HELMHOLTZ AI | ARTIFICIAL INTELLIGENCE COOPERATION UNIT

Helmholtz AI

Dr. Christoph Feest
Head of science management
@FeestChristoph

Helmholtz Association

What is the Helmholtz Association?

founded in
1995

Germany's **largest**
scientific organisation

42,178
employees

5 billion
annual budget

2,000
joint projects with
companies a year

18
research institutions

7,000 foreign
scientists

20 new high-tech
spin-offs a year

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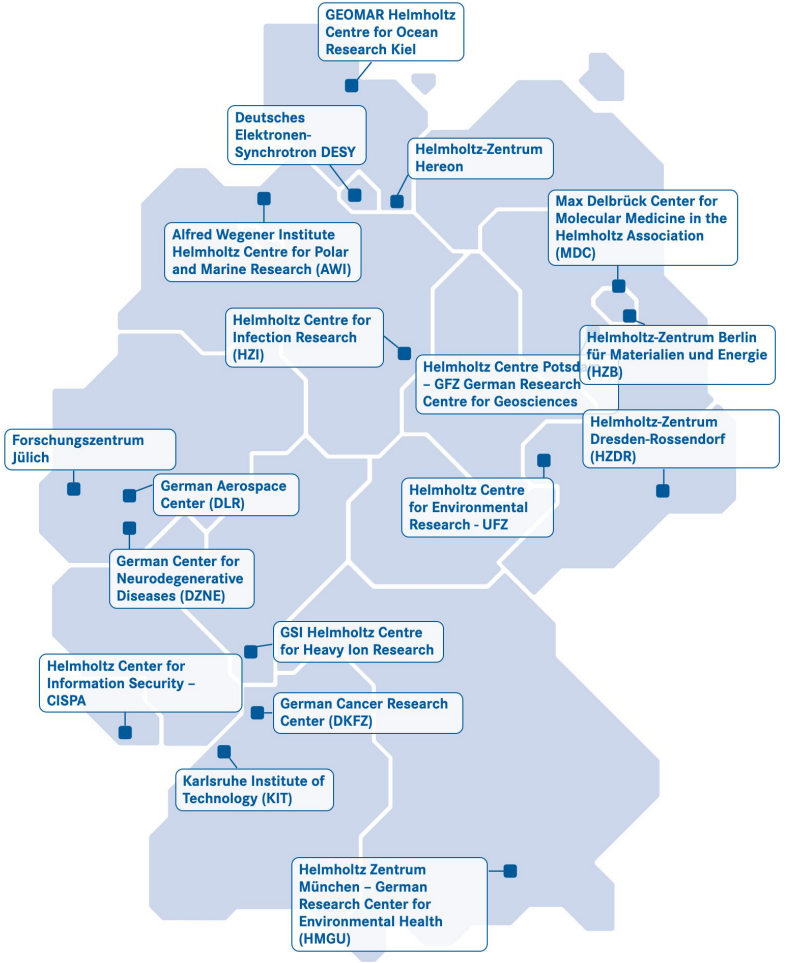

