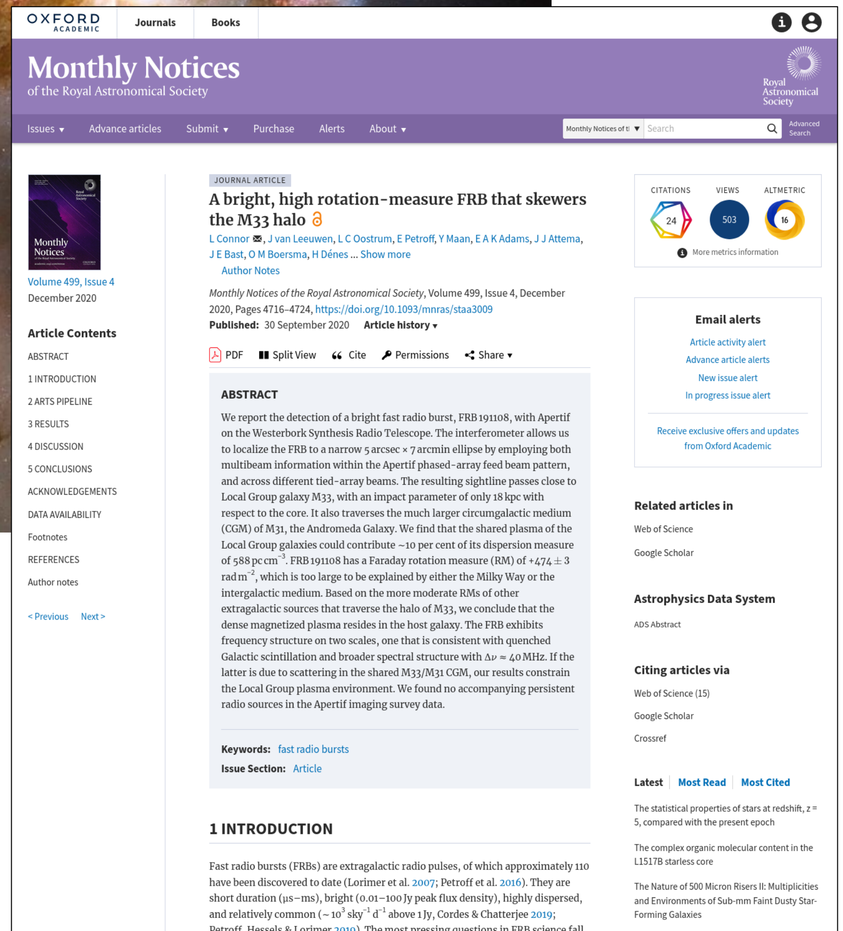
~270 projects

(on many different topics)

Astronomy: fast radio bursts

In collaboration with ASTRON & UvA





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Monthly Notices of the Royal Astronomical Society

Royal Astronomical Society

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Volume 499, Issue 4
December 2020

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2 ARTS PIPELINE
3 RESULTS
4 DISCUSSION
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DATA AVAILABILITY
Footnotes
REFERENCES
Author notes

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JOURNAL ARTICLE

A bright, high rotation-measure FRB that skewers the M33 halo

L Connor ✉, J van Leeuwen, L C Oostrum, E Petroff, Y Maan, E A K Adams, J J Attema, J E Bast, O M Boersma, H Dénes ... Show more
Author Notes

Monthly Notices of the Royal Astronomical Society, Volume 499, Issue 4, December 2020, Pages 4716–4724, https://doi.org/10.1093/mnras/staa3009
Published: 30 September 2020 **Article history** ▾

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ABSTRACT

We report the detection of a bright fast radio burst, FRB 191108, with Apertif on the Westerbork Synthesis Radio Telescope. The interferometer allows us to localize the FRB to a narrow 5 arcsec × 7 arcmin ellipse by employing both multibeam information within the Apertif phased-array feed beam pattern, and across different tied-array beams. The resulting sightline passes close to Local Group galaxy M33, with an impact parameter of only 18 kpc with respect to the core. It also traverses the much larger circumgalactic medium (CGM) of M31, the Andromeda Galaxy. We find that the shared plasma of the Local Group galaxies could contribute ∼10 per cent of its dispersion measure of 588 pc cm^{-3}. FRB 191108 has a Faraday rotation measure (RM) of +474 ± 3 rad m^{-2}, which is too large to be explained by either the Milky Way or the intergalactic medium. Based on the more moderate RMs of other extragalactic sources that traverse the halo of M33, we conclude that the dense magnetized plasma resides in the host galaxy. The FRB exhibits frequency structure on two scales, one that is consistent with quenched Galactic scintillation and broader spectral structure with $\Delta\nu \approx 40$ MHz. If the latter is due to scattering in the shared M33/M31 CGM, our results constrain the Local Group plasma environment. We found no accompanying persistent radio sources in the Apertif imaging survey data.

Keywords: fast radio bursts
Issue Section: Article

1 INTRODUCTION

Fast radio bursts (FRBs) are extragalactic radio pulses, of which approximately 110 have been discovered to date (Lorimer et al. 2007; Petroff et al. 2016). They are short duration (μs–ms), bright (0.01–100 Jy peak flux density), highly dispersed, and relatively common (∼ 10^3 sky^{-1} d^{-1} above 1 Jy, Cordes & Chatterjee 2019; Petroff, Hessels & Lorimer 2019). The most pressing questions in FRB science fall

CITATIONS 24 | VIEWS 503 | ALTMETRIC 16
More metrics information

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Article activity alert
Advance article alerts
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Related articles in
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Google Scholar

Astrophysics Data System
ADS Abstract

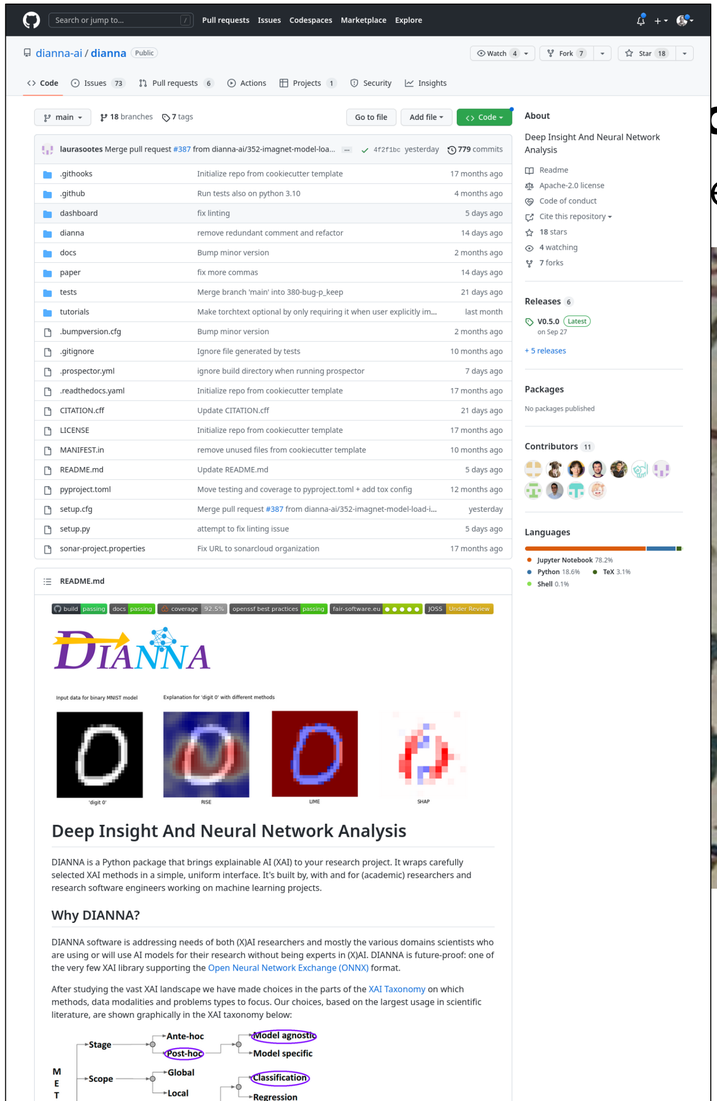
Citing articles via
Web of Science (15)
Google Scholar
Crossref

Latest | Most Read | Most Cited

The statistical properties of stars at redshift, z = 5, compared with the present epoch

The complex organic molecular content in the L1517B starless core

The Nature of 500 Micron Risers II: Multiplicities and Environments of Sub-mm Faint Dusty Star-Forming Galaxies



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dianna-ai / dianna Public

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Code | Issues 73 | Pull requests 6 | Actions | Projects 1 | Security | Insights

main | 18 branches | 7 tags | Go to file | Add file | Code

laurasootes Merge pull request #387 from dianna-ai/352-imagnet-model-loa... 4f2f1bc yesterday 779 commits

.githooks	Initialize repo from cookiecutter template	17 months ago
.github	Run tests also on python 3.10	4 months ago
dashboard	fix linting	5 days ago
dianna	remove redundant comment and refactor	14 days ago
docs	Bump minor version	2 months ago
paper	fix more commas	14 days ago
tests	Merge branch 'main' into 380-bug-p_keep	21 days ago
tutorials	Make torchtext optional by only requiring it when user explicitly im...	last month
.bumpversion.cfg	Bump minor version	2 months ago
.gitignore	Ignore file generated by tests	10 months ago
.prospector.yml	ignore build directory when running prospector	7 days ago
.readthedocs.yaml	Initialize repo from cookiecutter template	17 months ago
CITATION.cff	Update CITATION.cff	21 days ago
LICENSE	Initialize repo from cookiecutter template	17 months ago
MANIFEST.in	remove unused files from cookiecutter template	10 months ago
README.md	Update README.md	5 days ago
pyproject.toml	Move testing and coverage to pyproject.toml + add tox config	12 months ago
setup.cfg	Merge pull request #387 from dianna-ai/352-imagnet-model-load-i...	yesterday
setup.py	attempt to fix linting issue	5 days ago
sonar-project.properties	Fix URL to sonarcloud organization	17 months ago

About
Deep Insight And Neural Network Analysis
Readme
Apache-2.0 license
Code of conduct
Cite this repository
18 stars
4 watching
7 forks

Releases 6
v0.5.0 Latest on Sep 27
+ 5 releases

Packages
No packages published

Contributors 11

Languages
Jupyter Notebook 78.2%
Python 18.6%
TeX 3.1%
Shell 0.1%

README.md

DIANNA

Input data for binary MNIST model | Explanation for 'digit 0' with different methods

'digit 0' | RISE | LIME | SHAP

Deep Insight And Neural Network Analysis

DIANNA is a Python package that brings explainable AI (XAI) to your research project. It wraps carefully selected XAI methods in a simple, uniform interface. It's built by, with and for (academic) researchers and research software engineers working on machine learning projects.

