

Impact of Open Source Software in Research

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Domain Specific Software

Maintainers:



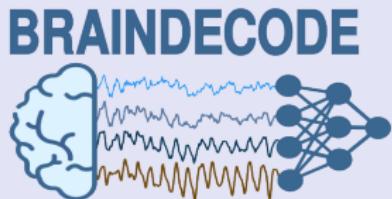
NiLearn



pysap-mri

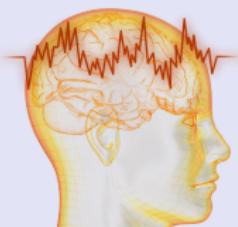
NeuroLang

Contributors:



Consolidating research results:

DicoDile



MRI-NUFFT

FaDIIn

α CSC

FuGW

Code for our research papers:

- ▶ Many repo to reproduce our experiments,
- ▶ Now a standard practice in ML community.

Benefits of the Software Publication

Improve Research:

- ▶ Improve reproducibility,
- ▶ Push for fair benchmarks,
- ▶ Make methods more robust.

Increase Impact of the Team

- ▶ Developed methods are reused,
- ▶ More visibility: citations/collaborations.

Often a good ground for interactions with other teams.

Challenges of the Software Publication

Burden of maintaining many softwares:

- ▶ Many published repos lead to high maintenance burden,
- ▶ High cognitive load and technical debt.

⇒ Need to gather the efforts!

Academic recognition:

- ▶ Maintaining software takes time,
- ▶ Academic credit can be challenging.

⇒ Need to have support of our institutions!

and a good strategy.

Context: First exascale machine will be delivered in 2026.

⇒ Need to prepare softwares to run on it!

Team involvement

- ▶ Adapting scikit-learn and joblib to leverage HPC.
- ▶ Developping methods to process simulation results.

⇒ Aggregating efforts for large scale signals processing with ML!

Reproducing this comparison and adding solvers and tasks is easy as:

```
git clone https://github.com/benchopt/benchmark_bci  
benchopt run ./benchmark_bci
```





- ▶ Brain-Computer Interface,
- ▶ Brain-age prediction,
- ▶ Brain alignment,
- ▶ MRI reconstruction,

⇒ Add yours!



Benchopt sprint in July.