The six Research Fields

of the Helmholtz Association

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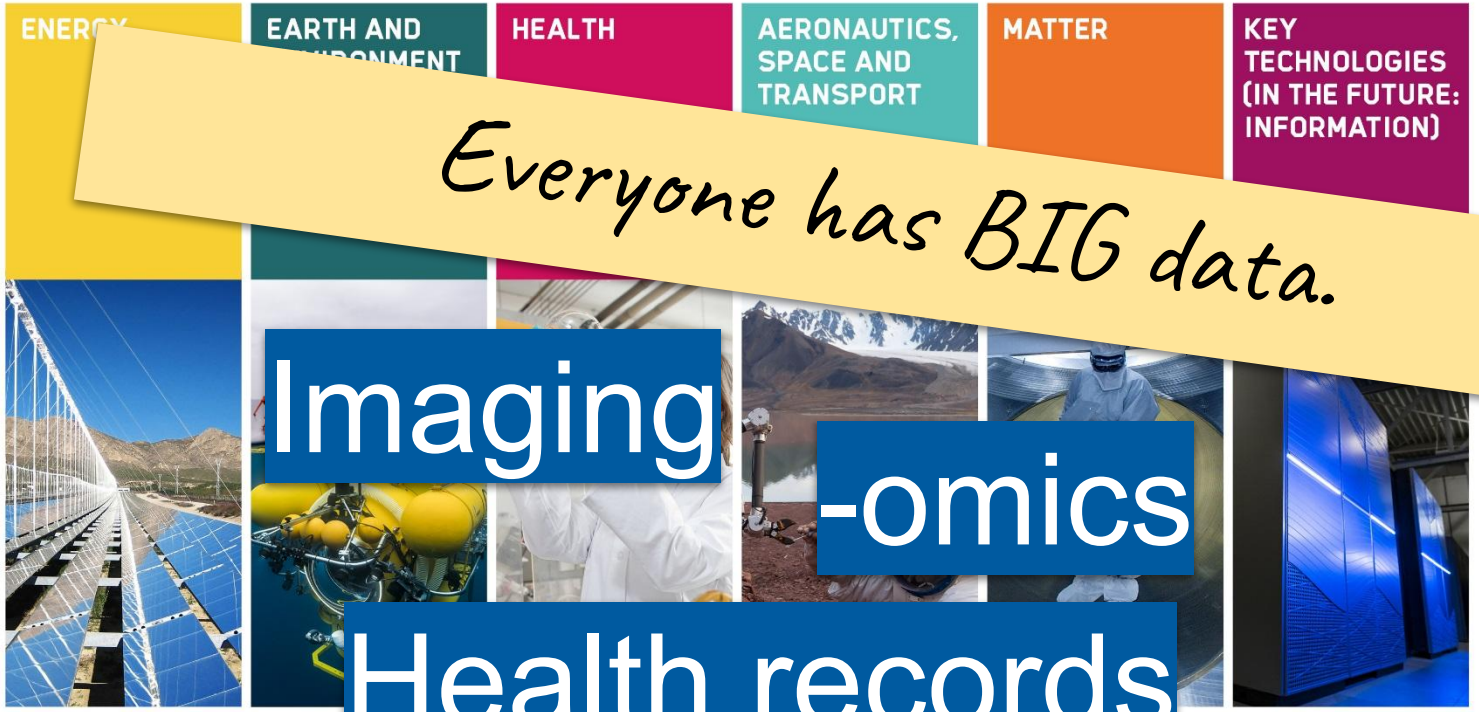

Everyone has BIG data.

Imaging

-omics

Health records

18
research centers

overall budget

42,178
employees

Helmholtz AI is part of...

...data science initiatives within the Helmholtz Association

HIFIS | HELMHOLTZ FEDERATED IT SERVICES

HiP | HELMHOLTZ IMAGING PLATFORM

HELMHOLTZ AI | ARTIFICIAL INTELLIGENCE COOPERATION UNIT

HiDA | HELMHOLTZ Information & Data Science Academy

<HMC> | HELMHOLTZ METADATA COLLABORATION

Research, funding & support

Helmholtz AI

in a nutshell

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@helmholtz_ai HelmholtzAI

Maximise research impact by democratising access to AI

- ➔ Foster **cross-field creativity**
- ➔ **Identify & leverage similarities** between applications
- ➔ Integrate **field-specific excellence**
- ➔ Improve **quality, scalability and availability** of emerging methods
- ➔ Empower current & **next generation of scientists**