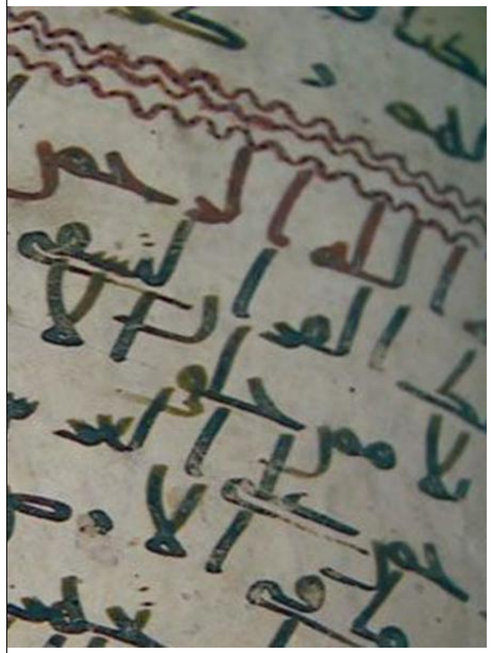
Why DIANNA?

DIANNA software is addressing needs of both (X)AI researchers and mostly the various domains scientists who are using or will use AI models for their research without being experts in (X)AI. DIANNA is future-proof: one of the very few XAI library supporting the Open Neural Network Exchange (ONNX) format.

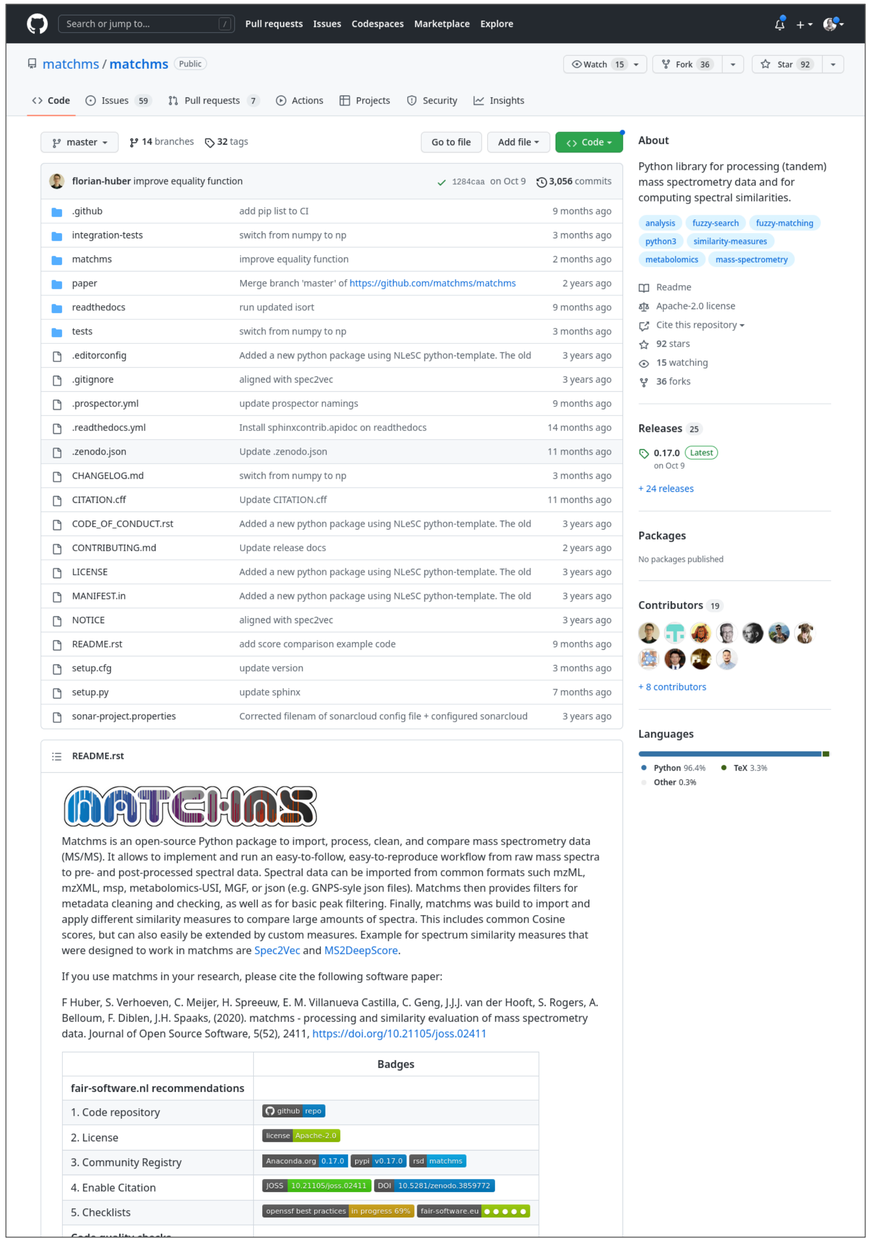
After studying the vast XAI landscape we have made choices in the parts of the XAI Taxonomy on which methods, data modalities and problems types to focus. Our choices, based on the largest usage in scientific literature, are shown graphically in the XAI taxonomy below:

c-Islamic corpus

echt University



Our role in the Research Software landscape



Our main contribution to research and main output as an institute is **research software**.

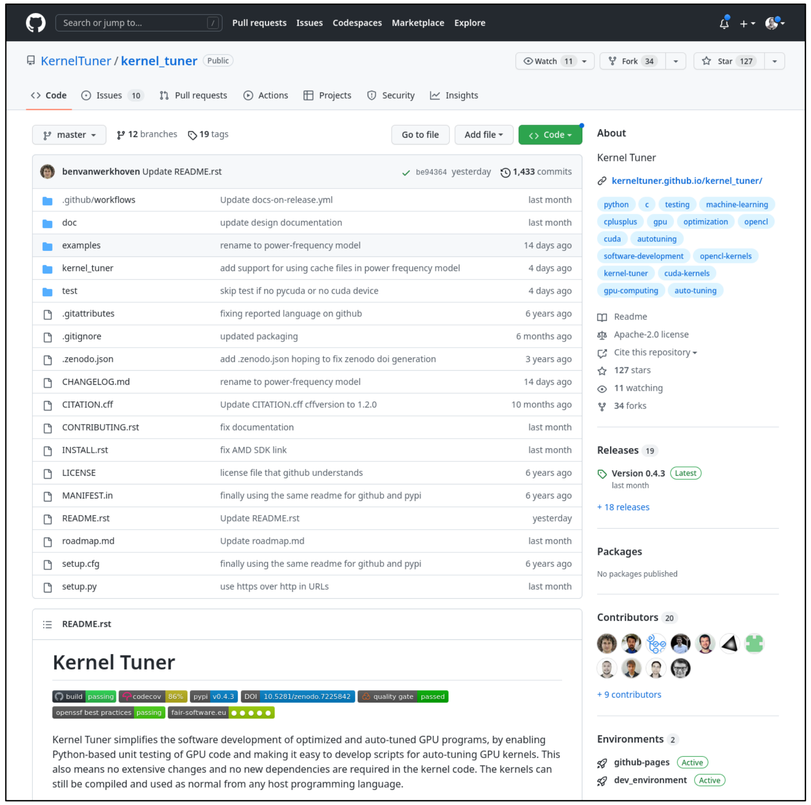
Broad impact, re-use, sustainability and proper credit and recognition of research software is very important to us!

Therefore, we are actively involved in:

- Best practices guidelines (Turing way)
- Digital skills training (Software Carpentry)
- FAIR software principles
- Software citation & metadata
- Software Management Plans
- Improving funding of research software
- **Research Software Directory**

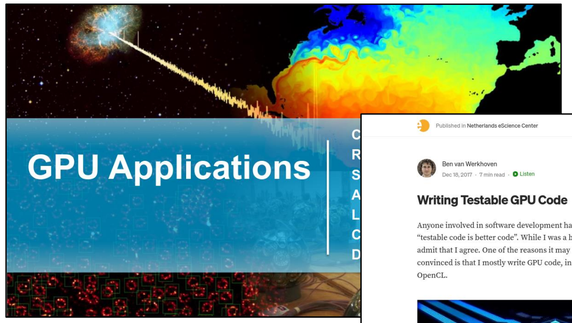
Research Software Directory?

