NORA.ai

NORA Annual Report 2023

NORA – Norwegian Artificial Intelligence Research Consortium

Excellence in AI research, education and innovation

NORA´s vision

Disclaimer
The numbers and figures featured in this report are based on data collected from Jan–Dec 2023.
The data is correct and complete to the best of our knowledge.

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A Message from the CEO and Board Chair

1.1 Klas Pettersen, CEO of NORA

What a year 2023 has been for AI, both in Norway and internationally! It has been intense and almost a bit chaotic, yet very interesting and rewarding. We have seen great progress in the field, the Norwegian government promised a billion Norwegian kroner for AI research, there is a new Norwegian minister responsible for AI, an agreement on a new EU AI regulation was reached, and so much more.

NORA is all about strengthening AI with a national perspective. In 2023 NORA has grown with new partners as well as new strategic partners, and we have been able to strengthen the community through the shared vision of Norwegian excellence in AI research, education and innovation through collaboration. The NORA secretariat is immensely thankful for the positivity we meet among Norwegian researchers and your willingness to contribute to strengthening Norwegian AI together.

In 2023 NORA launched a new strategy. We will continue taking national responsibility for AI, and this is even more pronounced now that we cover most of the relevant universities, university colleges and research institutes in Norway. In addition to strengthening the research, innovation and education in AI, the strategy points to a couple of new goals.

One of the new goals is to address the need to strengthen Norway's research policy and commitment to AI. As a consequence, we spent more resources in 2023 on advising politicians, the Norwegian government and relevant governmental institutions on how to organize Norwegian AI and what is needed for Norway to be able to reach our high ambitions of

45+

More than 45 of the most interesting AI Startups in Norway

4+

4 Cutting edge AI seminars with more than 100 attendees per event

AI

NORA is Norway's leading AI research network

17

NORA has a total of 17 partners

2426+

More than 2426 newsletter subscribers

international recognition of Norwegian AI research, education and innovation. We like to think that this has been a contributing factor to many of the positive initiatives by the Norwegian government.

A second new goal is to focus on adding value through collaboration. We have asked ourselves how our unique network of many strong partners can create added value. What can we do together that no partner could do alone? Within AI there are many projects requiring larger interdisciplinary collaboration and computing resources. We think Norway, through NORA, is well positioned to undertake larger projects of national importance. These projects should reflect the other values of our strategy. They should be based on openness, trust and Norwegian values, in contrast to some of the big companies driving the field. This was also why we established a broad consortium with the goal of building large language and foundation models, the so-called NORA.LLM project. We believe this will be a basic infrastructure on which not only research projects will be built; this will also be an infrastructure on which industry and public sector can base future services.

We are very happy with the achievements of the Norwegian AI community in 2023. In the annual report you can read more about how the NORA secretariat has worked to create value for Norway and the Norwegian AI community.

CEO of NORA, Klas Pettersen

"Through trust, a strong network, and a history of good collaborations, NORA can efficiently mobilize larger consortia of experts aimed at solving specific tasks we consider to be of national importance. In 2023, we proved this with NORA.LLM – a broad consortium aimed at building large-scale Norwegian language models as infrastructure. NORA's value lies in the strong synapses between researchers, groups, and institutions. In a rapidly advancing field that is crucial to society, the value we have created by strengthening these synapses over the past years should not be underestimated."

Klas H. Pettersen, CEO of NORA

1.2 Inge Jonassen, NORA Board Chair

In the year 2023, Artificial intelligence has risen as one of the hottest topics around dinner tables, at most workplaces, and of course in the higher education and research sector. We have seen how AI can be used to generate text, images, videos at an unprecedented level of quality – and at the same time these capabilities have been made available to the general public. AI was one of the main themes of the Arendalsuka this year and several AI books have reached a large audience. At the end of 2023, the general public – as well as our politicians – have a better grasp of what AI is.

The government also launched new investments in AI through the so-called "AI billion", which was announced in September. The Research Council of Norway has been given the responsibility to use the investment to fund AI research in Norway along three main directions – AI technology, social consequences, and innovation using AI. It is important that the billion be used in a way that will catalyze additional efforts since a much larger investment is needed to reach the ambitions we should have for AI in Norway.

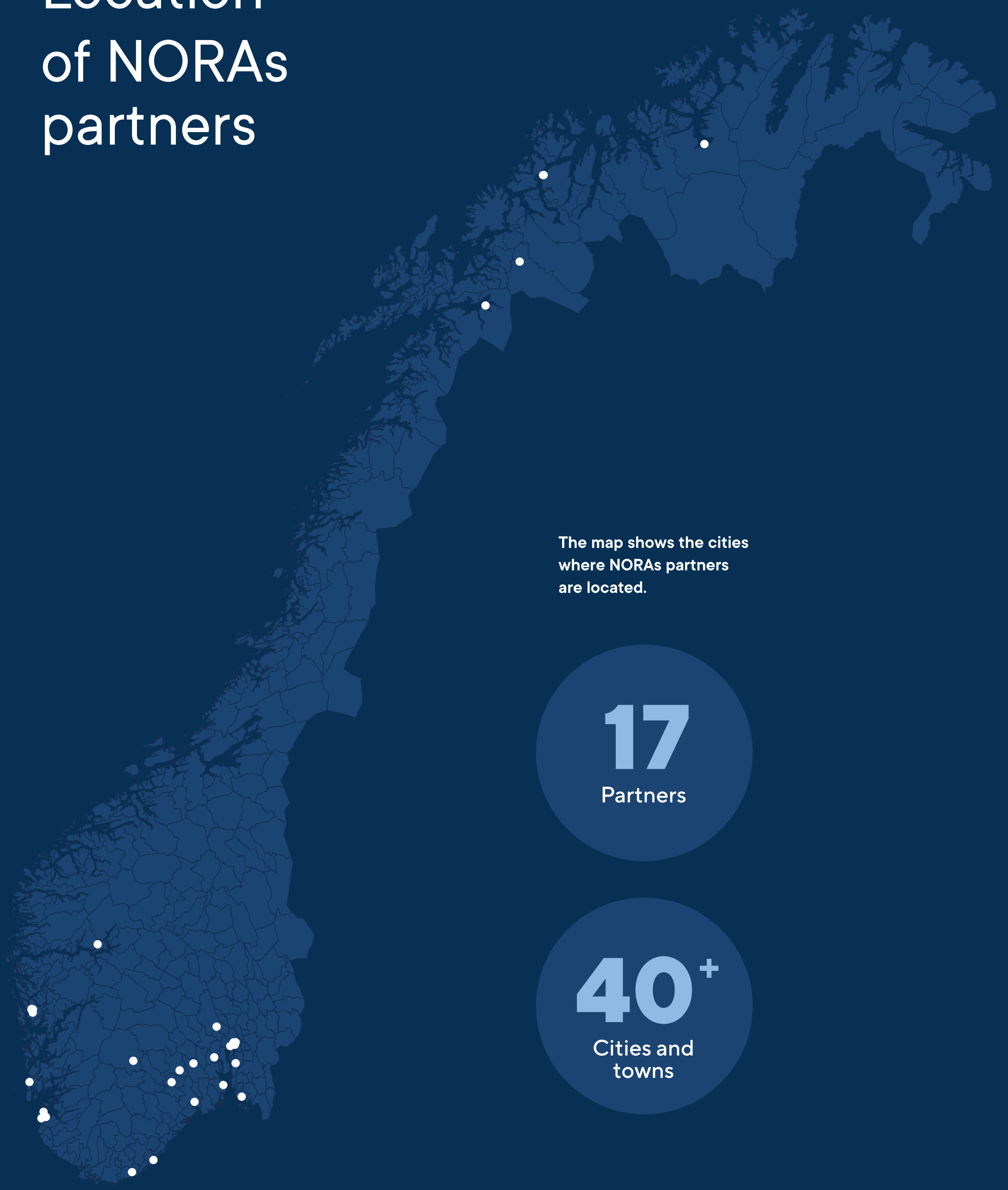
NORA has established itself as THE consortium for AI research in Norway. We are eager to continue playing an important role in helping our partners and the country continue to develop AI research efforts – and strengthening collaboration with industry and government when developing and utilizing AI to the benefit of society and the future.

Board Chair of NORA, Inge Jonassen

"In 2023, AI became one of the hottest topics of conversation, and NORA contributed through its many activities to inspire and create a platform for more knowledge-based discussion. The government also stepped in with the "AI billion" – and we look forward to how it will contribute to lifting the field in Norway!"

Inge Jonassen, Board Chair of NORA

Location of NORAs partners



The map shows the cities where NORAs partners are located.

17
Partners

40+
Cities and towns

About NORA

NORA was established on 21 November 2018 to strengthen Norwegian research, education, and innovation within AI, as well as other relevant fields that support the development of AI applications and has been operational since April 2019.

NORA contributes to the development of joint research projects among partners, collaborates closely with startup companies in the AI field, coordinates education, as well as strengthens the collaboration between the consortium partners' research communities and the business community.

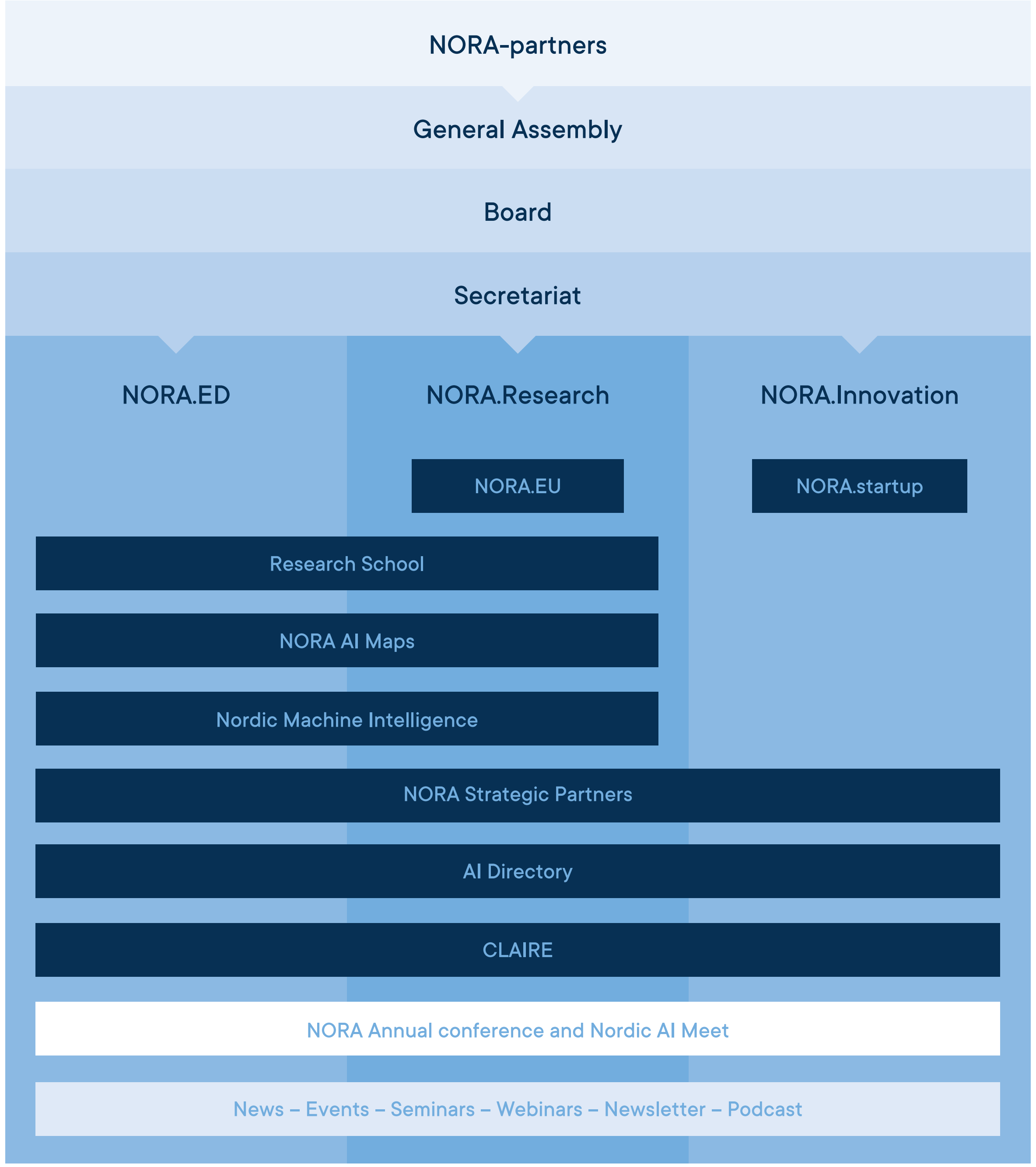
NORA further contributes to positioning Norwegian research in AI in the international arena and has a special responsibility for developing activities aimed at Horizon Europe. In addition, the NORA secretariat creates meeting venues and hosts various events for researchers and students. NORA is also a member of CLAIRE – the Confederation of Laboratories for AI Research in Europe and serves as the CLAIRE office in Norway/the Nordics.