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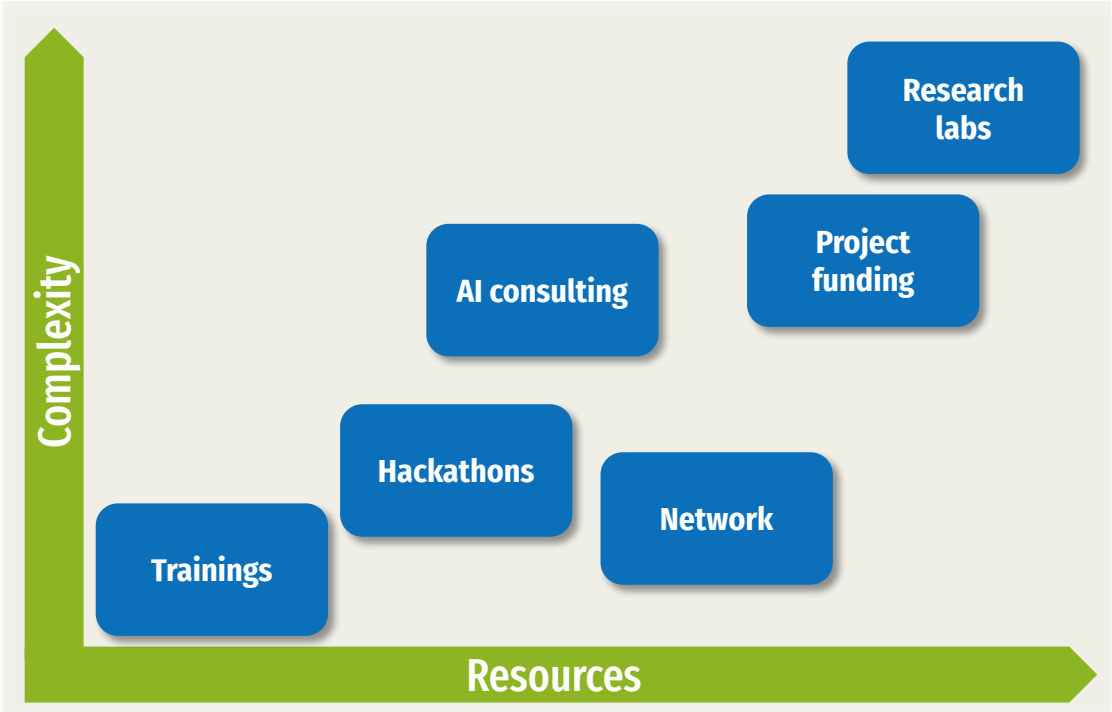

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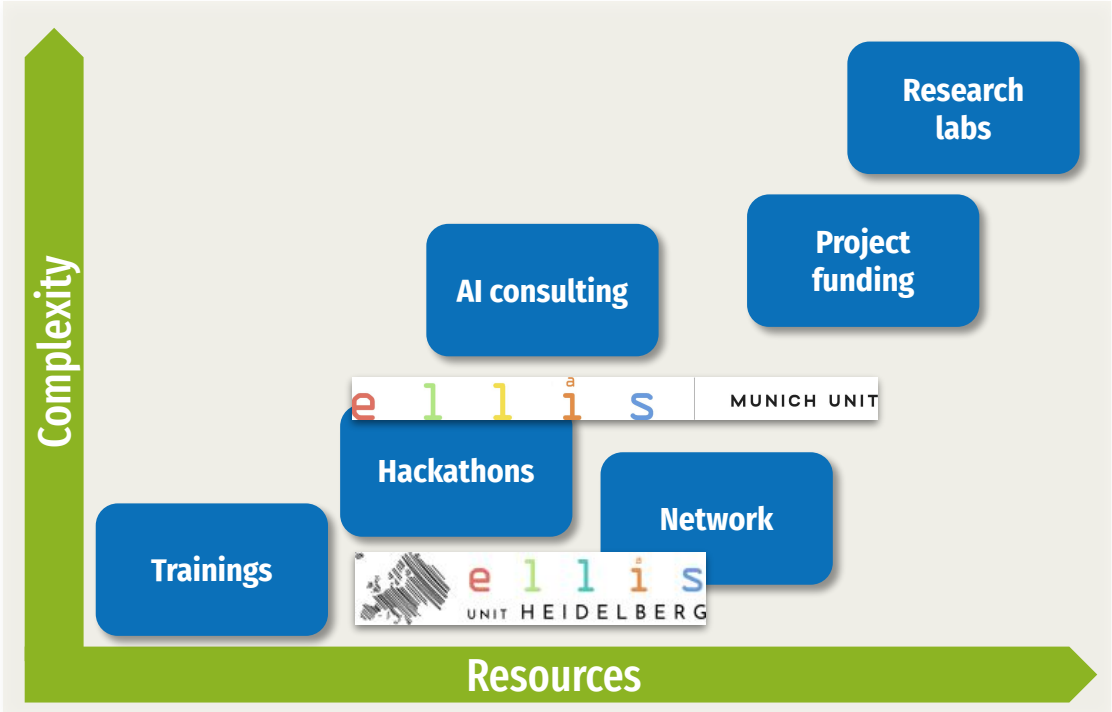