Research software is an essential output of research projects

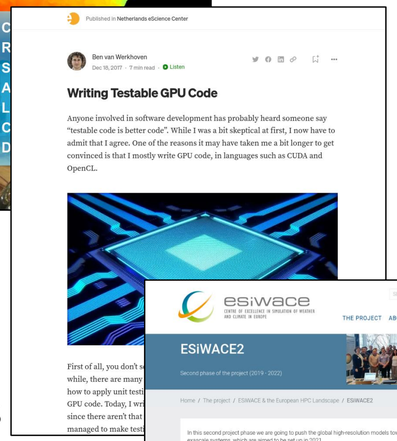


https://github.com/KernelTuner/kernel_tuner

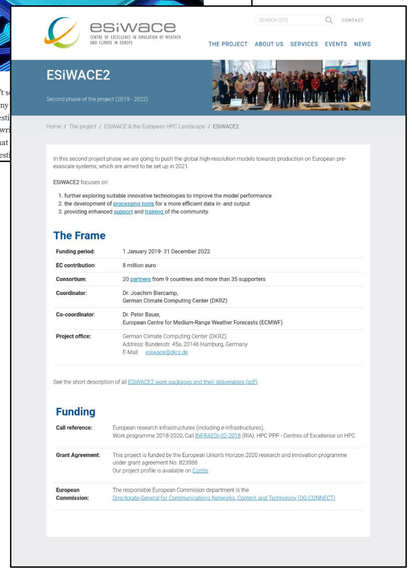
Research software has context



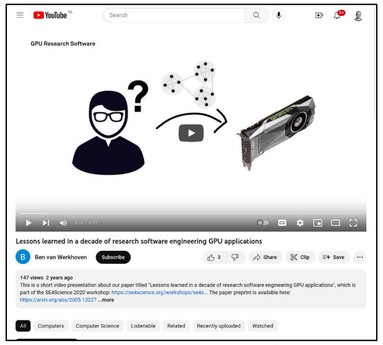
presentations



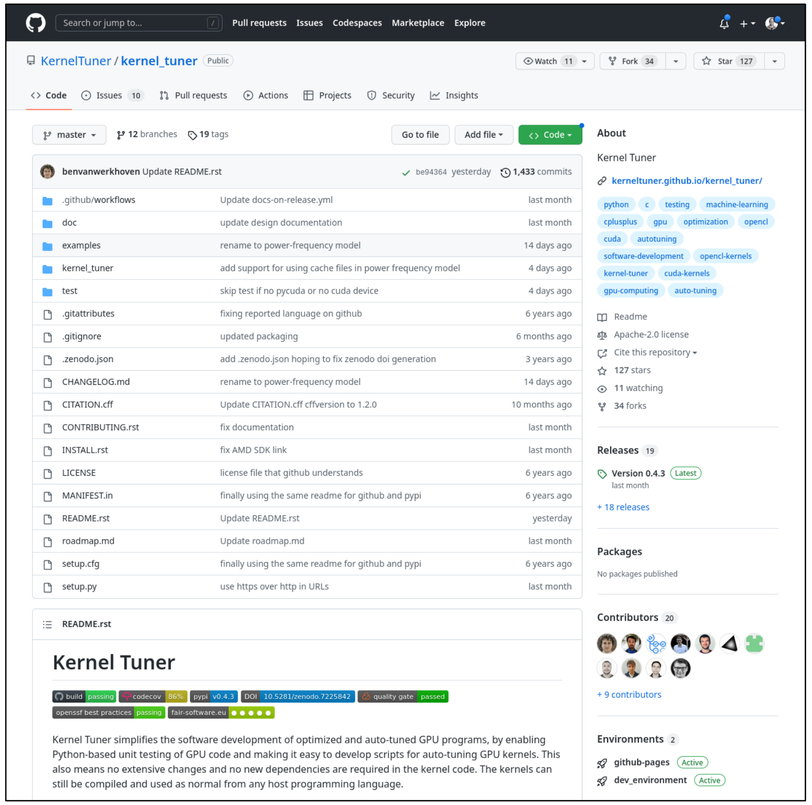
blogs



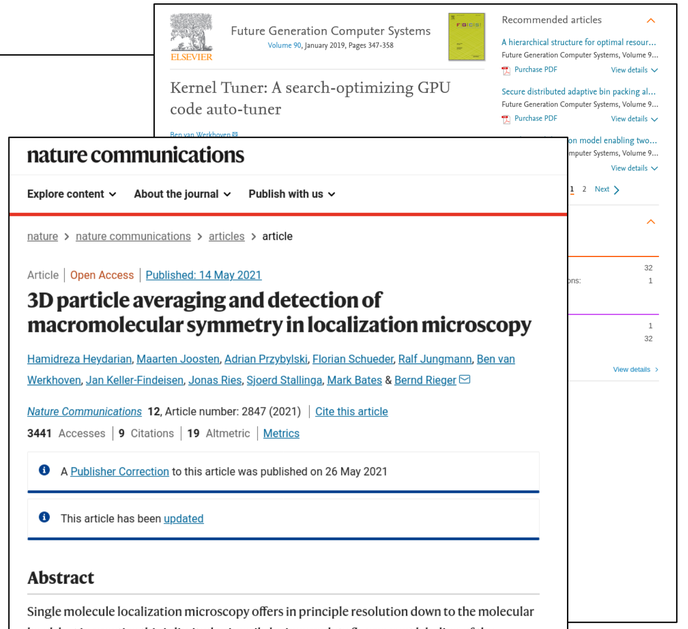
projects



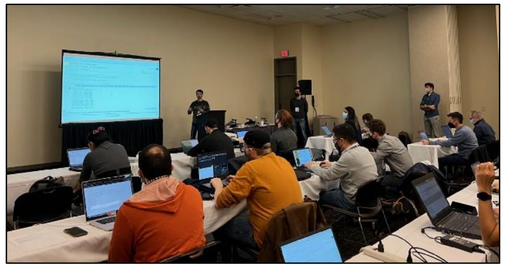
videos



https://github.com/KernelTuner/kernel_tuner

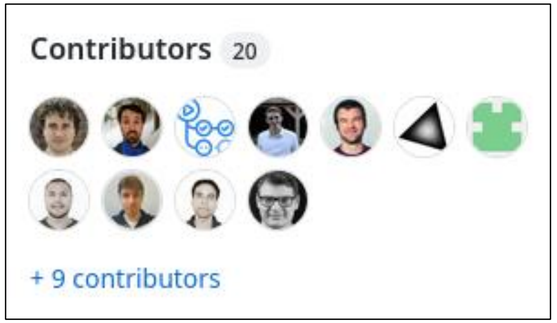


publications

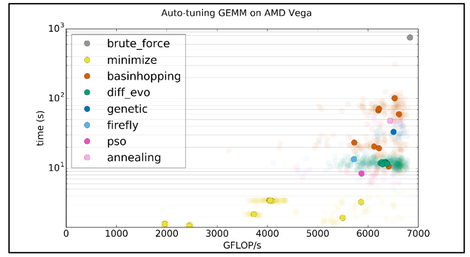


tutorials

participating organizations

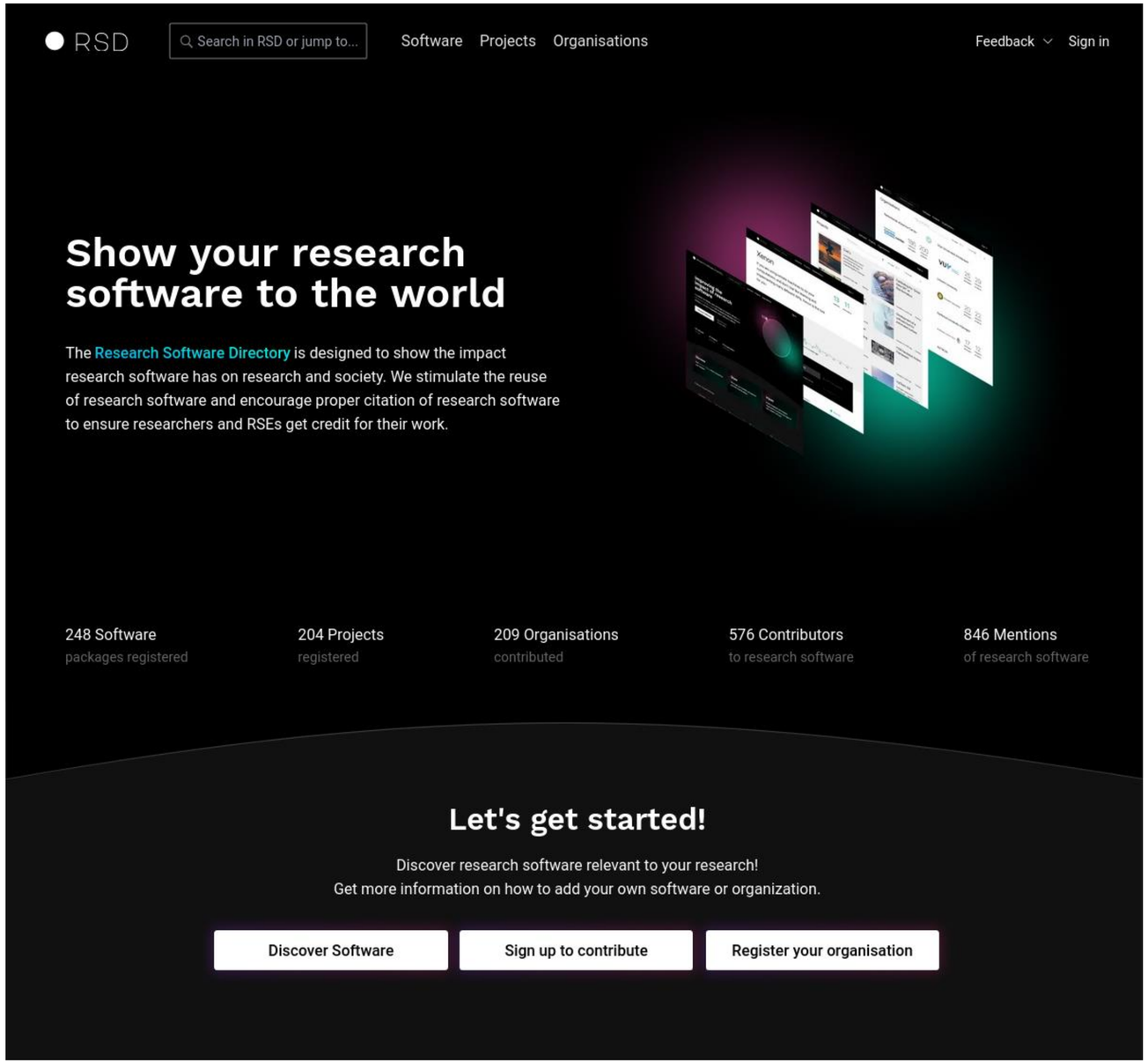


RSEs & other contributors



datasets

The Research Software Directory



The Research Software Directory is an **online service** designed to **collect** and **present** this web of information in a structured way.