In 2023, NORA welcomed Western Norway University of Applied Sciences as a consortium partner, bringing the number of consortium partners to 17. The NORA consortium partners are:

1. BI Norwegian Business School
2. Kristiania University College
3. NORCE Norwegian Research Centre AS
4. Norwegian University of Life Sciences
5. OsloMet – Oslo Metropolitan University
6. Simula Research Laboratory AS
7. SINTEF
8. UiT, The Arctic University of Norway
9. University of Agder
10. University of Bergen
11. University of Oslo
12. University of SouthEastern Norway
13. University of Stavanger
14. Western Norway Research Institute
15. Østfold University College
16. Norwegian Computing Center
17. Western Norway University of Applied Sciences

NORA programs and initiatives

The figure below provides an overview of NORA programs and initiatives. Several of the initiatives have their own governance structure with their own boards and committees. NORA Consortium partners refers to the universities, university colleges and research institutes who are members of NORA. NORA Strategic partners refer to members of the NORA Strategic Partner Network, consisting of both public and private companies.



3

The people at NORA

The NORA Consortium Board represents NORA consortium partners and is NORA's governing body. NORA had its first Annual General Meeting in April 2022, where a new board was elected. As of April 2022, the NORA Consortium Board consists of seven members and two deputy members. The NORA secretariat oversees the day-to-day management of NORA and is located at the University of Oslo.

NORA Board of directors

Inge Jonassen,
Board Chair
University of Bergen

Ingrid Glad,
Board Member
University of Oslo

Trond Runar Hagen,
Board Member
SINTEF

Morten Irgens,
Board Member
OsloMet – Oslo Metropolitan University

Cecilia Marie Futsæther,
Board Member
Norwegian University of Life Sciences

Anders Andersen,
Board Member
UiT – The Arctic University of Norway

Annette F. Stephansen,
Board Member
NORCE

Kjersti Engan,
Deputy Board Member
University of Stavanger

Stefano Nichele,
Deputy Board Member
Østfold University College

NORA Secretariat

Klas H. Pettersen
CEO

Anam Javaid
Senior Communication Advisor

Alex Moltzau
AI Policy and Ethics

Birte Hansen
Innovation and Industry Coordinator

Sachin Gaur
Research Coordinator

Synne Svinsås Gjønnes
Communication Advisor

Kushtrim Visoka
Principal Engineer

Michael Solvang
Research Coordinator

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Strategy Overview

In September 2023, NORA launched the new strategy for 2023–2026. The new strategy was approved by the NORA board on the 24th of April 2023. The new strategy will help guide NORA as well as support the NORA secretariat in prioritizing and structuring their work to achieve the tasks and goals set by the NORA consortium partners. The strategy states the ambition, vision and mission for NORA and outlines eight strategic goals.

The strategy outlines goals aimed at strengthening NORA as a national access point, taking on a more visible national role by initiating larger AI projects of national importance. NORA will further strengthen Norwegian participation in international cooperation in artificial intelligence. NORA will also initiate and coordinate larger AI projects of national importance.

NORA will continue taking national responsibility for AI. This responsibility is even more pronounced now that NORA represents 17 universities, university colleges and research institutes across Norway. In addition to strengthening the research, innovation and education in AI, the new strategy includes new strategic goals that were not in the previous strategy.

NORA will participate actively in strengthening Norway's research policy and commitment to AI. It is natural for the Norwegian government and relevant governmental institutions to seek advice from NORA experts. In line with this goal, NORA will give advice on how to organize Norwegian AI and what is needed for Norway to be able to reach our high ambitions of international recognition of Norwegian AI research, education and innovation.

Another new goal is to focus on adding value through collaboration. Within the field of AI, there are many projects requiring larger interdisciplinary collaboration and computing resources. Together with the consortium partners, NORA is well positioned to undertake larger projects of national importance. These projects should reflect the values of the strategy, namely openness, trust and Norwegian values, in contrast to some of the big companies driving the field.

NORA's mission

- Advance national and international cooperation in AI
- Advance collaboration between academia and other sectors
- Promote ethical AI
- Serve as a national access point for AI

NORA's vision

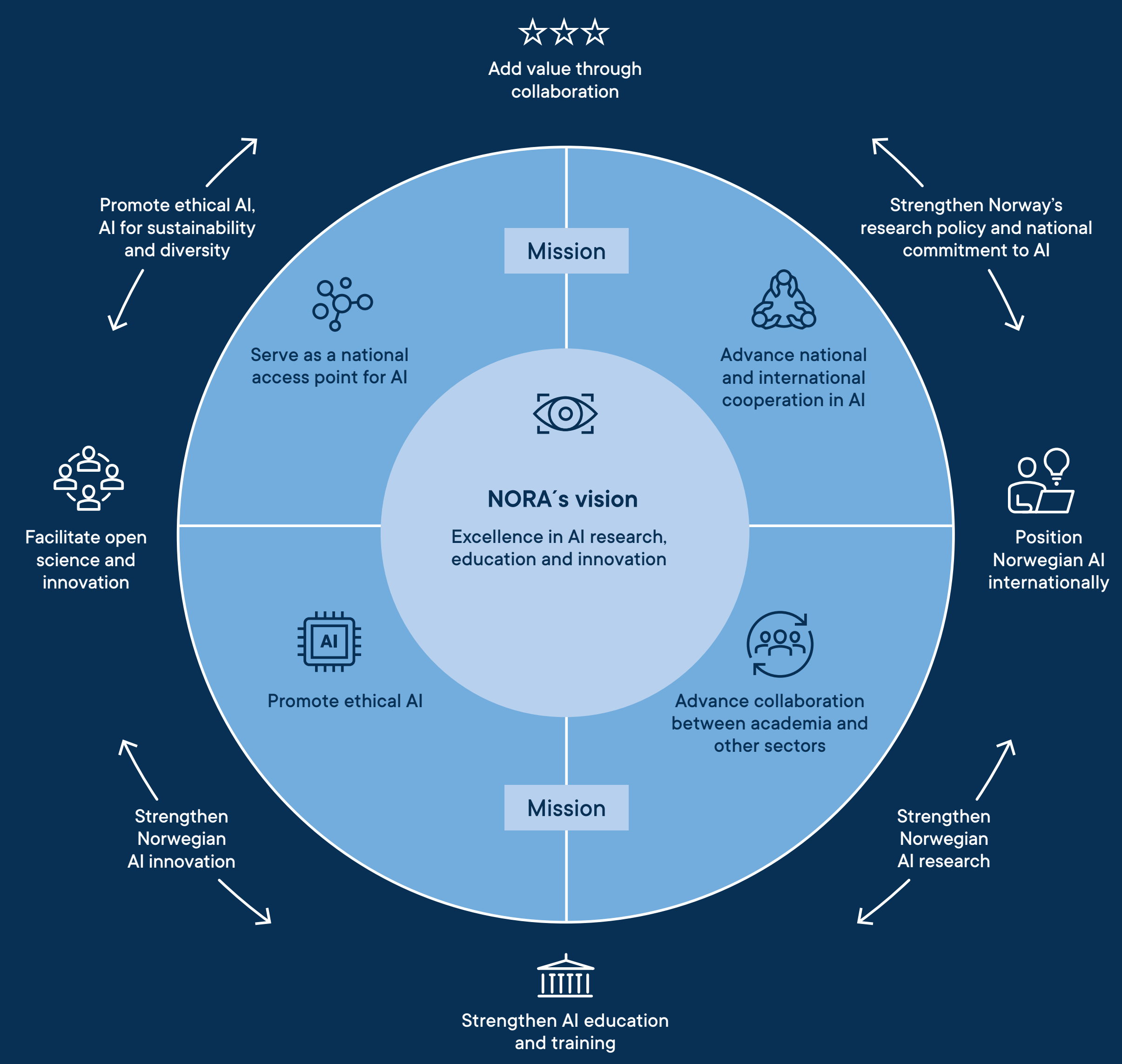
Excellence in AI research, education and innovation

NORA's ambition

International recognition of Norwegian AI research, education and innovation

NORA's ambition

International recognition of Norwegian AI research, education and innovation



5

Research

Research stands as a foundational element in NORA's new strategy. Aligned with the strategic plan 2023–2026, NORA will establish itself as an internationally recognized network for research and education. Norway holds significant promise in excelling within the realm of AI research. To harness this potential, NORA is actively creating platforms for both fundamental and applied research, mirroring the intricate, interdisciplinary, and diversity inherent to the field.

NORA Annual Conference. Oral presentation by Martin Thomas Horsch, NMBU

Two such important platforms are the NORA Annual Conference and the Nordic AI Meet. The NORA Annual Conference is an annual event that gathers the Norwegian research community within the field of Artificial Intelligence. The conference provides a meeting place where consortium partners, strategic partners, speakers and other participants can submit and share research, ideas, theories, models and new perspectives, as well as interact with peers in the field.

The Nordic AI Meet is an annual conference where early career researchers from all the Nordic countries are invited to meet, submit and present research, discuss new ideas, methods and theories in AI as well as build professional networks. The conference, started by NORA, is now "truly Nordic", as it was co-organized with the Pioneer Centre for AI in Copenhagen in 2023, and will be co-organized with FCAI in Finland in 2024.

The Nordic Machine Intelligence Journal has encouraged the publication of articles submitted from both conferences.

Apart from conferences, NORA has arranged various research seminars, activities, and events where researchers from NORA consortium partners have been invited to present and showcase their research to the broader AI community in Norway.

Moreover, NORA has been proactive in promoting and endorsing calls for funding proposals. NORA has enabled many researchers from NORA consortium partners to apply for research funding.

The organization has facilitated connections between researchers to respond and apply for research and funding calls, providing letters of support, making introductions for consortium building, joining and coordinating proposals of national importance. This in turn has fostered consortium building among both consortium and strategic partners. In 2023, NORA played a supportive role in numerous successful research proposals, such as the "Ethical risks assessmeNt of Artificial intelligenCe in pracTice" (ENACT) project, which was funded by the Research Council of Norway. The NORA secretariat also submitted a larger infrastructure application to the Research Council of Norway, NORA.LLM project.

NORA has also taken steps to actively engage with and coordinate meetings among Norwegian centers for research-based Innovation (SFIs) that involve NORA consortium partners, such as Visual Intelligence (UiT), Big Insight (UiO) and Media Futures (UiB).

The NORA.LLM project – large language models as infrastructure

On the 15th of November, NORA along with partners submitted a proposal to the Research Council of Norway under the call National Financing Initiative for Research Infrastructure. The proposed project has a total budget of 212 million Norwegian kroner (NOK 212M), of which NOK 62M is in-kind contributions from the partners. The goal of the project is to establish Norwegian language models as infrastructure. The total project duration is 10 years, where 3 years will be dedicated to development and 7 years to operation.

NORA believes a broad national effort to establish large language models as infrastructure is crucial for Norway to safeguard the Norwegian language, culture, and democracy, and ensure complete control of the training data while enhancing our research and innovation capabilities.

NORA is therefore proud to have gathered the foremost experts on language technology and related fields in Norway who share the same vision to support the large infrastructure application.

The project partners include National Library of Norway, University of Bergen, Sigma2 AS, University of Agder, Norwegian Computing Center, University of Stavanger, The Directorate of E-health (now part of The Norwegian Directorate of Health), SINTEF AS, The Cancer Registry of Norway (now part Norwegian Institute of Public Health), University of Oslo, Østfold University College, Simula Research Laboratory AS, NORCE Norwegian Research Centre AS, UiT – The Arctic University of Norway, The Norwegian Labour and Welfare Administration, and Western Norway University of Applied Sciences. Norway's two Centers of Excellence for AI (CoEs), CoE Integreat and CoE Digital Narratives, are supporting the project, so are two Norwegian centers for Innovation in AI (SFIs), SFI Visual Intelligence and SFI Media Futures, as well as the large Cofund programs DSTrain and LEAD AI.