Helmholtz AI

in a nutshell

HELMHOLTZ AI | ARTIFICIAL INTELLIGENCE COOPERATION UNIT

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6 LOCAL UNITS

- Earth @ Hereon
- Energy @ KIT
- Matter @ HZDR
- Space @ DLR
- Health @ HMGU
- Info @ FZJ

RESEARCH

- **7** early career PIs
- **2** senior PIs (soon)
- **>30** researchers
- **>30** associates

SUPPORT

- **6** AI consultant teams
- **39** AI consultants

MANAGEMENT

- **3** Project managers
- **1** Outreach manager
- **1** Network manager
- **2** Exec. assistants

FABIAN THEIS
Helmholtz AI
scientific director
@fabian_theis

36
HELMHOLTZ AI PROJECTS
(2019+20)

>100
AI CONSULTINGS

>100
TRAININGS & HACKATHONS

12 M€/Y

www.helmholtz.ai
contact@helmholtz.ai

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- **7** Young Investigator Groups
- **2** Senior Investigator Groups soon
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Helmholtz AI

Local PIs - Health

KILBERTUS GROUP
Reliable machine learning

PENG GROUP
AI for microscopy and computational pathology

ALBARQOUNI GROUP
Deep federated learning in healthcare

Research groups

PIRAUD TEAM
Health (HMGU)

AI consultant team

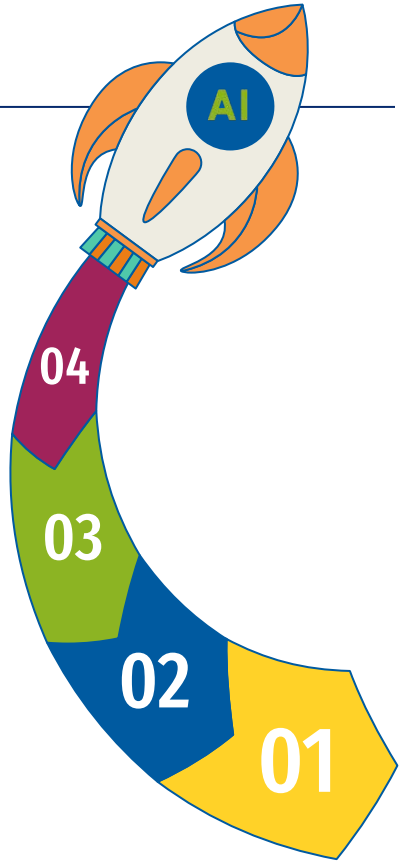
Helmholtz AI

Consulting

Flexible, dynamic and transparent setting up of (free!) collaborations with the Helmholtz AI consultant teams

voucher-system.helmholtz.ai

More info: bit.ly/HelmholtzAIvoucher



COLLABORATION

EXPLORATION -- up to 2 weeks
REALISATION -- up to 6 months

REVIEW

Formal criteria (Science management)
Scientific criteria (AI consultants)

SUBMISSION

Through official online form
at submission website

IDEA

Selecting, testing and implementing ML methods, knowledge transfer and networking, training and workshops, benchmark datasets...