Enable RSEs to show the impact their software has in research and society

Help researchers to find research software they need to do their research

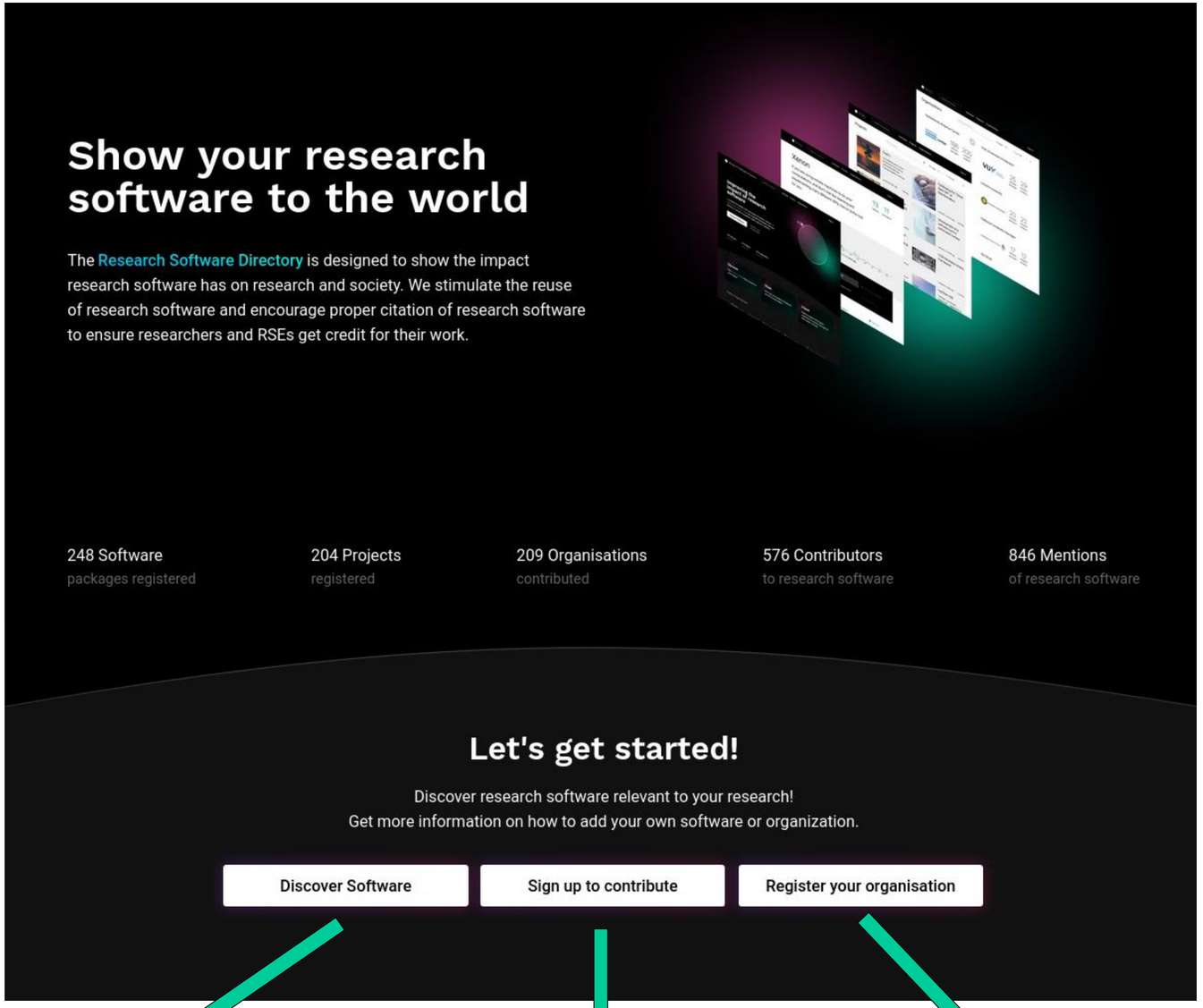
Encourage citation of research software in other research outputs.

Allow organisations to collect information about the research software they produce and its impact

netherlands eScience center

HIFIS HELMHOLTZ FEDERATED IT SERVICES

Join the Research Software Directory



browse content as visitor

sign up as a developer / team

sign up as organisation

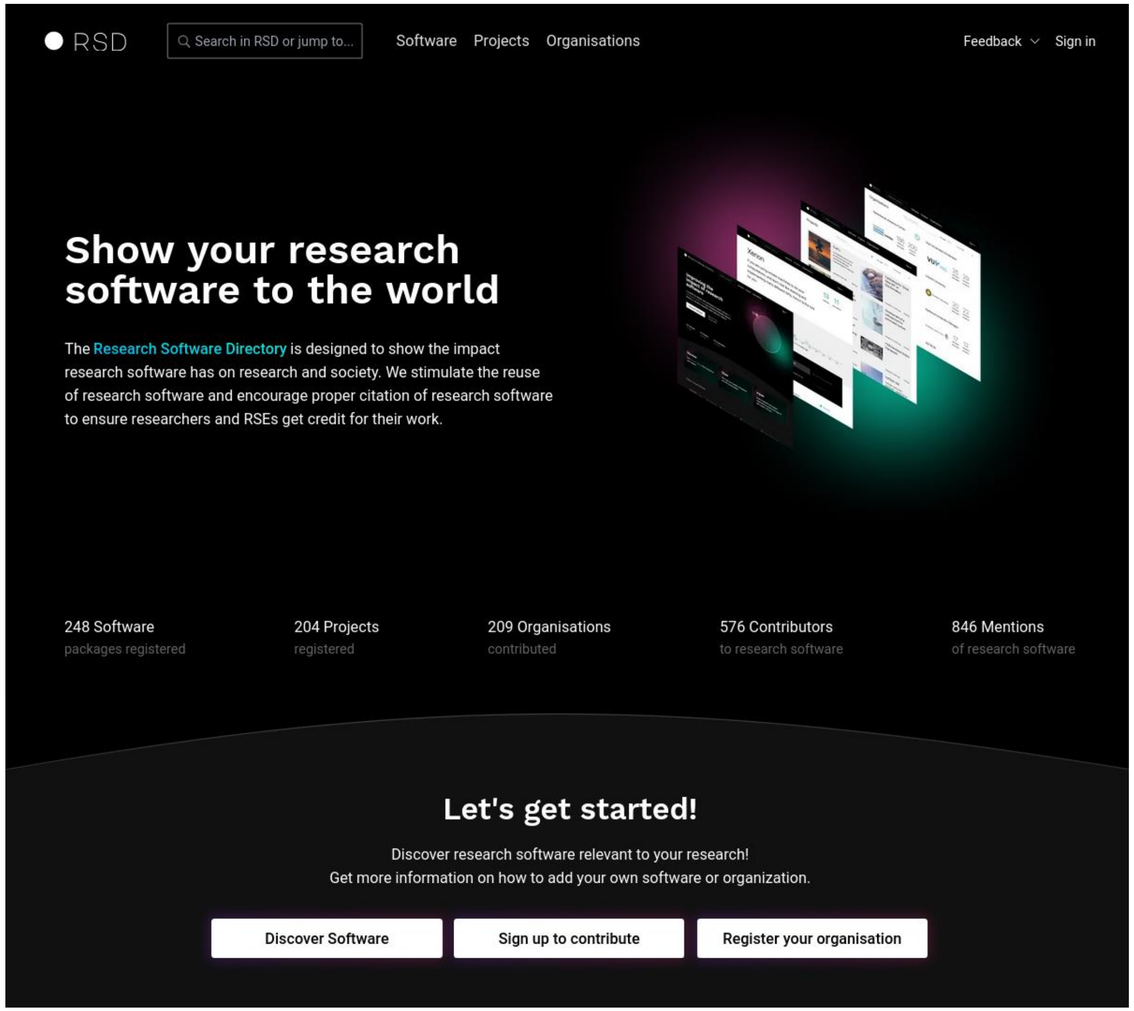
You are welcome to:

- browse content
- sign up as an individual / team
- sign up as an organization
- add your own software
- join the open source development

https://research-software-directory.org

rsd@esciencecenter.nl

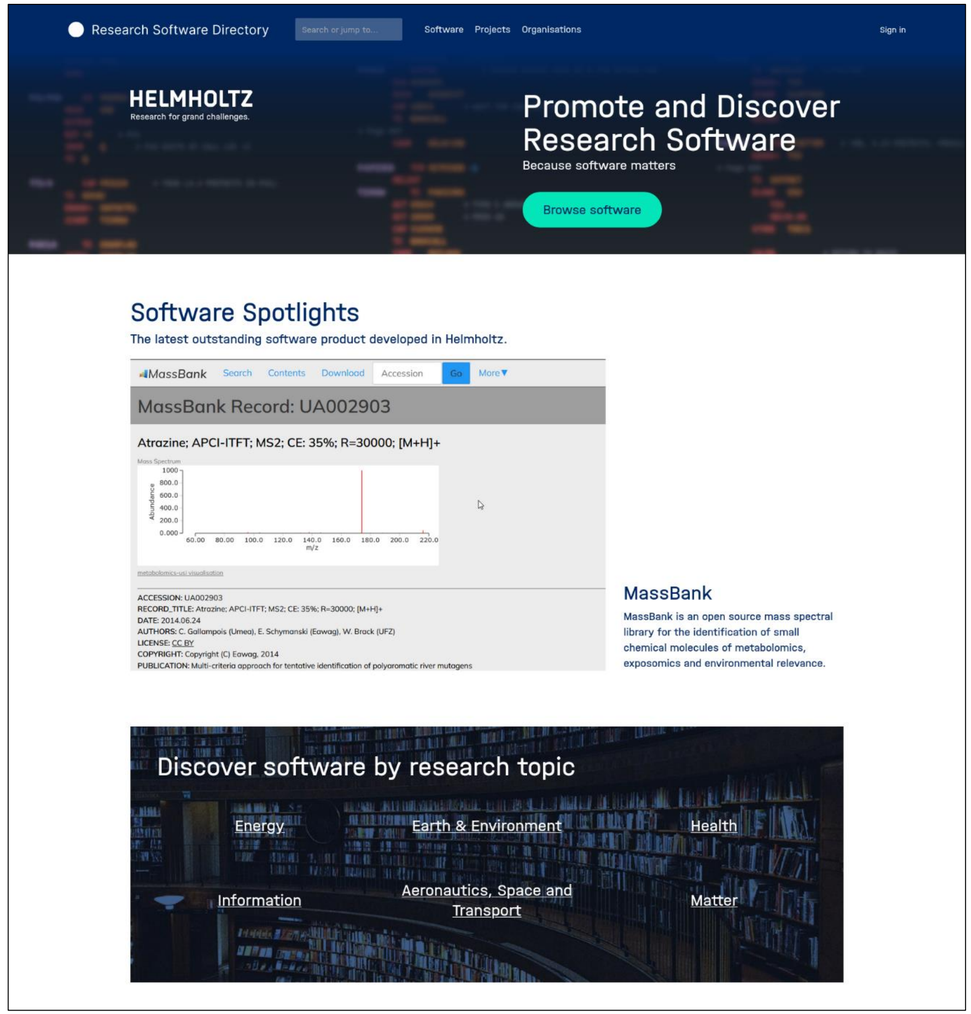
Research Software Directory = Open Source