5.1

NORA.EU

Molly Maleckar

> "NORA's groundwork in international collaborations with the United Kingdom and particularly the Turing Institute laid the foundation for the deepening of existing collaborations and development of international funding proposals"
>
> – Molly Maleckar, Research Professor, Simula Research Laboratory

In 2023, NORA.EU made notable advancements in its mission to facilitate Norwegian research activity in Europe for our partners; NORA.EU further strengthened the collaboration with the Alan Turing Institute, expanded the network by joining the Cancer Mission Hub, and organized a workshop on forthcoming EU calls.

Collaboration with Alan Turing Institute: Through collaboration with the Alan Turing Institute in the UK, NORA.EU facilitated a valuable research exchange opportunity for Research Professor Molly Maleckar, from the Simula Research Laboratory. Prof. Maleckar received financial support from NORA.EU and the Turing Missions Fund for her research stay in London. She collaborated with experts from the Imperial College and Kings College London on the topic of Digital Twins in cardiology, focusing on the use of AI to re-develop clinical guidelines for critically underserved populations.

Cancer Mission Hub: Health is a strategic focus for NORA, and in line with this focus, NORA.EU joined the Cancer Mission HUB (cancermission.no). The HUB serves as a platform where academia, the government, industry, patient organizations and Hospital Trusts come together to identify new opportunities and to collaborate in the field of cancer. Through NORA's partnership with the hub, the NORA.EU network has established a presence in the field of cancer, enabling NORA consortium partners to connect with other members of the Cancer Mission Hub to collectively address complex challenges in cancer research, prevention and treatment.

Workshop on forthcoming EU calls: On the 13th of December, NORA and the Oslo Cancer Cluster co-organized a workshop on upcoming EU calls in Artificial Intelligence. The workshop was hosted by the Norwegian Research Council and focused on two topics: 'Advancing Large AI Models' under Horizon Europe program and 'Support for Health Data Access Bodies to Facilitate AI in Healthcare' from the Digital Europe program. The topics were presented by Waqar Ahmed from the Research Council of Norway and Alexander Klein from DigDIR. The workshop provided valuable insights and networking opportunities for researchers and professionals interested in participating in EU projects.

EHiN stand – NORA & Cancer Mission hub – Marine Jeanmougin, Ketil F. Widerberg, Michael Solvang

5.2

Nordic Machine Intelligence Journal

NMI was established in 2021 and is a Diamond-Open Access level 1 journal, meaning that it is a commercial, open-access, peer-reviewed journal with no publication fee. Since its inception, the journal has attracted attention from AI and ML researchers, enhancing the academic credibility of the journal.

The aim of the NMI journal is to provide a high-quality journal with complete, accurate, and concise research papers of international and Nordic interest. The journal publishes original research articles, literature reviews, conference proceedings related to both Norwegian and Nordic conferences, articles related to the NMI Challenge, expert opinions and other educational material within all aspects of artificial intelligence. The goal is to position the NMI journal on the second- level Norwegian Scientific Index bibliographic database.

In 2023, the journal published four issues, namely NMI Open Issue 2023, NORA Annual Conference 2023, Road AI 2023 and an XAI issue in collaboration with NLDL 2023. NMI is a collaborative project with Anne Håkansson (UiT) as NMI's Editor-in-Chief. Morten Goodwin (UiA), Klas Pettersen (NORA) and Michael Riegler (Simula-Met) are the journal's Associate Editors. Bjørn Jostein Singstad at Oslo University Hospital is the journal's General Manager.

> "Continuing the strong growth of 2022, 2023 was a successful year for the NMI journal. The journal has expanded with high-quality journal papers, conference proceedings and AI competitions. We view 2023 as a continuation of publishing high-quality research papers and other contributions, increasing the goal of the NMI journal of becoming a significant part of the Nordic countries' scientific database. The ambition for 2024 is to continuously improve the journal's scientific ranking and Norwegian Higher Education Institutions' publication points."
>
> – NMI's Editor in chief Anne Håkansson

Anne Håkansson, Professor UiT and NMI's Editor in chief

NORA Annual Conference 2023

5.3

Research Conferences

NORA Annual Conference 2023

On the 5th and 6th of June of June 2023, NORA held its third Annual Conference at the Scandic Ishavshotell in Tromsø. More than 120+ researchers from Norway gathered to attend one of Norway's most important conferences for the AI community.

The conference aims to gather the Norwegian AI research community to create a platform where keynote speakers and participants can share research, ideas, theories, models, and new perspectives and interact with peers from the field.

Knowledge sharing and interaction was the focus of the conference, fostering a strong community of researchers and practitioners while bridging the gap between researchers, startups, public and private actors. The conference consisted of tracks for oral presentations, poster sessions, panel discussions, startup and industry presentations, and keynote speakers from prominent researchers such as Anders M. Dale, Professor of Neurosciences, Radiology, Psychiatry, Cognitive Science, and Data Science, UCSD; Jill Walker Rettberg, Professor, Principal Investigator of the ERC project Machine Vision in Everyday Life, University of Bergen, Co-director, Center for Digital Narratives and Arnoldo Frigessi, Professor of Statistics, Department of Biostatistics, University of Oslo.

The conference also hosted two panel discussions, where one discussed "NeuroAI" and the other one "Large Language Models: Bias & Reasoning". Both panels featured prominent researchers and discussed key challenges and opportunities within the respective fields.

Each year, the conference awards the best oral presentation and best poster presentation for early career stage researchers.

Best poster presentation NORA Annual Conference 2023

"*Cancer detection for white urban Americans*" by Kajsa Møllersen, Lars Ailo Bongo and Masoud Tafavvoghi, UiT

Best oral presentation NORA Annual Conference 2023

"*An Efficient Machine Learning Approach for Building Segmentation Using Arial Images and LiDAR Data*" by Erik Finnesand, Muhammad Sulaiman and Mina Farmanbar, UiS

NORA Annual Conference Keynote by Jill Walker Rettberg

NORA Annual Conference Keynote by Anders M. Dale

NORA Annual Conference. Keynote by Arnoldo Frigessi

NORA Annual Awards Ceremony

NORA Annual Conference Panel Discussion Neuro AI

NORA Annual Conference Panel Discussion LLM

NeuroAI featured Solve Sæbø, Professor, The Norwegian University of Life Sciences; Anders M. Dale, Professor of Neurosciences, Radiology, Psychiatry, Cognitive Science, and Data Science, UCSD; Hanne Stensola, Associate Professor, University of Agder; Klas Pettersen, CEO, NORA. The panel discussion was moderated by Gaute Einevoll, Professor, NMBU.

Large Language Models: Bias & Reasoning invited insights from Jill Walker Rettberg, Professor UiB, Per Egil Kummervold, National Library and Silje Strandengen. Morten Goodwin, Professor UiA, moderated the discussion.

Both panel discussions were made available as NORA podcasts.

The keynote speakers weren't the only highlights of the conference. The conference presented four academic tracks with interesting academic presentations from both early career stage and mature researchers, mixed with presentations from startups and strategic partners. Track 1 presented talks about Responsible AI and Representation Learning and was chaired by Ana Ozaki, Associate Professor, UiB. Track 2 focused on Medical AI & Chemistry and was chaired by Morten Goodwin, Professor, UiA. Track 3 featured presentations on Marine AI & Earth Observation and was chaired by Katalin Blix, Research Fellow, UiT, while track 4 was themed "Miscellaneous", chaired by Mina Farmanbar, Associate Professor, UiS.

The conference dinner was hosted at Fjellheisen, where conference participants enjoyed stunning views of Tromsø. During the dinner, Anders Andersen, professor at UiT announced the winners of the NORA Annual Awards, celebrating some of the most inspiring individuals within the Norwegian AI community. The NORA Annual Awards aims to acknowledge and celebrate excellent contributions towards AI in Norway, both on an individual level and on behalf of communities. The nominations for the NORA Annual Awards 2023 were collected from the AI Community in Norway and reviewed by the Program Committee of the NORA Annual Conference 2023 and the NORA Board.

NORA Annual Awards Ishita Barua, Klas Pettersen, Morten Goodwin

Annual Conference Klas Pettersen and Anders M. Dale

NORA Annual Awards 2023

NORA Award for Lifetime Achievement
Jim Tørresen, Professor, UiO

NORA Award for Diversity in AI
Roger A. Søraa, Associate Professor, NTNU

NORA Award for AI Community Building and Education
Morten Goodwin, Professor, UiA

NORA.startup Award
Factiverse AS

NORA Award for Distinguished Early-Career Investigator
Ishita Barua, MD PhD,
Lead in AI Healthcare, Deloitte

NORA Award for Outstanding Publication of the Decade 2012–2022
Kai Olav Ellefsen, Jean-Baptiste Mouret, and Jeff Clune. "Neural modularity helps organisms evolve to learn new skills without forgetting old skills." PLoS computational biology 11.4 (2015): e1004128

The NORA Annual Awards will be given out every year at the NORA Annual Conference.

Nordic AI Meet. Serge Belongie (Pioneer Centre for AI), Pascal Fua (EPFL),
Jana Kosecka (Mason University), Robert Jenssen (UiT) and Klas Pettersen (NORA)

Nordic AI Meet 2023

The Nordic AI Meet 2023 was held on 2nd and 3rd of October at the National Museum of Denmark in collaboration with the Pioneer Centre for Artificial Intelligence Denmark. 165 early career stage researchers registered to attend the conference from all over the Nordics and beyond. The program for the conference was packed with interesting sessions, panel discussions and prominent keynote speakers, featuring Prof Martin Gebster from University of Klagenfurt and Graz University of Technology, Prof Elisa Barney Smith from Luleå University of Technology. Prof Yngvi Bjornsson from Reykjavik University, Prof Pascal Fua from EPFL, Prof Jana Kosecka from George Mason University and Lauren Wilcox from Google Research. The Nordic AI Meet has grown considerably since the first conference was hosted in Oslo in 2021, and as it was hosted in Denmark in 2023, the conference has become truly Nordic. In 2024, the conference will be hosted in Helsinki, Finland in collaboration with FCAI. The Norwegian AI Research School provided travel funds for 20 PhD students who wished to attend the Nordic AI Meet.

Echoing last year, the conference also hosted a generative AI art contest where participants were asked to submit an artwork using generative AI tools. The winner of this year's competition was Andy Sode Anker (DTU) from Denmark. The image was a surreal depiction of the city of Copenhagen.

During the conference dinner, the winners for the Road AI dataset competition were announced. For more information about RoadAI and NORA Dataset competitions, please see chapter 7.4.

The Nordic AI Meet 2024 will be organized with Finland's flagship event called AI Day. AI Day receives around 600–700 participants.

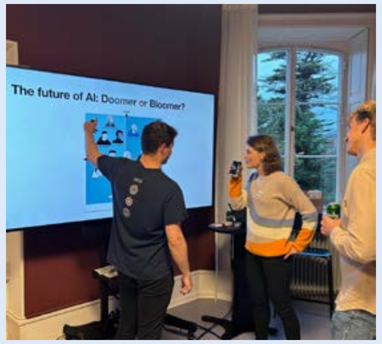
Best Oral Presentation Nordic AI Meet 2023

Thea Brüsch, Mikkel N. Schmidt
and Tommy Sonne Alstrøm
Multi-view contrastive pre-training for multivariate variable-channel time series

Best poster presentation Nordic AI Meet 2023

Kaustubh Chakradeo, Neil Scheidwasser, Alexandros Katsiferis, Seth Flaxman, Swapnil Mishra and Samir Bhatt
Malaria Prediction with Remote Sensing using Unsupervised Contrastive Learning

Nordic AI Meet GenAI Winner



Nordic AI Meet Pre Conference Meetup
at The Observatory

Nordic AI Meet Poster Session

5.4

ENACT

ENACT Launch

In 2023, “Ethical risks assessmeNt of Artificial intelligenCe in pracTice (ENACT)”, a research project which NORA supported alongside consortium and strategic partners, was officially funded by the Research Council of Norway. ENACT is a research project that aims to develop a methodology for managing ethical principles and guidelines for the Norwegian public and private sector that use AI-based systems. The goal is to support Norwegian actors in reducing ethical risks by increasing their understanding of AI ethics through training programs and courses, and by translating ethical principles into practical guidelines.