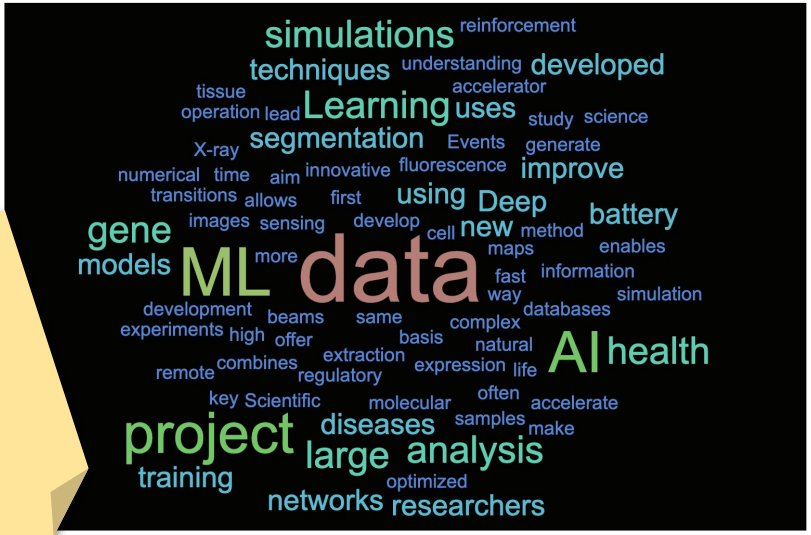
Helmholtz AI

Helmholtz AI project call

Our annual call to

- help exploit machine learning/AI methods in applicants' research field
- foster method transfer between application and research fields
- **encourage high-risk/high-gain approaches**
- at least two centers apply jointly
- up to €200k (INF, needs to be matched)
- funding for up to 3 years

All Helmholtz Centers are involved and all research area are covered.



2019 call: 19 projects with >€7m
2020 call: 17 projects with >€6m
2021 call: OPEN NOW (<1 Dec)

Helmholtz AI

Helmholtz AI project call timeline

- **9th August 2021: call open**
- **1st September 2021: submission portal open**
- **1st December 2021: submission deadline**
- **December and early 2022:** review process and selection
- **Spring 2022:** selected projects will be announced

Outreach & proposal planning

Dedicated submission portal: https://application.helmholtz.ai

Submit proposals until end of day (CET)

External review

Formal criteria check

virtual panel meeting

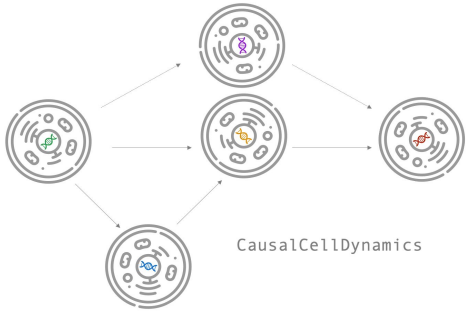
Projects selected and starting

Helmholtz AI

Helmholtz international labs cross continents to unleash the potential of AI communities working together

In the ‘Helmholtz International BigBrain Analytics and Learning Laboratory’ researchers from **McGill University and MILA in Montreal and FZJ/Helmholtz AI in Jülich** develop novel AI-based methods for analyzing high-resolution image data. They create new highly detailed maps of brain areas, cortical layers, and subcortical structures for microscopic models of the human brain.

HIBALL
HELMHOLTZ International BigBrain Analytics & Learning Laboratory



The Helmholtz International Lab ‘Causal Cell Dynamics’ brings together 3 sites with pioneering roles in artificial intelligence - **Mila in Montreal, MPI in Tübingen and ICB + Helmholtz AI in Munich**. The major aim is to develop methods for causally structured deep representation learning in order to improve our understanding of cellular decisions.