https://research-software-directory.org

7/7/2022 Launched by eScience Center

Used by 8 Dutch research institutes + several international



https://helmholtz.software

29/7/2022 Launch by Helmholtz

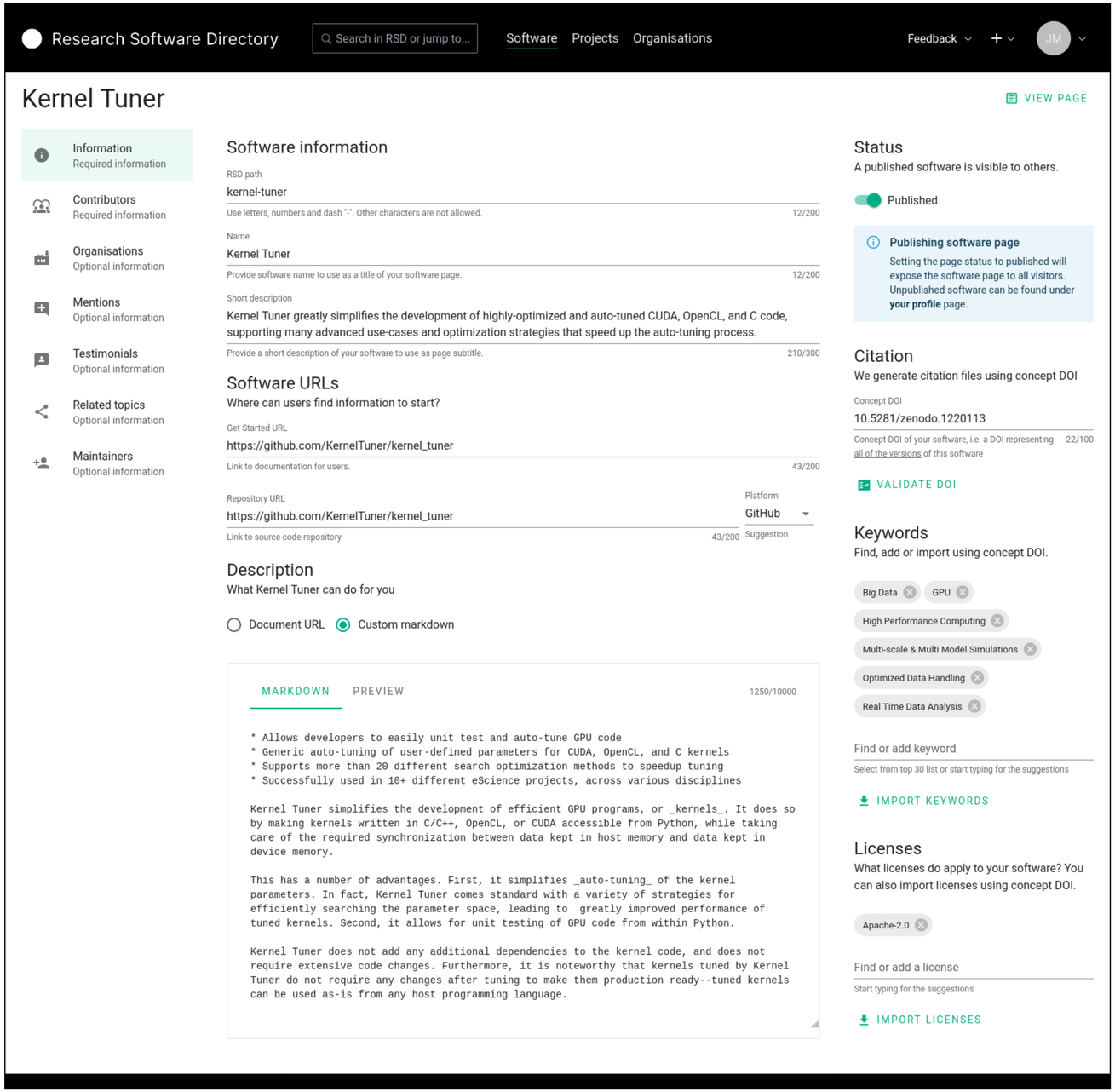
Available to all Helmholtz Institutes

netherlands eScience center

open source and shared codebase at:
https://github.com/research-software-directory/RSD-as-a-service

HIFIS HELMHOLTZ FEDERATED IT SERVICES

User friendly data curation interface



Free to use for RSEs and researchers

- sign-in via SURFConext, ORCID (or Helmholtz AAI)

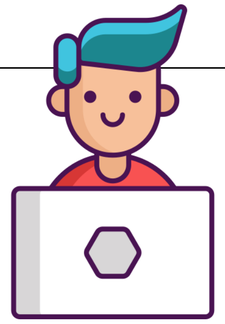
Collect all related information on software in one place

Easy to use without extensive technical knowledge

We automatically **harvest** data where possible

- Contributors via ORCID / DOI+CFF
- Organisations via ROR
- Keywords & licences from DOI
- Releases & mentions via DOI
- Descriptions via source repository in gitlab/github

Many data sources + automatic harvesting



GitHub

GitLab

development info
programming languages
license information
commit activity
README.md

basic information
software name
short description
relevant links & PIDs
testimonials
contributor roles

ROR

organization info
organization name
website URL
role, address, etc.

Research Software Directory

contributor info
contributor name
affiliation

ORCID
Connecting Research and Researchers

export metadata
(software releases)

OpenAIRE

software metadata
versions
contributors
keywords
license

CFF

zenodo

publication metadata
title
authors
publisher

DataCite
FIND, ACCESS, AND REUSE DATA

Crossref

usage data
downloads
reverse dependencies

python Package Index

docker

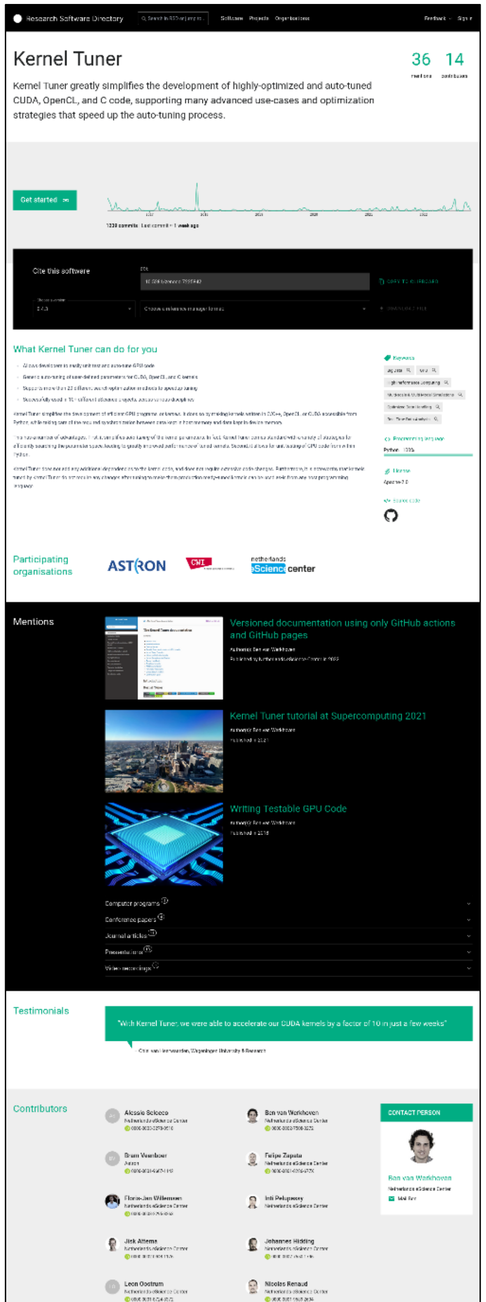
R

ANACONDA.

Maven

npm

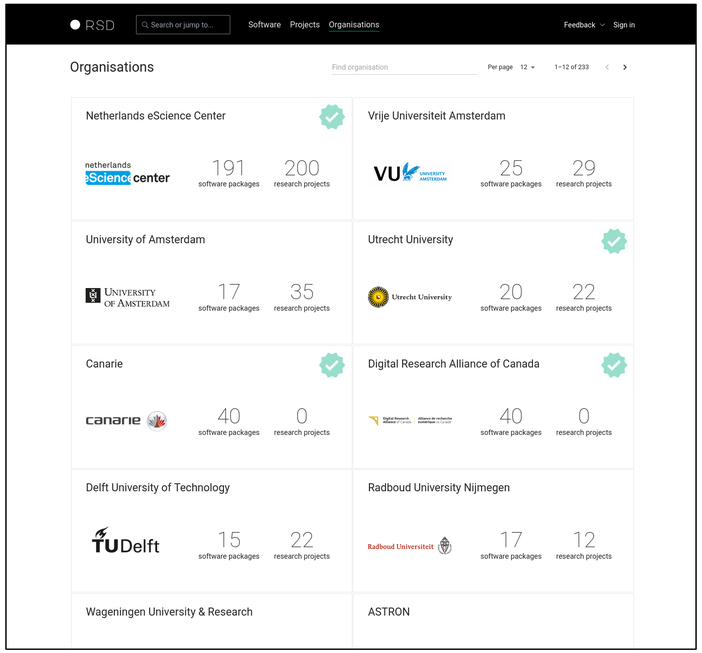
Generated software pages (& project pages)