The project was officially launched at the end of August, where the entire project team met at HIØ’s campus in Fredrikstad.

This consortium involved in the project consists of leading institutions in Norway in the field of artificial intelligence, including SINTEF, HiØF, NTNU, UiO and UiA. In addition, ENACT has received support from partners from the public and private sector, including DNB, NAV, Posten/Bring, Hypatia Learning and Medsensio, all of whom are committed to promoting this important work. The project also benefits from support from the NORA secretariat and the innovation network Cluster for Applied AI / Smart Innovation Norway, in addition to NORDE. International collaboration is a cornerstone of ENACT, with participation from the University College London and Imperial College London. NORA is leading work package 5 “Communication and Dissemination”, and is responsible for developing a comprehensive dissemination and communication strategy. In October 2023, the ENACT website was launched, alongside dedicated pages and profiles on LinkedIn and X.

> “ENACT is for EVERYONE. Developed and designed to meet the ethical AI needs of democratic, non-discriminatory societies. Artificial intelligence should be designed and developed to help us with our processes, not to dictate them.”
>
> – Hans Torvatn, Project Manager, SINTEF

Launch of NeuroAI

NeuroAI – Special Interest Group

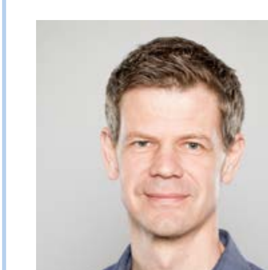
In 2023, NORA supported the establishment of a Special Interest Group (SIG) within the field of NeuroAI. NeuroAI, a field at the intersection of the brain sciences and artificial intelligence, is poised to become a significant and important research field. Its promise lies in decoding how the brain computes, enabling the development of more efficient and flexible AI, potentially surpassing human intelligence. This multidisciplinary effort involves computer science, neuroscience, psychology, philosophy, linguistics, law, and ethics. Norway, with its world-class expertise in brain sciences and a thriving AI community, is well-positioned in this emerging field. The Neuro AI SIG works towards building an ideal ecosystem in Norway and aims to take a leading role in NeuroAI initiatives in Europe. Norwegian investments in NeuroAI may then be a strategic initiative to position Norway at the forefront of AI research worldwide.

The NeuroAI SIG hosted three workshops in 2023, starting with the launch of the SIG on January 24th at Simula. The second workshop took place at UiT on June 4th, in collaboration with the NORA Annual Conference in Tromsø. The workshop included presentations, poster sessions, roundtable discussions and networking among the NeuroAI community in Norway as well as keynotes from Anders M. Dale and a digital keynote presentation from Tony Zador on "*Catalyzing next-generation Artificial Intelligence through NeuroAI*". The workshop ended with a discussion on "*How do we proceed with NeuroAI Norway?*" between Gaute Einevoll, Solve Sæbø, Kai Olav Ellefsen, Mikkel Lepperød, Tor Stensola and Klas Pettersen.

The third workshop was hosted at NMBU on December 15th and was themed "Young NeuroAI". The workshop aimed to encourage researchers who are early in their careers to contribute with a presentation or a poster and engage with the larger Neuro AI community. Participation was therefore also welcomed from everyone in the NeuroAI community. The workshop featured a keynote speech from Doris Tsao (UC Berkeley) and featured a packed program with poster presentations, oral presentations, discussions and networking.

Young NeuroAI Workshop

> "The key takeaway from the Young NeuroAI workshop is that the interdisciplinary area of NeuroAI will assume growing significance in the years to come. The presentations delivered by emerging researchers, alongside the exceptional keynote address by Doris Tsao from UC Berkeley, vividly illustrated the synergistic potential between neuroscience and artificial intelligence. This symbiosis has the capacity to enhance our comprehension of the intricacies of the human brain and chart a novel course toward the development of more resilient and sustainable AI systems."
>
> – Solve Sæbø, Professor, NMBU



Solve Sæbø | Photo: NMBU – Håkon Sparre

6

Education

NORA has many initiatives for AI education throughout the year, which includes topic specific webinars, workshops and events. The main platform for education is through the NORA Norwegian AI Research School, although NORA continues to support consortium partners in establishing new independent courses. The NORA Norwegian AI Research School provides courses specifically through the winter school, hosted in collaboration with NLDL, the summer school, hosted together with the NORA Annual Conference, and other conferences, such as the PRESIMAL Autumn School.

Winter School 2023 Opening

Winter School 2023 Tutorial

Since the launch of the NORA Norwegian AI Research School in 2021, NORA and consortium partners have made significant efforts towards strengthening education and training within the field of AI in Norway. The school currently has 226 active members and 14 PhD students have successfully graduated. The Research School is an active partner in the NORA Annual Conference 2023 and Nordic AI Meet 2023, hosting a summer school after the annual conference and winter school alongside NLDL in Tromsø, together with workshops and seminars for members.

The NORA Norwegian AI Research School is funded by the Research Council of Norway and is an 8-year project starting in 2021 and ending in 2029. The initial aim for the research school was to have 200 members by 2029, which was already exceeded in 2023, the second year of the project.

Winter School

The NLDL Winter School 2023 was hosted in collaboration with Visual Intelligence SFI and the Northern Lights Deep Learning conference (NLDL). The winter school offered a unique opportunity for PhD students to engage with deep learning through expert-led tutorials and the opportunity to participate in the broader NLDL conference. The winter school was organized over 5 days at UiT, The Arctic University of Norway, and the program included sessions on innovative applications of deep learning and high-performance computing. PhD students who attended and completed the required course assessments were granted 5 ECTS by UiT. The winter school at NLDL was successfully organized with close to 150 attendees. The Research School provided financial support for 24 students to attend the winter school.

Summer School

The Summer School 2023, hosted by the UiT The Arctic University of Norway as part of the NORA Annual Conference was a week-long intensive program from June 12 to June 17, dedicated to current topics in Artificial Intelligence. This year's program offered four courses with a strong focus on interpretability in deep learning, self-supervised learning, optimization algorithms, and secure and robust AI model development. The courses, aimed at the master and PhD level, delivered a blend of theoretical and practical knowledge. Students who successfully completed in the course were granted 5 ECTS credits. Students could also register and attend individual courses without receiving credits. 45 students attended across four tracks. Financial support was available for candidates from NORA partner institutes. The Research School provided financial support to 20 PhD students for their participation in the summer school.

Research school goals:

200

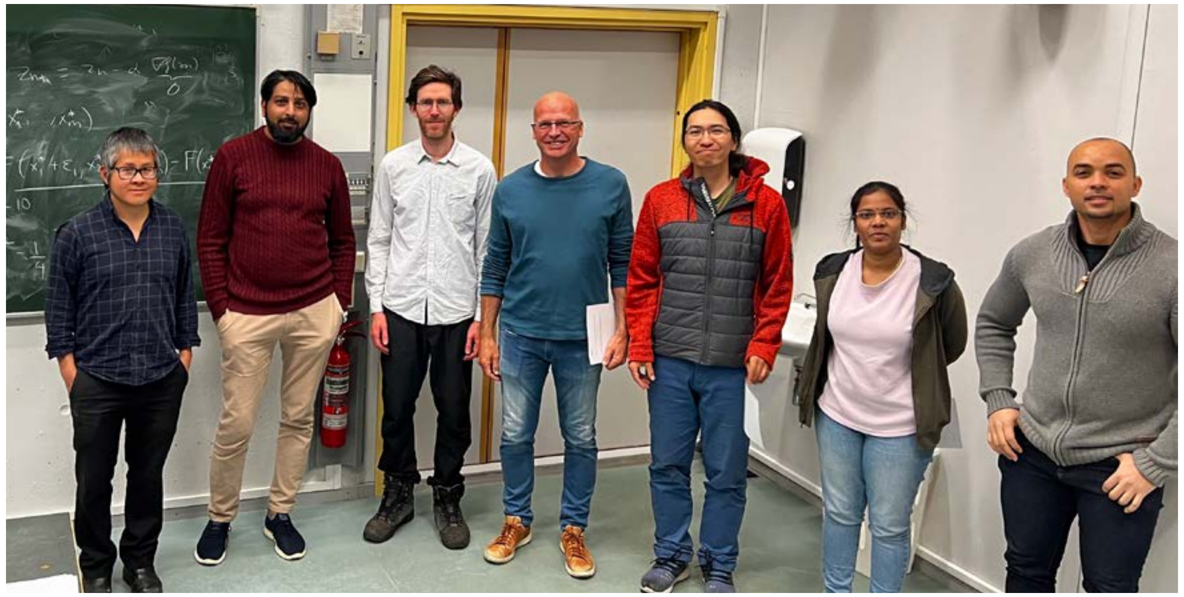
200 PhD students by the end of the project period

25%

25% industrial and public sector PhDs by 2029

Summer School 2023 Track 1 Course

Summer School 2023 Track 2 Course



Summer School 2023 Track 3 Course

The highlight of the summer school was its diverse curriculum, which included a course led by Visual Intelligence researchers on self-supervised learning. The courses were designed to engage participants in both theoretical understanding and practical application. Notably, the program also included a social event at Storgata Camping on GenAI, fostering an environment for networking and collaboration.

The 2023 NORA Summer School offered a rich educational experience, combining expert-led courses with the stunning backdrop of Tromsø. The program was not just about learning AI but also understanding its implications and ensuring alignment with ethical standards. The event not only enhanced the participants' technical knowledge but also promoted interaction among a diverse group of attendees, setting the stage for future collaborations and advancements in the field of AI.

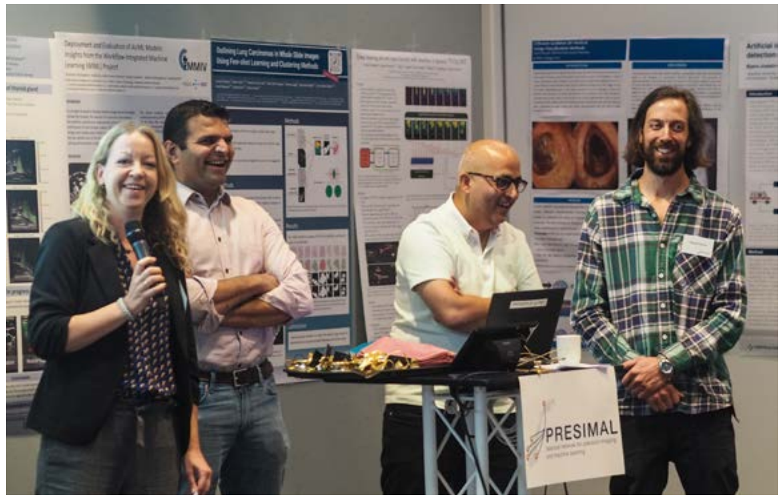
Tromsø AI Meetup 2023

On the 11th of June, 2023, the Research School organized a generative AI meetup in collaboration with TEKNA and the Visual Intelligence Graduate School. The meetup was planned as a social activity with the purpose of welcoming participants who were attending the NORA Summer School. The meetup had insightful talks on the hot topic of generative AI.

Presimal Autumn School Group Photo

Autumn School with PRESIMAL

The PRESIMAL Autumn Research School 2023 was a successful gathering, attended by over 40 early career stage researchers and established scientists at the scenic Sommarøy Arctic Hotel, from 13–15 September 2023. The Presimal Autumn Research School is dedicated to advancing the field of medical imaging and AI. This enriching 3-day event, organized by PRESIMAL in collaboration with NORA, not only offered a platform for academic discourse but also included outdoor adventures such as a challenging hike up Hillesøya and the chance to witness the awe-inspiring northern lights. The conference balanced rigorous academic sessions with social activities, great local cuisine, and the natural beauty of the northern landscape.



Presimal Autumn School Organizing Committee Eli Eikefjord, Keyur Radiya, Sachin Gaur and Samuel Kuttner

The program was packed with workshops, poster presentations, and expert keynote speeches, providing insights into the latest developments in AI applications for medical imaging. Esteemed speakers like Ingfrid Haldorsen (UiB) highlighted the role of AI in cancer diagnostics, while others, such as Alexander Lundervold (HVL) and Samuel Kuttner (UiT) delved into deep learning and the physics of medical imaging for AI scientists. Interactive elements like the "Connectathon" hosted by Hauke Bartsch (UiB) encouraged practical engagement, and the poster sessions facilitated in-depth discussions among participants. The event ended with recognizing Marianne Hannisdal (UiB) for contributing the best poster and Ashkan Moradi (NTNU) for the best oral presentation, emphasizing the successful fusion of knowledge-sharing and community-building at the Autumn Research School.