Helmholtz AI

Network and collaborations

ellis
European Laboratory for Learning and Intelligent Systems

Helmholtz AI connects with the European Laboratory for Learning and Intelligent Systems (ELLIS) through its **ELLIS fellows, members and PhDs** and through their involvement in the **ELLIS Units Munich** and Heidelberg.

ellis
MUNICH UNIT

www.ellismunich.ai

HiDA HELMHOLTZ Information & Data Science Academy

HIDA **supports the mobility of several young talents and exchange scientists from abroad** who are currently working jointly with Helmholtz AI researchers, e.g. two Israeli students at Helmholtz AI in Geesthacht.

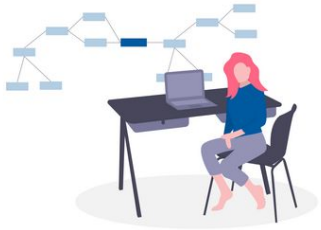
Helmholtz AI

Community and resources

Online since autumn 2020: The “Helmholtz AI computing resources” (HAICORE, €2.5m) provide easy, free and **low-barrier GPU access** to the entire AI community within the Helmholtz Association.

- **Ad-hoc usage** for initial testing with data and/or AI methods
- Lightweight projects of **up to 10,000 GPU hours** per year

HAICORE is operated by Jülich and Karlsruhe.



www.helmholtz.ai

The 'Helmholtz AI community' workspace is **a dedicated networking space** for Helmholtz researchers to share information and meet other AI/ML enthusiasts, e.g. to partner up for the annual Helmholtz AI project call.

Helmholtz AI

Jobs...

The German Climate Computing Centre (DKRZ) is the central data processing facility for the German climate and Earth system modeling community and is one of the leading facilities in this area. DKRZ operates supercomputers of the highest performance class, modern high-performance clusters and graphics systems as well as one of the largest data and archive systems worldwide.

DKRZ DEUTSCHES KLIMARECHENZENTRUM

For the AI Consultant team we are hiring for positions that will start as soon as possible (specific dates can be discussed individually).

ML Software Engineer & Scientific Programmer (all genders)

To improve the infrastructure for climate modelling, DKRZ participates in many national and international projects. Through its research group on Scientific Computing, DKRZ is linked to the Department of Informatics at the University of Hamburg.

The Helmholtz Association (HGF) initiated the Helmholtz Artificial Intelligence platform (https://helmholtz.ai). This future-oriented network for applied Artificial Intelligence develops, implements and disseminates methods of Artificial Intelligence for purposes including the analysis of complex systems in the fields of energy, transport, climate and health. The Helmholtz AI local unit AIM (Artificial Intelligence Innovation for Earth System Analytics and Modelling) provides application-oriented AI capabilities for the field of Earth System and climate science, with a specific focus on Machine Learning (ML) methods. AIM consists of scientific partners, including a research group at Helmholtz-Zentrum Hereon and a support team of AI Consultants at DKRZ. The

Helmholtz AI central unit @ Helmholtz Zentrum München (HMGU):

- **Helmholtz AI consultants (Health; until Sept 29, 2021)**
- **Senior Helmholtz AI consultants (Health; until Sept 29, 2021)**
- **Machine Learning Engineer for AI applications (until Sept 29, 2021)**

Scientific / postdoctoral posts

Postdoc in Computational and Systems Neuroscience

Jülich **Forschungszentrum Jülich**

Scientific / postdoctoral posts

59924: Computer Scientist, Physicist or similar (f/m/x) - Anomaly detection for maritime focused detector systems

Bremerhaven **German Aerospace Center (DLR)**

Scientific / postdoctoral posts

Research associate / PhD candidate (f/m/d) Machine learning for design of chemical engineering unit operations

Karlsruhe **Karlsruhe Institute of Technology (KIT)**

Check:
https://www.helmholtz-hida.de/en/jobs/

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