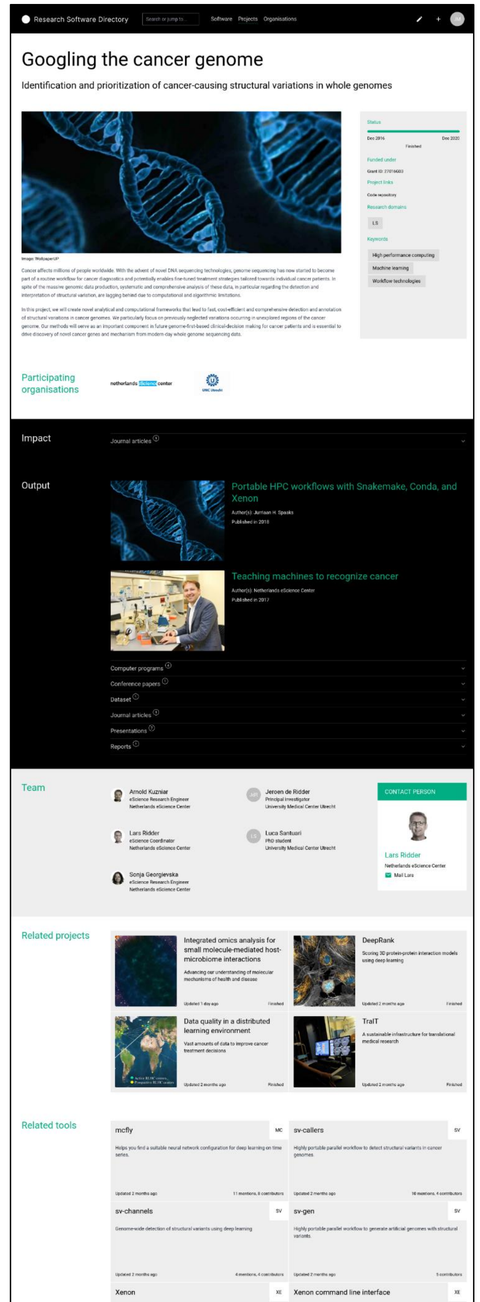
generated software pages

generated project pages

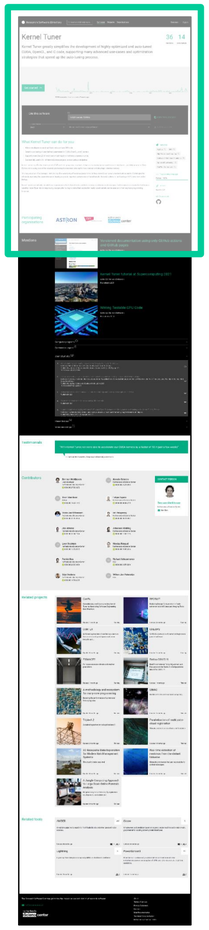
generated organisation pages



generated metrics? (TODO)



Basic information

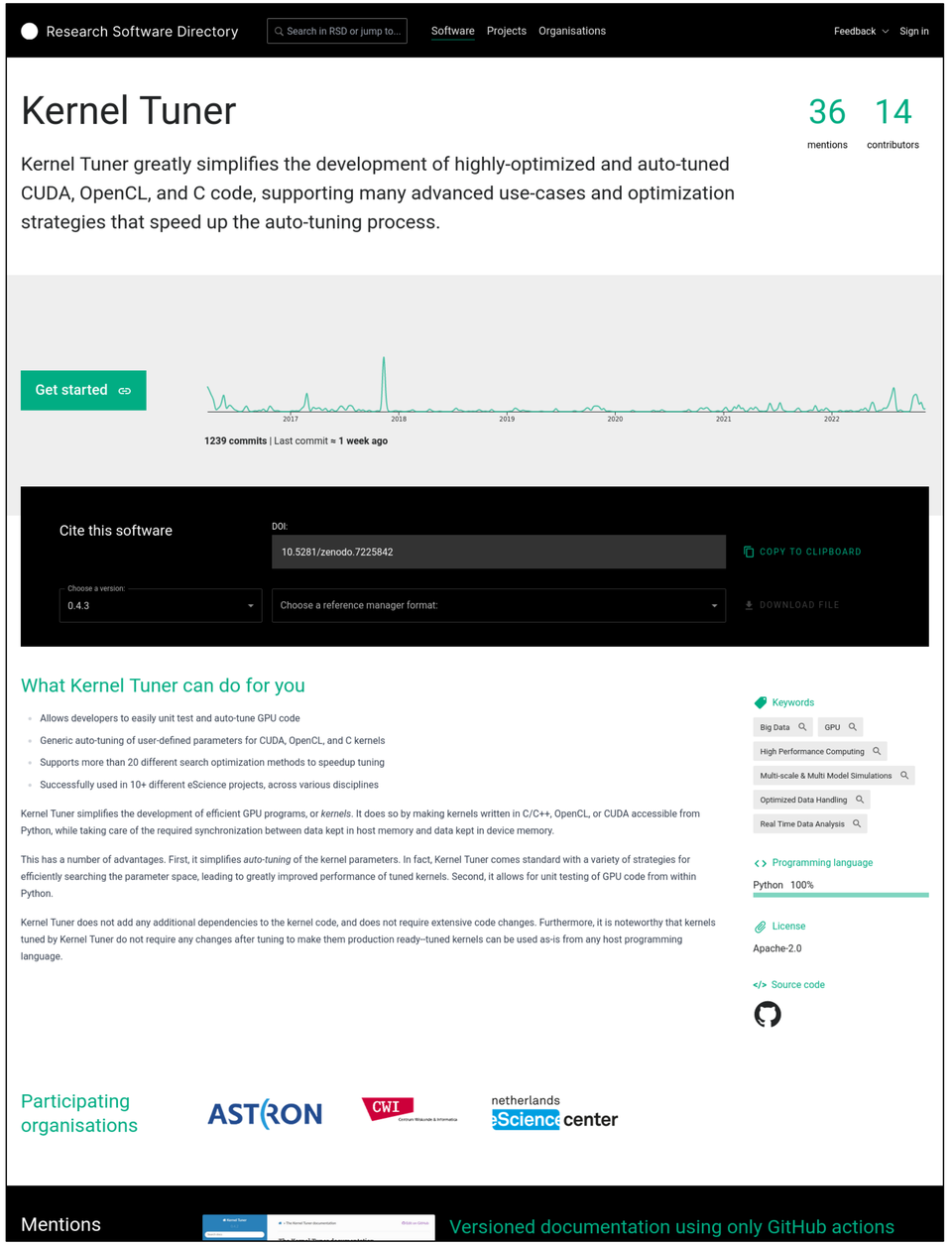


full page

name & description

getting started link
(to external webpage)

detailed description



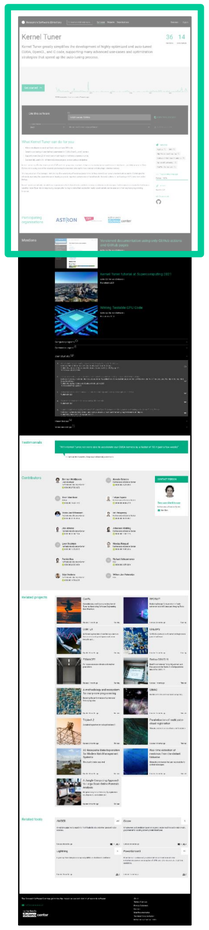
keywords

used programming languages & license

source code repository link

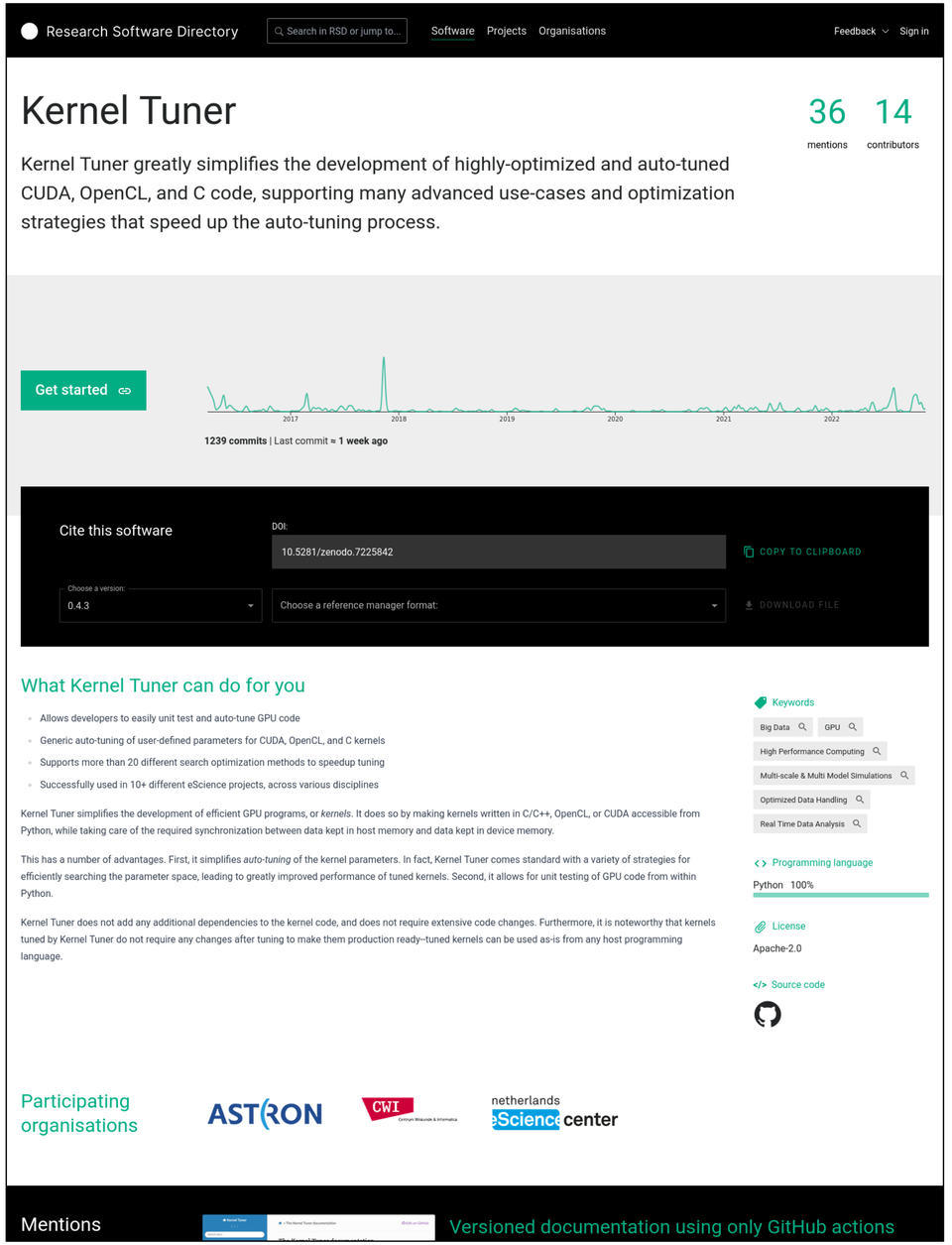
https://research-software-directory.org/software/kernel-tuner

Community, development activity



full page

participating organizations

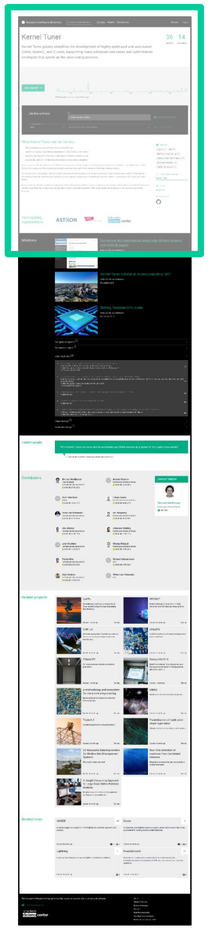


https://research-software-directory.org/software/kernel-tuner

contributor and mention count

development activity

Citation information



full page

Research Software Directory | Search in RSD or jump to... | Software | Projects | Organisations | Feedback | Sign in

Kernel Tuner

36 mentions 14 contributors

Kernel Tuner greatly simplifies the development of highly-optimized and auto-tuned CUDA, OpenCL, and C code, supporting many advanced use-cases and optimization strategies that speed up the auto-tuning process.