Research School Structure

Overview of the NORA Norwegian AI Research School Structure

Strategic partners

Centre for Digital Life Norway
Uninett Sigma 2

NORA Research School Board
Chair: Cathrine Phil Lyngstad (NAV)

Project Manager
CEO: Klas Pettersen (NORA)

International Advisory Council

The Alan Turing Institute
Helmholtz Association
CLAIRE

NORA Secretariat (Executive body)
Research Coordinator: Sachin Gaur (NORA)

PhD Student Council
Leader: Mari Serine Kannelønning (OsloMet)

Innovation Council
Leader: Signe Riemer-Sørensen (SINTEF)

Education Council
Leader: Tom Ryen (UiS)

Partners

Universities / University colleges

Universities / University colleges

University of Stavanger, University of Oslo, Norwegian University of Life Sciences, NORCE Norwegian Research Centre AS, University of Agder, Simula Research Laboratory AS, SINTEF, UiT The Arctic University of Norway, University of Bergen, Kristiania University College, Østfold University College, University of South-Eastern Norway, BI Norwegian Business School, Oslo Metropolitan University

Research institutes / SFIs

Research institutes / SFIs

Visual Intelligence, BigInsight, Simula Research Laboratory AS, Media Futures, NORCE Norwegian Research Centre AS, SINTEF, Western Norway Research Insitute

Industry / Public Sector

Industry / Public Sector

Norway Health Tech, Norwegian Cognitive Center, Oslo Cancer Cluster, Digital Norway, Oslo University Hospital, Cluster for Applied AI, NAV, Norges Bank Investment Management, Telenor, DNB, Skanska, Graphcore, NORA.startup, NORA strategic partners

7

Innovation

NORA's goal is to be a leading network for collaboration between consortium partners, start-ups, private and public actors in Norway. To achieve this goal, NORA has developed and launched various initiatives aimed at supporting and strengthening innovation within the field of AI in Norway, namely NORA.startup, NORA Strategic Partners and the NORA Norwegian AI Research School. The Research School focuses on delivering quality education relevant to the Norwegian labor market. In addition, NORA has played a key role in acquiring funding for and establishing new initiatives aimed at supporting both public and private sector, namely the European Digital Innovation Hub, Nemonoor, the Norwegian AI Cloud (NAIC), ENACT (Ethical risk assessment of Artificial Intelligence in Practice) and NORA.LLM.

Throughout 2023, NORA has focused on creating meeting places between the consortium partners, private and public actors and startups, such as the NORA Annual Conference 2023, the Nordic AI Meet 2023, NLDL Industry Day, NORA.startup events, while also supporting other important events such as the AI+ conference in Halden. Through NORA.startup, NORA has taken an active role in supporting startup companies in the field of AI, while establishing forums for collaboration and research.

7.1 NORA.startup

NORA.startup was created based on an initiative introduced by the Simula Garage with the aim of building a national network for startups driven by research-based innovation. Since its inception in September

NORA.startup | Key figures

45+

NORA.startup consists of 45+ companies

60+

NORA.startup consists of 60+ researchers

40+

NORA.startup has organized more than 40 webinars and hybrid events

2020, NORA.startup has been an active supporter of startups who wish to connect with the research community across Norway and has since become known as NORA's innovation platform.

In 2023, the NORA.startup community grew its membership and advvanced national activities across partner institutions. Currently, NORA.startup consists of more than 45+ startup companies and 60+ researchers.

NORA.startup focuses on creating an arena for research-based innovation, where members can exchange experience, knowledge and disseminate results from innovation projects. The network facilitates opportunities for research collaboration in the field of AI, machine learning and robotics, and supports startups and aspiring entrepreneurial researchers by helping them navigate and connect to relevant actors and knowledge clusters in the Norwegian AI Innovation ecosystem.

In 2023, NORA.startup hosted numerous activities for members including themed hybrid events and physical workshops, match-making sessions, events exploring funding opportunities and other social networking events. In January 2023, NORA.startup hosted a social AI Startup stories event at Simula focused on promoting startups and actors working in the field of sustainability and AI. The event featured presentations from prominent startups such as Sensorita, Fjong, NovaTech, Forestat and presentations from Mali Hole, Director of technology and sustainability ICT Norway and Achim Kohler, Professor and Coordinator for Green Data Lab, NMBU. Eric Daimler, previous White House Presidential Innovation Fellow for Machine Intelligence and Robotics, contributed with a keynote speech and participated in the following panel.

In May, NORA.startup, in collaboration with Startuplab, hosted an event exploring funding opportunities from the Research Council of Norway, highlighting funding opportunities such as the Innovation project in the Industrial Sector. The event also explored funding schemes from the European Innovation Council and Horizon Europe, including the EIC Pathfinder and Transition funding, EIC Accelerator, Pathfinder and grants available to startup from Innovation Norway. The event invited startups who had succeeded in their applications for grants to share their experience and motivate startups to apply.

1

2


3

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5


6

1. NORA.startup event Oslo, presentation by Knut Husdal, Nova Tech | 2. NORA.startup presentation Oslo Big Data Day | 3. NORA.startup event Startuplab Oslo, presentation by Maria Amelie, Factiverse | 4. NORA.startup event Tromsø | 5. NORA.startup event Oslo, Anastasiia Korsak and Rebecca Wiborg Seyfarth from Volur | 6. NORA.startup event Oslo, Mehmet Naci Akkøk from In-Virtualis and Gaute Kokkvoll from Factiverse

NORA Annual Conference, presentation by Medsensio

NORA Annual Conference presentation by Bineric

In addition, NORA hosted two events focusing on connecting students with startups, one in Bergen in collaboration with UiB and Startuplab Bergen and one in Oslo, in collaboration with Startuplab, HK, UiO, OsloMet, Simula and BI Norwegian Business School. Startups value the fresh perspective and the energy that students can bring to their teams, and connecting students, researchers and startups is an important goal for NORA.startup. Students often look for opportunities to contribute their skills and knowledge to help startups solve complex problems and develop new products and services. Working for startups provides students with a unique opportunity to learn about entrepreneurship, innovation and startup culture, giving them valuable work experience that will be highly sought after by future employers. Through matchmaking events, NORA.startup successfully connected many students with startups for project-based work.

In October, NORA.startup hosted an event during the Arctic Innovation Week in Tromsø focused on Generative Artificial Intelligence as a driver for innovation. The event was hosted in collaboration with SFI VIsual Intelligence and the Visual Intelligence Graduate School and combined presentations from startups and researchers active in the field of generative AI, such as Benjamin Ricaud, Associate Professor, UiT, Pavitra Chauhan, PhD Student UiT, Ismet Bachtiar, Kreativ Teknologi, Tvibit, Lifeness.io and Abdera.ai. The event ended with a quiz organized by Suaiba Amina Salahuddin, PhD Student, UiT, followed by pizza and networking among participants.

NORA.startup has also played a pivotal role in the NORA Cutting Edge AI series, where startups such as Digifarm, Iris.ai and brua.ai have been invited to present keynote speeches and contribute to panel debates.

During the NORA Annual Conference 2023 in Tromsø, NORA.startup members and strategic partners were invited to submit scientific abstracts which were reviewed by the NORA Annual Conference Program Committee. Based on reviews, Medsensio and Bineric presented interesting use cases of applied AI, alongside Posten. NORA.startup was also invited to provide a presentation during the Big Data Day hosted at DnB in April and co-organized the AI Startup track at AI + in Halden in May.

Steering group NORA.startup

Jørgen Veiby
Business Development Manager, Startuplab and the Leader of the Board

Anita Schjøll Brede
CEO and Co-founder of IRIS.ai

Lars Selsås
CEO and Founder of Boost.ai

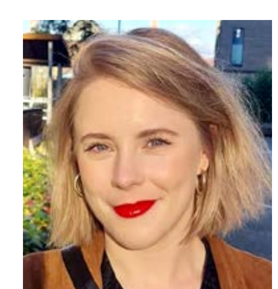
Sondre Pedersen
Co-founder of Findable

Lars Ailo Bongo
Professor at UiT, The Arctic University of Norway

Morten Goodwin
Professor at the University of Agder

Annette Fargerhaug Stephansen
Research Director Digital Systems at NORCE

Freyja Jørgensen
Innovation Manager Grundergarasjen



Gro Herredsvela Rørvik
Senior Research Advisor, Vibrent

Klas Pettersen
CEO of NORA

Birte Hansen
Innovation and Industry Coordinator, NORA

NORA.startup members

7.2 NORA Strategic Partners

The network for Strategic Partners was launched in January 2022, and was a central accomplishment of NORA. NORA Strategic Partners is a network for and of research-based innovation projects in the business and public sector. In 2023, NORA welcomed NAV [the Norwegian Labor and Welfare Administration] as a member to the network, joining existing partners such as Ruter, Posten AS [Norwegian Postal Service] and Norsk Helsenett [Norwegian Health Network] as strategic partners to NORA. In 2023, NORA continued the effort of working closely with the private and public sector and instituted an Innovation Council comprising strategic partners. This council serves as an advisory body to both the NORA Consortium Board and the NORA Norwegian AI Research School board.

NORA Strategic Partners will benefit from the experience and expertise present in the NORA consortium partners. The aim of the network is to build strong platforms for knowledge and technology exchange, education and training and provide access to talent and student collaboration, supported by NORA.startup and the NORA Norwegian AI Research School. A central goal is to increase the uptake of AI in Norway through open and shared knowledge and technology exchange amongst NORA consortium partners, private and public sector and startups.

NLDL 2023 keynote presentation by Davide Roverso, Chief Analytics Officer, eSmart Systems | Photo: Harald Lykke Joakimsen

NLDL 2023 Moderator Martine Espeseth, Project Manager, KSAT | Photo: Harald Lykke Joakimsen

The linchpin for successful partnership collaboration lies in connecting and strengthening collaboration between actors in the NORA ecosystem. NORA's objective is to support partners in conducting research-based innovation, exploring AI applications, and advancing AI adoption in Norway. This initiative actively seeks to intensify research collaboration among consortium partners, startups, private and public actors.

NORA has created and launched many initiatives and arenas for interaction amongst consortium partners, private and public sector, startups and students, such as the NORA Annual Conference, the NORA Norwegian AI Research School, the Nordic AI Meet and the NLDL Industry Day. For example, the industry segment is an important track in the Nordic AI Meet where private and public actors are invited to present projects where AI is used to produce innovative products and services. At the Nordic AI Meet 2023, which took place in Copenhagen, the industry segment saw scientific presentations about AI in practice from both Norwegian and Danish companies and startups, including Skanska, SINTEF, Corti and SyntheticAIdata. Private and public actors and startups have also been invited as keynote speakers and panelists to the NORA Cutting Edge AI Series. Read more about Cutting Edge AI in chapter 7.3.

Industry Day NLDL

On the 10th of January, 2023, NORA co-hosted the Industry Day as a special event to the Northern Lights Deep Learning Conference. The conference is organized by the SFI Visual Intelligence and is hosted by UiT, The Arctic University of Norway. The event featured three keynote speakers, namely Malin Rygg, Director of the Universal Design of ICT, Signe Riemer Sørensen, Research Manager, SINTEF, Davide Roverso, Chief Analytics Officer, eSmart Systems and concluded with a panel with participation from Jonas Nordhaug Myhre, Senior Research Scientist, NORCE and co-founder of Abdera.ai. The panel discussion was moderated by Martine Espeseth, Project Manager, KSAT and addressed important subjects such as the value of industry to academic collaboration and how academic researchers can connect with industry to advance collaboration within the field of AI.

Klas Pettersen, CEO of NORA also led a panel at NLDL 2023 focused on cutting-edge AI and the role of academia in tomorrow's AI landscape. Among the panelists were Mihaela van der Schaar, Professor of Machine Learning, Artificial Intelligence and Medicine at the University of Cambridge, Christian Igel, Professor, DIKU, Polina Golland, Professor of Electrical Engineering and Computer Science at MIT, Zheng-Hua Tan, Professor UiT.

