

INIVERSITY OF ICELAND AND NATURAL SCIENCES

FACULTY OF INDUSTRIAL ENGINEERING MECHANICAL ENGINEERING AND COMPUTER SCIENCE





THANKS FOR JOINING RAISE CoE Seminar: HPC Systems Engineering in the Interaction Room

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IHPC National Competence Center (NCC) for HPC & AI in Iceland

CoE RAISE Web Page & More Information







Towards AI & HPC at Exascale with CoE RAISE Results





Hardware Infrastructure

Prepare & Document available production systems at partners' HPC centers Examples: JUWELS (JUELICH), LUMI (UOICELAND), DEEP Modular Prototypes, JUNIQ (JUELICH), etc.

Software Infrastructure

Prepare & Document available open source tools & libraries for HPC & AI useful for implementing use cases Examples: DeepSpeed and/or Horovod for interconnecting N GPUs for a scalable deep learning jobs

Computing-driven Use Cases Requirements & Feedback

Use cases with emphasize on computing bring in co-design information about AI framework & hardware Examples: Use feedback that TensorFlow does not work nicely, so WP2 works with use cases on pyTorch

Data-driven Use Cases Requirements & Feedback

Use cases with emphasize on data bring in co-design information about AI framework & hardware Examples: Deployment blueprint by using AI training on cluster module & inference/testing on booster

\rightarrow UNIQUE AI FRAMEWORK

Living design document & software framework blueprint for using HPC & AI offering also pretrained AI models



CoE RAISE Seminar in May: Data Lad – Short Appetizer



Great source: DataLad itself offers a massive amount of information about the technology and its usage: handbook.datalad.org



DataLad – Selected Examples & Benefits





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Selected DataLad @ Juelich Activities: INM-7 & others



Slides courtesy of Kaustubh R. Patil, Institute of Brain and Behavior (INM-7), Forschungszentrum Juelich, Germany



JOIN US IN MAY - DATE & TIME WILL BE ANNOUNCED

🤌 Discover Data

DataLad has built-in support for **metadata** extraction and **search**. With only a few steps, you can search through a large collection of readily available datasets and immediately download them. <u>See</u> <u>more...</u>

📥 Consume Data

DataLad offers direct **access to individual files** great when you only need a few files from some large datasets for an analysis. Files in a dataset can be distributed across multiple download sources with tailored permissions to match your **data privacy** needs. <u>See more...</u>



DataLad can help

with small or large-scale data management

https://www.datalad.org/

 CoE RAISE datasets?
Pretrained Models?

🖉 Publish Data

DataLad supports sharing datasets with the **public or just some colleagues** on platforms that you are using already — **no need for a central service**. You have complete freedom to share your work in multiple platforms simultaneously (your own server, DropBox, GitHub, etc.) without losing track. <u>See</u> more...

Reproducibility

DataLad provides **joint management of analysis code and data**. This enables you to comprehensively track the exact state of any analysis inputs that produced your results — across the entire lifetime of a project, and across multiple datasets. <u>See more...</u> **C**



The DataLad project operates a crawler that regularly indexes datasets from scientific data portals such as <u>OpenNeuro</u> and <u>CRCNS</u>, making them trivial to acquire and work with using DataLad. Take a look at the <u>available datasets</u>.

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drive. enable. innovate.





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