Get started

2017 2018 2019 2020 2021 2022

1239 commits | Last commit ≈ **1 week ago**

Cite this software

DOI: 10.5281/zenodo.7225842 COPY TO CLIPBOARD

Choose a version: 0.4.3

Choose a reference manager format:

DOWNLOAD FILE

What Kernel Tuner can do for you

- Allows developers to easily unit test and auto-tune GPU code
- Generic auto-tuning of user-defined parameters for CUDA, OpenCL, and C kernels
- Supports more than 20 different search optimization methods to speedup tuning
- Successfully used in 10+ different eScience projects, across various disciplines

Kernel Tuner simplifies the development of efficient GPU programs, or *kernels*. It does so by making kernels written in C/C++, OpenCL, or CUDA accessible from Python, while taking care of the required synchronization between data kept in host memory and data kept in device memory.

Keywords: Big Data | GPU | High Performance Computing | Multi-scale & Multi Model Simulations | Optimized Data Handling | Real Time Data Analysis

Cite this software

DOI: 10.5281/zenodo.7225842 COPY TO CLIPBOARD

Choose a version: 0.4.3

Choose a reference manager format:

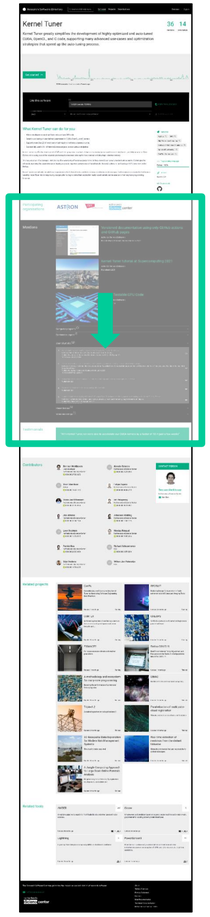
DOWNLOAD FILE

Mentions — Versioned documentation using only GitHub actions

citation information

https://research-software-directory.org/software/kernel-tuner

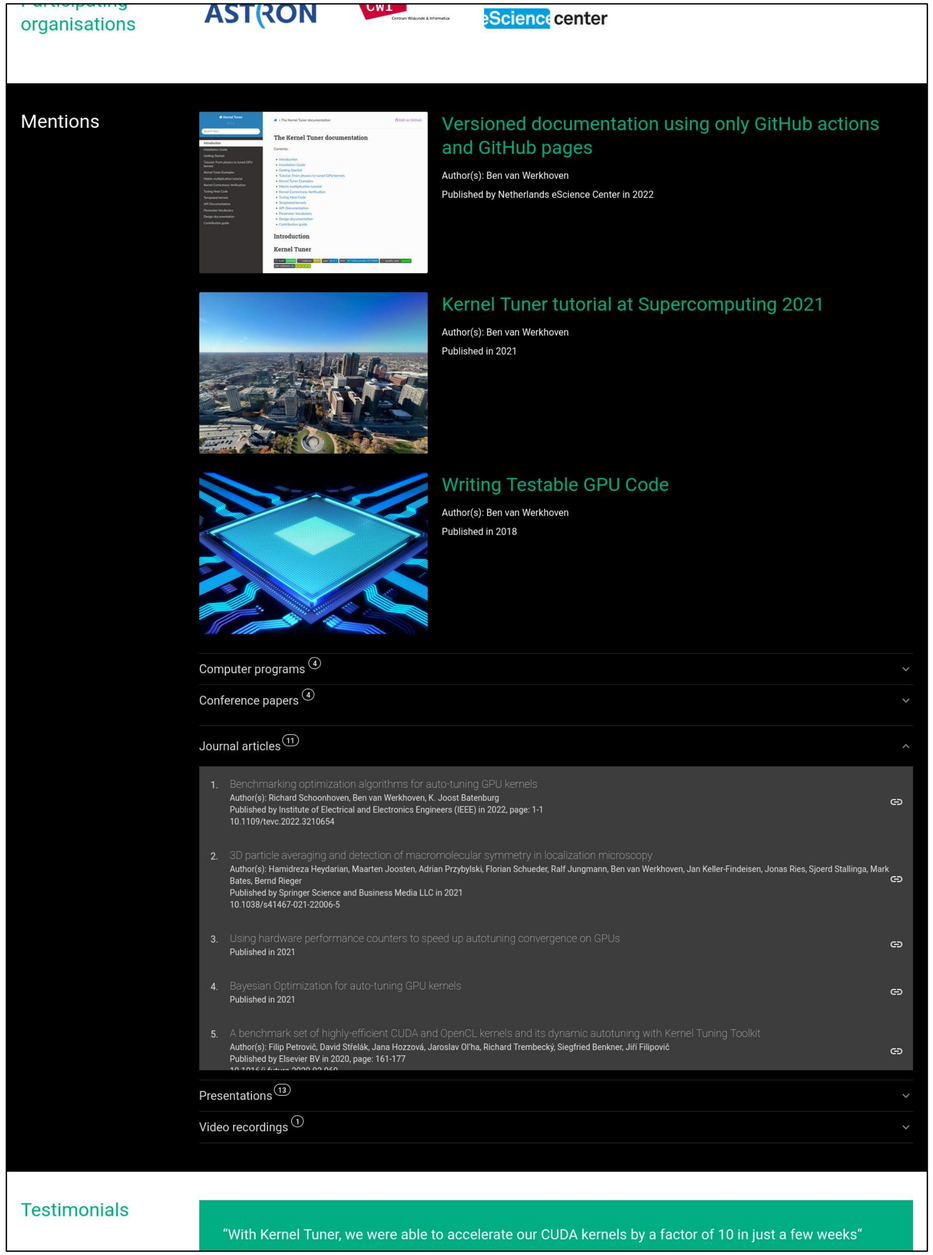
Mentions: related research output



full page

highlights

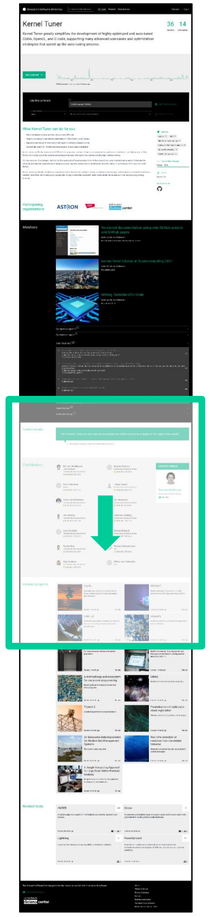
mentions grouped per type
publications, presentations,
blogs, videos, etc.



expanded list of
journal publications
(with links)

https://research-software-directory.org/software/kernel-tuner

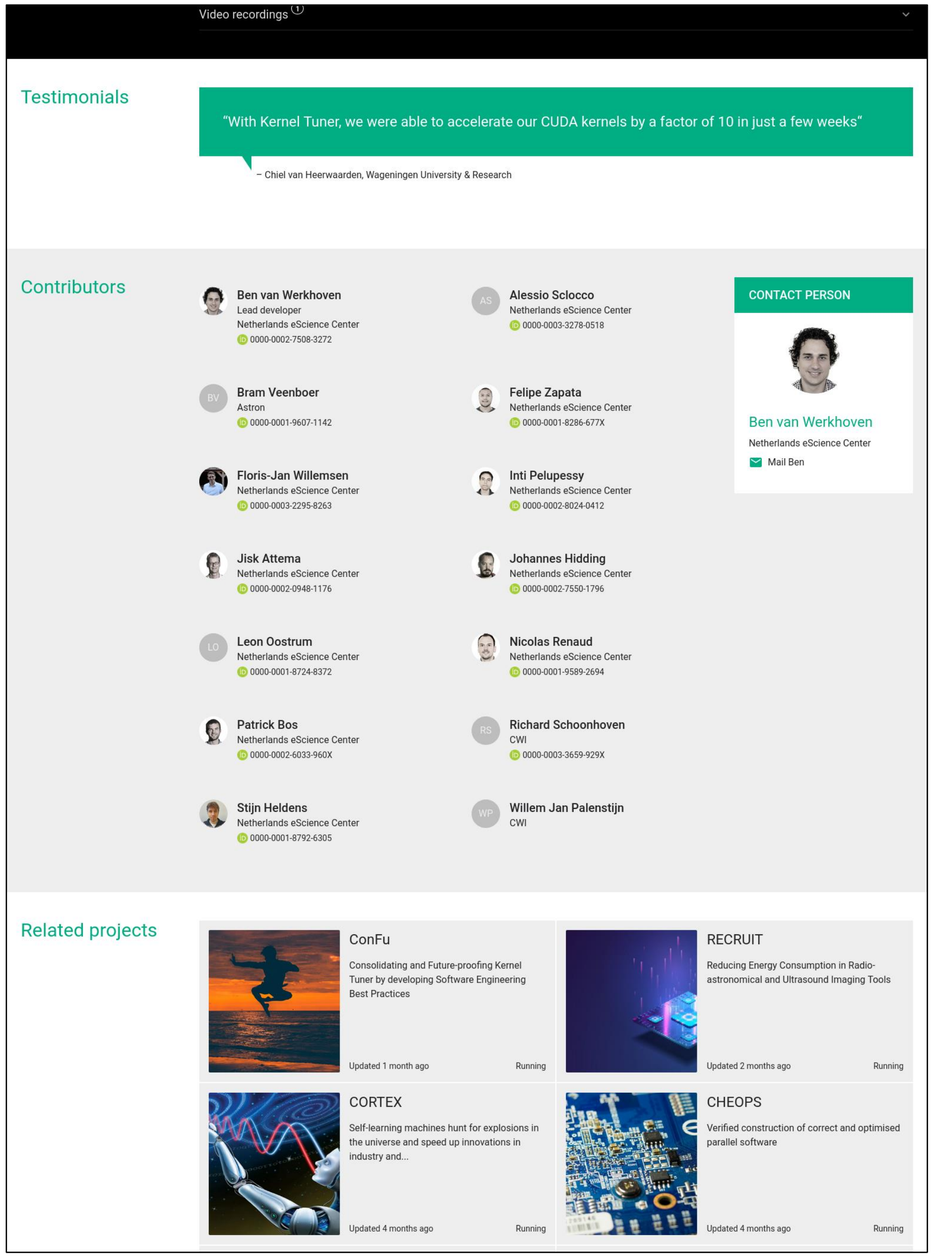
Contributors, testimonials, related projects