Klas Pettersen, CEO of NORA.ai, Moderator. Panellists: Samia Touileb, Researcher, MediaFutures, UiB; Anita Schjøll Abildgaard, CEO of Iris.ai; Eivind Throndsen, Academic Liaison / Product Manager, Schibsted; Per Erik Solberg, NLP Linguist, Språkbanken v/Nasjonalbiblioteket; Sten Ludvigsen, Professor in learning and digitalization, UiO

LEKIO – Leadership Network for AI in the Public Sector
In 2023, NORA, alongside Posten, DigDir and Ruter founded an informal network for leaders and middle managers in the public sector responsible for developing and driving AI related projects. On the 15th of March, the group – named LEKIO – hosted the first workshop with the group which discussed opportunities and challenges arising when AI was applied to produce solutions and services pertaining to the public sector. Since its launch, the network has hosted three themed workshops, focusing on themes suggested by members, such as Large Language Models, Generativ AI and AI in Health and Medicine. Workshops include talks from invited experts, specific cases introduced by members and discussion. The aim of the workshops is to gain new knowledge, share experiences and learn best practices from colleagues working on similar technologies. The workshops are well attended by leaders and middle managers from a diverse set of public actors.

7.3 Cutting Edge AI

In 2023, NORA launched a new seminar series aimed at making AI accessible to a broader audience, focusing on knowledge-sharing, idea exchange, and collaborative projects in AI. The seminar series, named Cutting Edge AI, takes place once every quarter. In 2023, NORA hosted three Cutting Edge AI events at Domus Bibliotheca Oslo and co-hosted one in Bergen with UiB AI. The events allow for virtual and physical attendance and invites participants to delve into the latest advancements from the field. The agenda for each event encompassed keynote presentations, panel debates, and interactive workshops, catering to various levels of expertise in AI. The Cutting Edge AI series has successfully offered a platform for learning from leading AI researchers and professionals in Norway, ensuring that each participant, regardless of their AI proficiency, found the experience enriching. Additionally, the series uniquely addresses policy-related aspects of artificial intelligence, providing a well-rounded perspective that encompasses both theoretical and applied AI concepts.

Klas Pettersen, CEO of NORA.ai

Cutting Edge AI: Large Language Models
On February 21st, 2023, NORA proudly hosted the inaugural seminar of the Cutting Edge AI series, marking a significant milestone for this new initiative. This first seminar, centered on Large Language Models, symbolized NORAs commitment to democratizing AI. The event featured talks from Lilja Øvrelid, Professor of Language Technology, UiO, Pierre Lison, Senior Researcher at The Norwegian Computing Center, Michael Riegler, Chief Research Scientist at Simula/Research Professor, Samia Touileb, Researcher, MediaFutures, UiB, Anita Schjøll Abildgaard, CEO of Iris.ai, Andrey Kutuzov, Associate Professor, Research Group for Language Technology, UiO, Per Egil Kummervold, Senior Researcher at the National Library of Norway and Arjun Chandra, Independent AI researcher, engineer, and founder of brua.io, and included a panel discussion on the ethics of large language models.

The event provided a dynamic platform for researchers, students, practitioners, and the broader public to engage, share knowledge, and collaborate on AI initiatives. The event was a resounding success, with over 300 online attendees and more than 100 in-person participants at Domus Bibliotheca, reflecting the growing interest for AI from the Norwegian community.

Ishita Barua, Lead in AI in Healthcare, Deloitte

Sabry Razick, Chief Engineer, UiO

Klas Pettersen, CEO of NORA.ai; Marija Slavkovik, Head of Department of Information and Media Studies, UiB; Ishita Barua, Lead in AI in Healthcare, Deloitte; Simen Eide, Head of Schibsted's AI Enablement Program; Riley Brown

Klas Pettersen, CEO of NORA.ai; Marija Slavkovik, Head of Department of Information and Media Studies, UiB; Ishita Barua, Lead in AI in Healthcare, Deloitte; Simen Eide, Head of Schibsted's AI Enablement Program; Riley Brown

Cutting Edge AI: Responsible Deployment of AI

The second seminar in the Cutting Edge AI series was held on May 11th, 2023, at Domus Bibliotheca in Oslo. The event delved into the critical topic of responsible AI deployment. Esteemed AI experts led discussions on the ethical development and prudent use of AI tools, providing attendees with valuable insights into the practical aspects of AI deployment. Invited keynote speakers emphasized the importance of responsible practices in AI, and fostered a comprehensive understanding among a diverse audience, including industry professionals, public sector representatives, SMEs, and academic scholars. The event held talks from Riley Brown, AI content creator on Tik Tok, Simen Eide, Head of Schibsted's AI Enablement Program, Marija Slavkovik, Head of Department of Information and Media Studies, UiB, Ishita Barua, Lead in AI in Healthcare, Deloitte, Sabry Razick, Chief Engineer, UiO and Jawad Saleemi, AI and Data Lead, Ruter AS. The seminar's hybrid format ensured broad accessibility, ensuring national participation.

Pinar Heggernes (UiB)

Cutting Edge AI: Investment in Infrastructure for Norway's Intelligent Future

In September, NORA hosted the third Cutting Edge AI seminar, which focused on the pivotal role of infrastructure in shaping Norway's AI-driven future. Gathering leading experts and researchers, the event offered an in-depth exploration of the Norwegian AI landscape. Topics such as data governance, ethical considerations, and strengthening academia-industry partnerships were at the forefront. Invited speakers were Cathrine Phil Lyngstad, Head of Section Data, NAV IT, Hans Eide, Special Advisor, Sigma2, Nils Helset, CEO, Digifarm, Sabry Razick, Chief Engineer, UiO/ NAIC, Christine Hafskjold, Senior ICT policy adviser, KDD and Leon du Toit, Head of Section, TSD.

The seminar highlighted the significance of AI beyond mere digitalization, addressing the challenges and opportunities in building a robust AI ecosystem in Norway. The insights gained during the event were instrumental for the private and public sector, and the overall innovation sector in Norway.

Cutting Edge AI x UiB: What are we going to do with a billion for artificial intelligence?

The fourth Cutting Edge AI seminar was co-hosted by the UiB AI Lab and brought together experts and stakeholders to discuss Norway's ambitious national strategy on AI and digitalization. The event followed the government's announcement of a one-billion-kroner investment in AI and digital security research over the next five years. The seminar featured presentations from several of Norway´s most notable AI experts, such as Morten Irgens from Kristiania University College and Copenhagen Business School, Inge Jonassen, head of the Department of Informatics at UiB and Chairman of the NORA Board, Kjersti Engan, professor at the Department of Data and Electrical Engineering at the University of Stavanger, Simen Eide, AI developer and leader of the AI Enablement Program at Schibsted and Odd Gurvin, project manager at the Norwegian Cognitive Center

Key highlights of the seminar included in-depth discussions on three primary areas: the social impacts of AI and digital technologies, the development of digital technologies themselves, and the application of these technologies in innovation across business and public sectors.

7.4

Dataset Competitions

Do you remember the winners of last year's FishAI Competition? Meet Catchwise – the startup!

The team behind Catchwise. Jonas Dammen, Ludvig Løddesøl, Kristian Andersen Hole, Åsmund Brekke, Tomas Roaldsnes

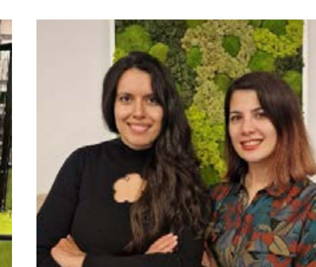
> "The competition inspired us! So many engineers and academics sit and wait for a good business case or valuable problem to help with, and using these competitions to highlight them is gold. For us, this was the perfect nudge for building something that we believe in."
>
> – The Catchwise team

Since they were announced as the winners of the FishAI: Sustainable Commercial Fishing Dataset Competition at the Nordic AI Meet in 2022, the team – formerly known as Team Poseidon – has successfully launched a startup commercializing the powerful decision-making tool they developed during the FishAI competition. Since the launch of the start-up, Catchwise.no has had over 750 users on their platform representing over 70 shipping companies and are currently working closely with a few selected vessels and fisheries to further develop their product. The tool created by the Catchwise team has shown great potential in ensuring a more environmentally minded fishing industry by allowing fishermen to use data to predict the coordinates of a specific fish. Research and domain knowledge has been important to Catchwise in grounding their project, which has played an important role in their success. The research the team themselves have conducted throughout the competition in the process of launching their startup has been essential and will continue to be useful for them – and others. Participation in the FishAI competition inspired the idea and product behind Catchwise.

Meet the winners of RoadAI: Reducing emissions in road construction dataset competition 2023

In 2023, NORA launched a dataset competition together with Skanska, SINTEF, Ditio, USIT/UiO and the Nordic Machine Intelligence Journal. The competition invited teams from all over the world to take a deep dive into data from a road construction site in Viken, Norway. The data included GPS data from dump trucks, machine data including daily fuel consumption, and drone maps of the construction site, and encouraged developing an algorithm to help reduce CO_2 emissions in road construction.
The team behind the RoadAI competition recommended an exploratory approach when solving the set tasks and encouraged innovation when developing solutions. All participating teams were asked to submit a 2-page paper describing methods and results. The competition saw great interest and over 30 teams from all over the world registered to compete for the winning prize. The winners of the RoadAI dataset competition were announced at the NordicAIMeet 2023 in Copenhagen. We congratulate Team Think Evolve for winning the competition and Team NoDig and Data Roadsters for sharing the second place.

Team NoDig Mats Stensrud Skui, Lars Martin Hodne, Andreas Thyholt Henriksen Bottom from the left- Øystein Stavnes Sletta, Ole-Magnus Høiback



Team Data Roadsters. Eleonora Piersanti and Naeeme Danesh Moghaddam

Team Think Evolve From left: Ponniah Kameswaran, Aakash Gupta and Avanish Singh

NORA ICCV

RCV workshop at ICCV

Sponsored by NORA and co-organized by UiT, The Arctic University of Norway, the Resource Efficient Computer Vision Workshop (RCV) at the International Conference on Computer Vision (ICCV) 2023 brought together researchers and industry practitioners to address the growing scale of deep learning models.

With a focus on practical training and inference efficiency, especially in the realm of computer vision, the workshop aimed to reduce computational memory requirements and associated times. A unique aspect is its emphasis on budget-aware model training and inference, acknowledging diverse resource constraints. RCV also featured challenges to optimize model training and inference under specific constraints, fostering collaboration and advancing research in resource-efficient deep learning.

Notable speakers at the event included Prof. Song Han from MIT, USA, Dr. Prateek Jain from Google, India, Dr. Sangdoo Yun from Naver AI Lab, South Korea, and Prof. Efstratios Gavves from the University of Amsterdam, Netherlands.

The conference featured 50 posters and 3 oral presentations, showcasing diverse research in efficient computer vision models and applications. There were over 100 abstract submissions and 53 were accepted after double blind reviews by the 3 sets of reviewers for each submitted paper. All 53 papers were published by the Computer Vision Foundation as open access, contributing valuable insights to the research community.

7.5 European Digital Innovation Hub – Nemonoor

Norway has joined the major European initiative – DIGITAL EUROPE – to contribute to AI and other advanced digital technologies promoting the competitiveness of private and public enterprises. Part of this program is the European Digital Innovation Hubs (EDIHs). The initiative is intended as a one-stop shop supporting companies and public sector organizations to respond to digital challenges and become more competitive. EDIH Nemonoor is a national hub for AI set up to help small and medium-sized enterprises (SMEs) and public service organisations (PSOs) to understand and utilize AI to create value for Norwegian society. NORA leads a work package on sustainable and trustworthy AI, in addition to contributing to coordinating work on education and infrastructure.

The public launch of the EDIH took place in June 2023, and the fall has been spent consolidating the collaboration and setting up relevant services. Karianne Tung further strengthened the work with 20 million NOK provided in national funding to support the EDIH Nemonoor and EDIH Oceanpolis, the two hubs active in Norway.

The main delivery for NORA in 2023 was the guidelines for sustainable and trustworthy AI submitted to the European Commission on the 2nd of November. These guidelines helped address the wish to align with the EU by showing examples of how to work towards lawful, ethical and robust artificial intelligence. Going from an outline in the EU towards a more concrete Norwegian approach prior to incoming regulations such as the EU AI Act. The guidelines will be updated in 2024, published online and used to help SMEs and PSOs through guidance and workshops.