full page

user testimonials

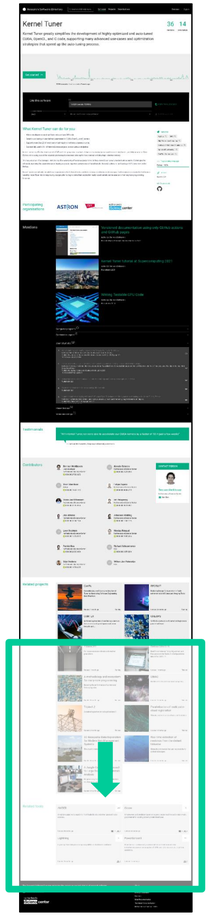
list of contributors with name, ORCID, image, **role**



contact person

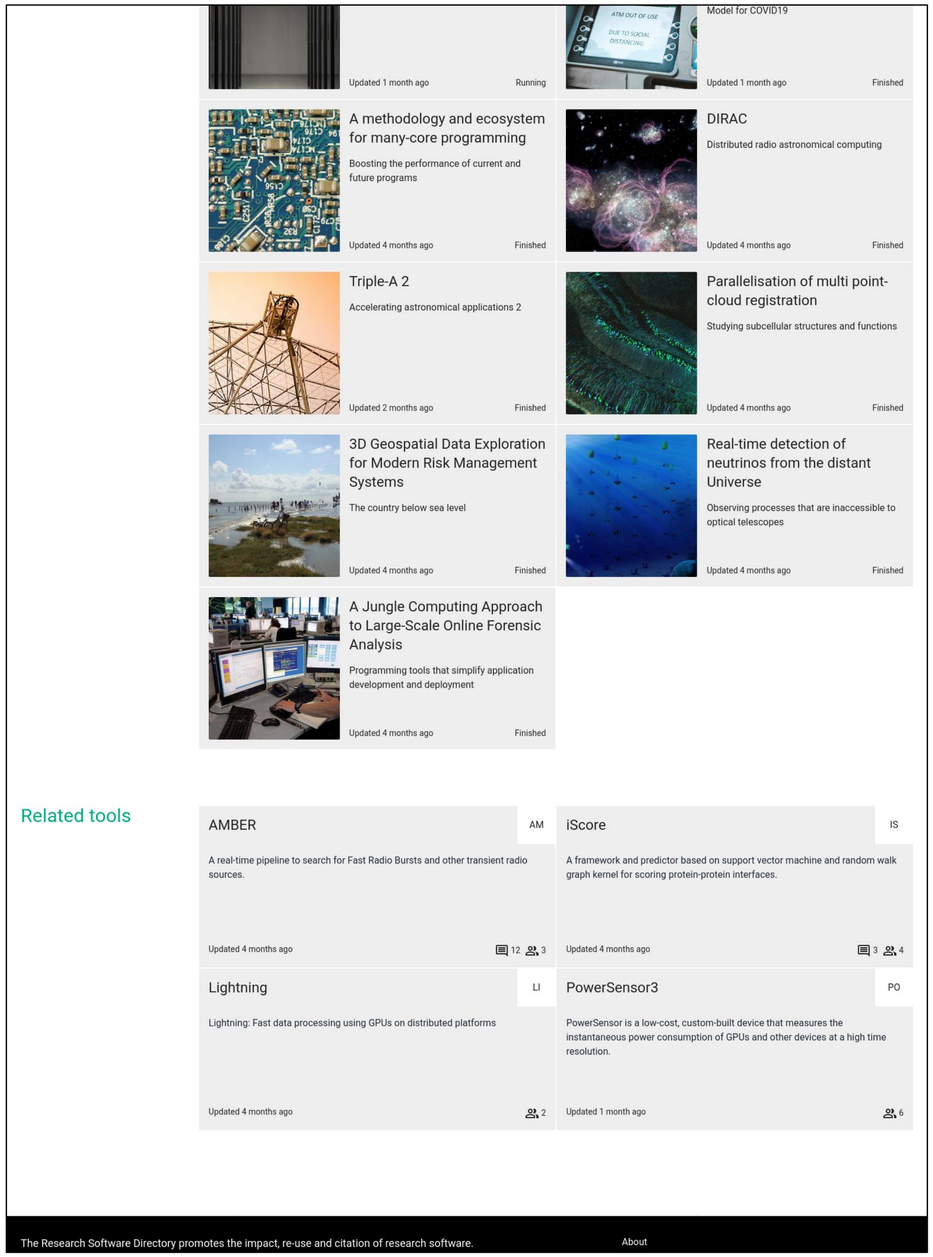
list of related projects

Related projects and software



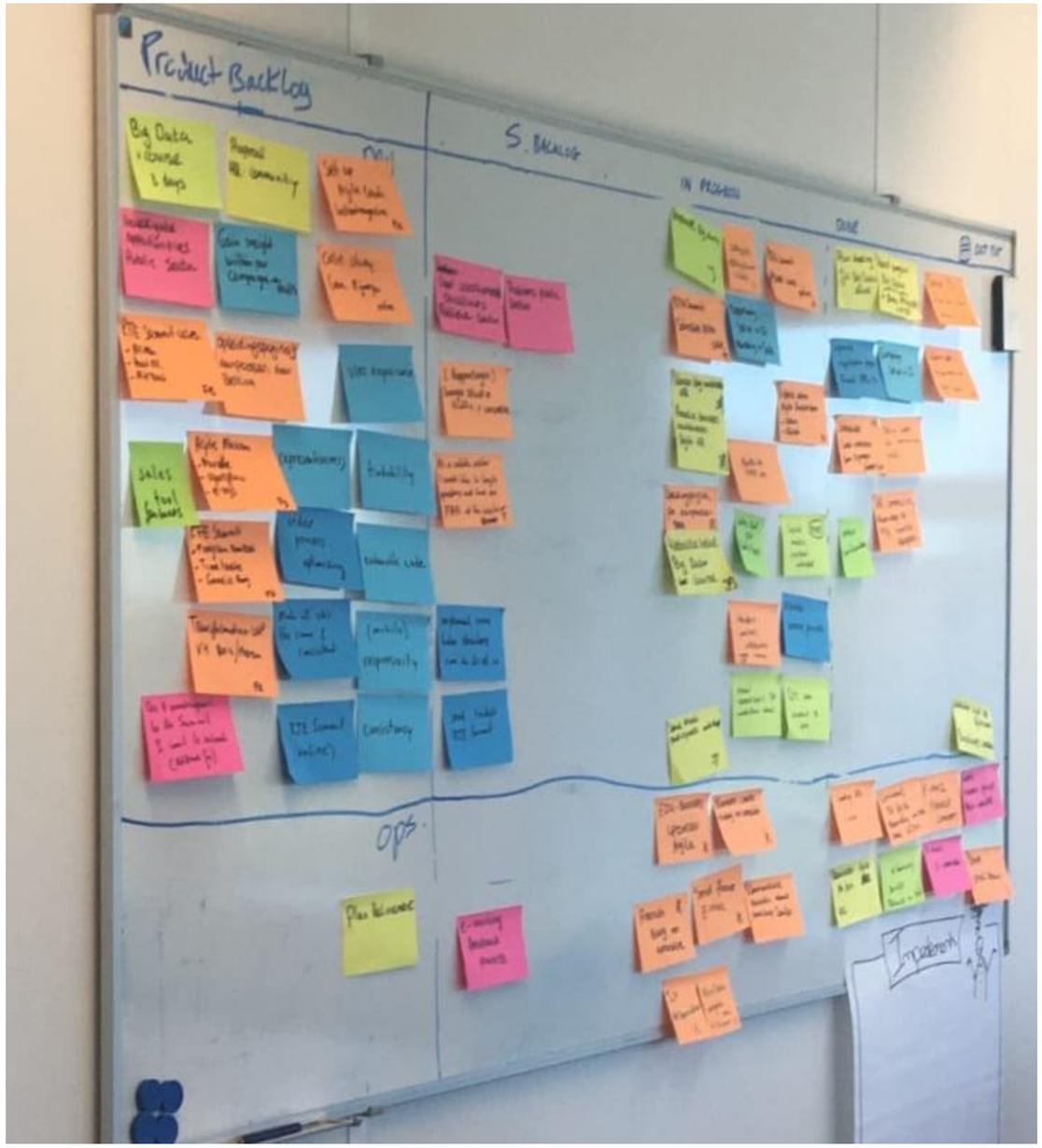
full page

list of related software



list of related projects (continued)

Plans for 2023



Research Software Directory is actively being maintained and developed. Our plans for this year are:

- ✓ link to package managers, container registries, software heritage, etc., and use as data sources.
- ✓ add additional APIs to share our data with external services (REST, OAI-PMH, etc.) + connect to OpenAIRE
- ↻ improve look and feel of software pages, software highlights, etc.
- ↻ improve search, organizational overview, insight, etc.
- ⏳ harvest various indicators on software impact and quality (and figure out how to display them)
- ⏳ research community curated software collections
- ⏳ federated search between different research software directories

netherlands eScience center

Questions?

https://www.esciencecenter.nl

j.maassen@esciencecenter.nl

https://research-software-directory.org

rsd@esciencecenter.nl