> "With increasing focus on AI, the demand for AI capacity and infrastructure is increasing. Today´s AI infrastructure is scattered and fragmented, with mainly local infrastructure setups. The Norwegian Artificial Intelligence cloud will connect leading expertise and create a national e-infrastructure with a broad service portfolio tailored to AI needs of academia, public administration and SMEs8/large industry. We are really excited to be part of one of the most ambitious AI-related projects in Norway"
>
> – Klas H. Pettersen, CEO of NORA

7.6 Norwegian AI Cloud

On the 25th of September, a successful kick-off event for the Norwegian AI Cloud (NAIC) was held at the University of Oslo. NAIC is a three-year project supported by the Norwegian Research Council that will establish a new national infrastructure for AI in Norway that will foster AI education, research, and innovation. The launch included presentations by Pinar Heggernes (UiB), Sabry Razick (Uio), Gard Thommassen (UiO), Stephan Oepen (UiO), Turgay Celik (UiA) and Klas Pettersen (NORA).

NAIC will provide access to High-Performance Computing (HPC) resources and support for researchers, PhD students, educators, entrepreneurs, startups, and SMEs who are interested in exploring AI methodologies and developing advanced AI models and algorithms. Furthermore, the project provides inclusive training programs and resources, accommodating both individuals new to AI seeking an introductory level of understanding and those looking for more advanced courses to leverage the infrastructure for specific tasks.

Over the course of three years, the Norwegian AI Cloud will bring together leading experts in the field to establish an infrastructure that provides accessible, affordable, and easy-to-use resources for machine learning and deep learning. The consortium comprises a diverse group of partners, including NORA, UiO, NTNU, UiB, SIMULA, UiA, SINTEF, UiT, SIGMA2, and NORCE Research, all of whom are renowned leaders in their respective domains. By pooling their unique expertise and resources, the consortium forms a dynamic and collaborative team fully committed to propelling the field of AI and machine learning in Norway.

Klas Pettersen, CEO of NORA

8

International Cooperation

Establishing international collaborations is essential to elevating Norwegian AI research and enhancing the international visibility of NORA consortium partners' research efforts. To reinforce these international connections, NORA has signed agreements with prestigious institutions like the Alan Turing Institute in the United Kingdom and the Helmholtz Information & Data Science Academy (HIDA) in Germany. These agreements provide Norwegian researchers with opportunities for research exchanges with the Alan Turing Institute and HIDA. In 2023, six Norwegian researchers were selected to participate in these exchange programs.

Additionally, in 2023, NORA organized the third Nordic AI Meet conference in Copenhagen in collaboration with the Pioneer Centre for Artificial Intelligence of Denmark. The conference is supported by the Research Council of Norway and CLAIRE. This event serves as an outstanding platform for NORA to collaborate with key Nordic partners in the AI field. The program and organizing committees for the Nordic AI Meet include members from leading AI organizations in the region, such as:

- WASP, Sweden
- AI Sweden
- AI.se
- Pioneer Centre for Artificial Intelligence, Denmark
- Science AI Center, Denmark
- Finnish Center on Artificial intelligence
- Icelandic Institute for Intelligent Machines

8.1 Alan Turing Institute

In 2023, two PhD students were chosen to go to the UK for a study exchange, as part of NORAs Enrichment Scheme agreement with the Alan Turing Institute (ATI), namely Lars Olsen from the University of Oslo and Anastasiia Grishina from Simula. This collaboration between NORA and the Alan Turing Institute highlights the commitment to fostering international research cooperation by providing Norwegian

Anastasiia Grishina from Simula

Lars Olsen from University of Oslo

researchers the opportunity to conduct research in and exchange knowledge with a world-class AI environment.

Lars, who was selected for the Enrichment Scheme, expressed his excitement about being a part of the 2023/24 Turing Enrichment Scheme cohort at the Alan Turing Institute in London. In his own words:

"The six-month program at ATI is an excellent chance for me to engage with the UK's top minds in AI, and I look forward to an educational and eventful period during his PhD journey. The opportunity for me to participate in this prestigious program, mainly intended for British university students, is a testament to the strength of the partnership between NORA and ATI and the quality of researchers emerging from Norway."

Anastasiia, the other PhD student selected for the Enrichment Scheme from Simula, expressed:

"I am thrilled about the unique opportunity to collaborate with leading AI researchers in the UK and improve my software engineering skills while focusing on ethical and meaningful AI applications. Having already spent a month at the institute, I am finding the atmosphere at ATI motivating and lively, filled with numerous events and learning opportunities. My experience includes engaging with the Research Engineering Group and participating in the Foundation Models Reading Group. The opportunity to give a talk on LangChain and upcoming presentations were one of the highlights of my time at ATI, contributing significantly to my PhD journey."

Both Lars and Anastasia's experiences reflect the enriching and transformative nature of the Enrichment Scheme, capturing the effectiveness of the MoU between NORA and the Alan Turing Institute. Their participation in various training programs, seminars, workshops, and peer-mentoring programs, funded and supported by NORA Research School, not only enhances their doctoral research but also strengthens the collaboration between the UK and Norway in the field of AI. This exchange is a shining example of international cooperation in advancing knowledge and skills in artificial intelligence and data science.

8.2 The Helmholtz Information & Data Science Academy

The cooperation agreement between NORA and Helmholtz Information and Data Science Academy (HIDA) offers reciprocal exchange of early career stage researchers. Both PhD students and postdoctoral candidates can apply for research exchange. In 2023, the agreement provided the opportunity for a three-month long study exchange to three candidates, three candidates from Germany and three candidates from Norway. The students receive NOK 30K in scholarship from the NORA Research School to cover travel and accommodation during the exchange program.

The above PhD students have been shortlisted for the latest HIDA exchange call.

PhD Students

Candidate Name	Affiliation	Host	Country
Qixia Zhang	UiT	Sanja Lazarova-Molnar / KIT	Norway
Fabien Sechi	UiA	Kirkamol Muandet / CISPA – Helmholtz Center for Information Security	Norway
Roza Abolghasemi	Oslomet	Vincent Fortuin / Helmholtz AI	Norway
Dr Abhishek Arun	Forschungszentrum Jülich	Veralia Sanchez / USN	Germany
Alexandra Walter	KIT	Jonas Kusch / NMBU	Germany
Hameed Moqadam	Alfred Wegener Institute, Helmholtz Centre for Polar and Marine Research	Nello Blaser / UiB	Germany

8.3 US Department of Energy

In November 2023, as part of the AI Memorandum of Understanding (MoU) signed between the US Department of Energy and Norwegian Ministry of Education and Research (KD) on March 8, 2022, a delegation visited San Francisco on the invitation from the Norwegian Ministry of Education and Research. The Norwegian Minister of Justice and Public Security, Emilie Mehl, and State Secretary of KD, Oddmund Hoel, were both part of the delegation. The delegation also included various members from the research community and industry, in addition to representatives from the Research Council of Norway, the Norwegian Embassy and Consulates General in the US, KD and the Ministry of Justice and Public Security. The program contained visits to the National Energy Research Scientific Computing Center Berkeley, OpenAI, Anthropic, NVIDIA, Stanford HAI, The Kavli Center for Ethics, Science, and the Public at University of Berkeley.

The aim of the agreement is to cooperate more closely on research, innovation, education and ethical issues in the field. The agreement seeks to promote scientific and technological activities in a broad range of fields, with impacts on science, energy, climate and health.

The collaboration aims to facilitate knowledge exchange from basic and applied AI research, development of quality educational programs and skills building through courses and further education programmes at all levels, the development of world-class computing power for AI research and applications, including advanced alternative AI accelerator technologies, quantum computing, neuromorphic computing and other emerging technologies. In addition, the agreement aims to facilitate access to data for AI development in selected areas within and across industries and sectors through fast, robust, and state-of-the-art secure networks.

9

Ethical, Sustainable and Inclusive AI

9.1 Ethics

In 2023, NORA was involved in and supported many initiatives and projects focused on the development of guidelines for the ethical, transparent and sustainable use of artificial intelligence by public and private actors and for society at large. As part of NEMONOOR, one of Norway's two European Digital Innovation Hubs (EDIHs), NORA has led the work on the development of guidelines for sustainable and trustworthy AI in Norway. NORA is also a consortium partner in ENACT (Ethical risks assessment of artificial intelligence in practice), which is supported by the Research Council of Norway that will work towards alignment for further guidelines mitigating ethical risks when developing AI tools and services. See Chapter 5.4 for more information about ENACT.

NORA also actively contributes to the expert group for ethical artificial intelligence in the Nordic Council of Ministers under Nordic Innovation, which will deliver recommendations to Nordic governments in 2024. The work includes delivering a joint target state description for ethical AI in the Nordics based on Nordic industry requirements and priorities. The description will also contain a roadmap with prioritized initiatives to achieve the target state and a public statement with recommendations to Nordic decision-makers regarding critical developments needed to achieve the target state.

Furthermore, NORA collaborates with the Norwegian Council for Digital Ethics on publishing news about ethical AI and AI policy in Norway on the Ethical

From left to right: Representative from Kreftregisteret, Christine Hafskjold Senior IT Policy Advisor in Ministry of Local Government and Regional Development, Hallstein Husand leader of the Norwegian AI Sandbox in the Norwegian Data Protection Authority, Alex Moltzau from NORA, Jens Osberg from the Norwegian Digitalisation Agency, Minister Sigbjørn Gjelsvik in charge of the Ministry of Local Government and Regional Development, Aslak Aslaksen Head of Department of Radiology at Helse Bergen, Ingfrid Haldorsen Head of Mohn Medical Imaging and Visualization Centre and Professor in Radiology at Universitetet i Bergen.

AI Resources blog. NORAs policy representative coordinates an informal group of writers who contribute to the blog. The blog reports and shares news from Norway and keeps up to date on current events in ethical AI within Norway and informs about AI developments that may be consequential for Norway.

9.2 Transparency

In the beginning of 2023 NORA, collaborated with DigDir in creating an overview of AI projects in the Norwegian Public Sector. NORA supported the project through research and by identifying AI projects in the Norwegian Public Sector, developing a list of projects that was handed over to DigDir. DigDir will maintain and update the overview going forward. The overview was the first national overview of AI in the public sector and was visited 7,402 times throughout the year. The overview was launched on the 28th of February by the Minister of Local Government and Regional Development, Sigbjørn Gjelsvik, who held the overall responsibility for digitalization in the Norwegian public sector at the time.

One of the actors that found this overview of AI useful was the Office of the Auditor General that worked to revise the governance of AI in Norway. In the preparation of the administrative audit for the use of artificial intelligence in the state, discussions were held to understand how the outreach could be more inclusive and promote an open, sharing culture seeing both the risks and the benefits of exploring the field of AI. The overview was also explicitly referred to in the first pages for the plan for artificial intelligence by the Norwegian Conservatives (Høyre), historically the first political public plan in the national to outline the priorities in the field of AI. Furthermore, the overview of AI in the public sector was mentioned several times on Thursday the 23rd of November 2023 during an initiative debate on AI in the Norwegian Parliament. Both strengthening the Norwegian national commitment to AI across the public sector and helping with increased transparency.

EDIH workshop purchasing green AI.

EDIH workshop purchasing green AI 2. Presentation by Alex Moltzau

EDIH workshop purchasing green AI 3. Synnøve Helsen from the University of Oslo presenting comments to the guidelines.

With regard to international responsibility for AI, NORA was involved in the process of shaping the views from Norges Bank Investment Management (NBIM) on responsible AI. Comments were made on consideration of impacts across the AI value chain that were included in the final document.

9.3 AI for sustainability

The Norwegian government buys products and services for 740 billion NOK each year, and they have decided to weigh the purchasing decision in favor of the environment with up to 30% (SSB 2023). NORA held a workshop on Purchasing Green AI on the 6th of September 2023 together with the Norwegian Board of Technology and the Norwegian Agency for Public and Financial Management. The workshop was held as part of a delivery to EDIH work package on sustainable and trustworthy AI to explore how the government could create a framework to buy environmentally friendly AI. It also discussed how researchers, startups and companies can ensure their AI models take these concerns into account for more responsible AI.

NORA, appointed by the Norwegian government's section for IT Policy, participated in the OECD Expert Group for Compute and Climate. Part of this work was the revision of the OECD Recommendation ICTs and the Environment and dissemination of previous reports on calculating carbon on a national scale from computing resources, such as data centers.

These activities with the EDIH and OECD within NORA worked in tandem to further raise the understanding of national compute requirements in terms of measuring carbon and the difficulties of SMEs in fulfilling these requirements in a green purchasing situation. Further work is needed to bridge the gap between the state shaping these requirements to ensure that small companies are also able to enter the market while fulfilling targets related to sustainability.

Welcome speech by Bjørn Erik Thon

Keynote by Siren Tønnesen, Head of AI & Analytics, Itera

Keynote by Claire Blackett, Senior Research Scientist, Institute for Energy Technology

9.4 Equality & Diversity in AI

NORA aspires to increase diversity and the visibility of women in the field of AI. By encouraging diversity in AI, NORA aims to improve the position of marginalized groups and inspire a more inclusive agenda in the field of AI to ensure equality for future generations.

On the 8th of March 2023, NORA and partners hosted a Women in AI event at Domus Bibliotheca, Oslo. The event brought together representatives from industry and research to address the gender disparity in AI in Norway and discussed initiatives to ensure inclusivity and diversity in AI for the future. Bjørn Erik Thon, the Equality and Anti-Discrimination Ombud, addressed the attendees through a video recording from the 67th Commission on the Status of Women which took place in New York on the topic of "Innovation and technological change, and education in the digital age for achieving gender equality and the empowerment of all women and girls". The event featured keynote speeches from Siren Tønnesen, Head of AI & Analytics, Itera, Ishita Barua, Lead in AI in Healthcare, Deloitte and Claire Blackett, Senior Research Scientist, Institute for Energy Technology. The event ended with a panel discussion with the keynote speakers and Alise Danielle Midtfjord, Sr. Data Scientist & Partner at Intellectual Labs AS. Helga Brøgger, Principal Researcher, MD at DNV moderated the event. 190+ registered to attend the event, which also included the launch of the new edition of the *Female Role Models Changing the Field AI in Norway* campaign, namely *the Women in AI Directory 2023.*

The goal of the directory is to raise awareness by promoting female role models from all backgrounds and employment, and to portray the breadth of opportunities for AI in society at large. In honor of International Women's Day, NORA published a new list of 130+ women working in the field of AI in Norway. The list includes short biographies and quotes from the women featured. The relevance of the campaign has become abundantly clear as the list has been used as a reference tool by various organizations who wish to include more female experts in discussions and on panels, to ensure that gender and diversity is reflected in debates.

Through the Women in AI campaign, NORA has dedicated efforts towards supporting universities, colleges, research institutions, startups, companies and individual researchers who wish to discuss and address the diversity and gender gap in AI education and in industry.

By focusing on the topic and by providing a platform for open discussion, NORA aims to develop and support initiatives that can increase the inclusion of a more diverse workforce in AI. In January 2023, NORA hosted a special session on the topic of Diversity in AI at the Northern Lights Deep Learning Conference (NLDL). The Diversity in AI Event was organized as a side event to the NLDL, which is a conference organized by SFI Visual Intelligence, hosted by UiT, The Arctic University of Norway. The event featured keynote speeches from Dr. Erin Young, Research Fellow, Alan Turing Institute; Sumeet Singh Patpatia, Global Head of Diversity, Inclusion & Belonging at Schibsted; Dr. Mihaela van der Schaar, Professor of Machine Learning, Artificial Intelligence and Medicine at the University of Cambridge and Manav Rihel Kumar, CEO of the Diversity Index. The event ended with a panel discussion moderated by Camilla Brekke, Prorector, UiT.

Women in AI, March 8th, Ishita Barua, Birte Hansen, Siren Tønnesen, Claire Blackett, Alise Danielle Midtfjord and Helga Brøgger

1. NLDL 2023 Diversity event Welcome by Suaiba Amina Salahuddin | 2. NLDL 2023 Diversity event Panel Discussion. Manav Rihel Kumar, Sumeet Singh Patpatia and Erin Young | 3. NLDL 2023 Diversity event Keynote by Erin Young, Alan Turing Institute | 4. NLDL 2023 Diversity event Keynote by Manav Rihel Kumar | 5. NLDL 2023 Diversity in AI event. Manav Rihel Kumar, Stine Hansen, Suaiba Amina Salahuddin, Srishti Gautam, Birte Hansen, Erin Young and Sumeet Singh Patpatia

Jenter og Teknologiaften, UiS. Irene Buan, Mona Wetrhus Minde, Michelle Nordanger Lavik, Aurora Holm Hagen, Sidsel Lindsø, Kjersti Engan, Birte Hansen

NORA is also a supporting partner at the British Embassy in Oslo's *Women in Tech initiative*. The initiative aims to create an inclusive platform for women in tech, be that students, researchers, founders, or practitioners. The platform will offer events and activities for women in tech, and will be a community for networking, advice, and support. In 2023, NORA supported a pitch competition for female tech founders/ CEO. The winner of the competition was Syrenna, who received a sponsored trip to make a pitch to international investors at The London Stock Exchange on June 15th 2023, an event organized by Tech Nordic Advocates for Nordic female tech founders/CEOs. The winner also received a free ticket to the London Tech Week – the largest tech event in the UK.

In February, 2023, NORA also presented at *Teknologiaften* hosted at the Radisson in Stavanger. The event was organized by UiS, NHO and NITO and was aimed at inspiring 150–200 young women in high school to continue studying STEM studies. In NORA, we are continuously pushing for diversity and gender balance in all our initiatives. We strive to have gender balance in our webinars, conferences, and panels and on our board and elected committees. Inclusivity and diversity in AI form a vital part of the vision and mission of NORA and of our consortium partners, and we will continue to promote these principles in our agenda going forward.

10

Communication and Dissemination

10.1 Arendalsuka 2023

Arendalsuka is, according to its official website"... *the largest political gathering in Norway held annually since 2012. The event's mission is clear: strengthen the belief in political empowerment and democracy through open debate and involvement.*"

As part of NORA's strategic goal to strengthen Norway´s research policy and commitment to AI, NORA decided to attend Arendalsuka 2023. NORA contributed to Arendalsuka with a focus on AI in health in two interconnected events that were organized jointly with the national network for artificial intelligence in the health service (KIN), Visual Intelligence – (University of Tromsø) and CAIR – Center for Research on Artificial Intelligence (University of Agder). Notably, the State Secretary from the Ministry of Health and Care Services (HOD) participated in both events. Both by holding a speech and participating in a panel debate. In addition to our own events, CEO Klas Pettersen also contributed to panels at other events, notably an event that discussed the need for an AI minister or minister of digitalization. This later became reality on the 16th of November 2023 with Karianne Tung as Minister of Digitalization and Public Governance.

The first event was an hour-long event where we explored the potential of artificial intelligence in the healthcare sector and discussed how we can realize a more efficient, accessible and quality-focused healthcare system. In addition to being attended by the State Secretary of HOD, it also featured presentations by Shahzad Rana from the Central Board to the Conservative Party; Klas Pettersen, CEO of NORA.ai; Lucie Aunan, Divisional Director Service Development in the Directorate for e-Health; Finn Henry Hansen, Head of Artificial Intelligence in the Norwegian Health Service (KIN); Morten Goodwin, Professor at UiA and Deputy Chair at CAIR; and Robert Jenssen, Professor at UiT and Head of SFI Visual Intelligence.

The second event was a two-hour long panel debate. In addition to featuring the State Secretary and the other participants, it was moderated by Hilde Lovett, at the time a Senior Advisor in the Directorate for e-Health. The panel also included Ishita Barua, who at the time was the Head of Artificial Intelligence in Health at Deloitte; Rolf Ole Lindsetmo, Professor, Head of Surgery, Cancer and Women's Health at

Arendalsuka event with Ellen Rønning-Arnesen, organized by UiA, UiT, NORA and KIN (Kunstig intelligens i norsk helsetjeneste)

the University Hospital of North Norway and PI Consortium for patient-centered Artificial intelligence (CPCAI); Vibeke Binz Vallevik, Researcher at DNV and PhD Student at UiO; Ira Haraldsen, Coordinator of the EU Project AI-Mind at OUS; Even Røed, Representative for the Labor Party in the Norwegian Parliament and Member of the Health and Care Committee; and Dag Rune Olsen, Rector, UiT, The Arctic University of Norway. To a large extent the panel debate was organized to share knowledge, experiences and best practices to ensure a successful and responsible implementation of AI in Norwegian health care.

This event was preceded by a seminar about AI in health at the Norwegian Parliament on the 23rd of May 2023 attended by representatives from all political parties with presentations from invited members of the research community in collaboration with KIN. A new meeting with the State Secretary was scheduled for 2024 confirmed in December 2023.

Arendalsuka panel discussion on the topic Health and Artificial Intelligence.

10.2

Newsletter

2426

Subscribers to NORA.startup newsletter

19 705

Opens newsletter

2614

Clicked

10.3

NORA website

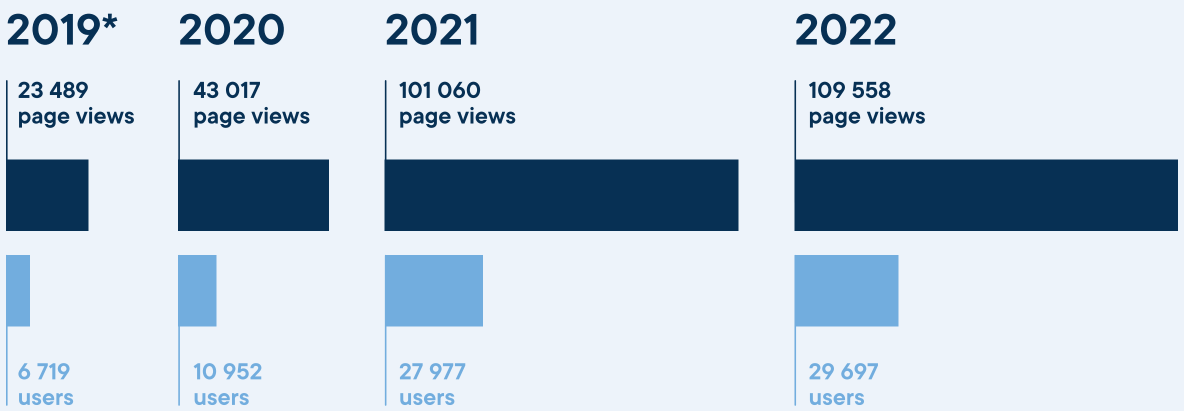
NORA webpage users and views

101 985 USERS
2019–2023

NORA´s webpage has had 101 985 individual users and 368 961 page views in total from 1st April 2019 until the end of 2023

*NORA was operational from 1st April 2019

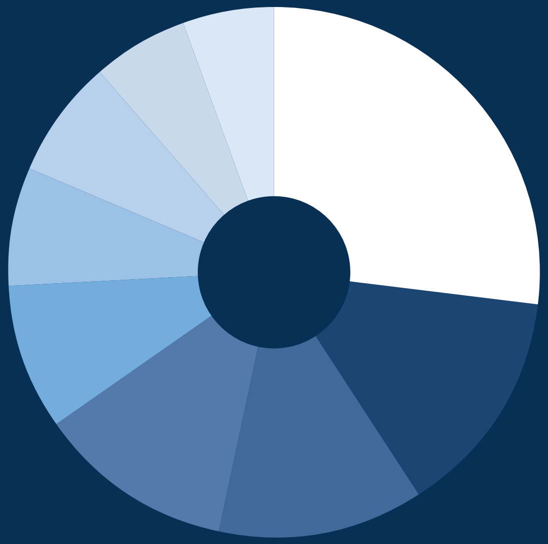
2023



NORA.ai top ten countries by users 2023

59% NORWAY
41% WORLD

59% of NORA´s users in 2023 were located in Norway



Top NORA.ai users abroad in 2022

- United States: 1 729 users
- Germany: 894 users
- United Kingdom: 799 users
- India: 765 users
- Sweden: 570 users
- Denmark: 471 users
- Unknown: 452 users
- Italy: 384 users
- France: 346 users

AI Directory webpage users and views

2021	2022	2023
4348 visits	18 200 visits	29 728 visits

140 COUNTRIES
6 CONTINENTS

Disclaimer
The numbers and figures featured in this report are based on data collected from Jan–Dec 2023.
The data is correct and complete to the best of our knowledge.

2023

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