

NORA

Status of AI in the Nordic Countries

Nordic Perspectives on Artificial Intelligence
October 13th, 2023

Klas H. Pettersen, CEO, NORA



The Nordic AI meet October 2023



Status of AI in the Nordic Countries



Finland AI Strategy 2017



Prime Minister



All sectors, but specifically mentions:
Energy; Wellbeing; transport;



PRIME MINISTER'S
OFFICE

Menu

[suomi](#) | [svenska](#) | English

Prime Minister Sipilä aspiring to make Finland world leader in artificial intelligence

Government Communications Department

7.2.2017 14.12 | Published in English on 8.2.2017 at 10.41 **PRESS RELEASE**

On Tuesday 7 February, Prime Minister Juha Sipilä spoke in a seminar held at the House of Estates about the opportunities that artificial intelligence have to offer Finland. The Prime Minister observed that artificial intelligence is one of the fastest growing global technologies. Its impact in the future will be enormous. Sipilä believes we need a vision: Making Finland the world leader in artificial intelligence.

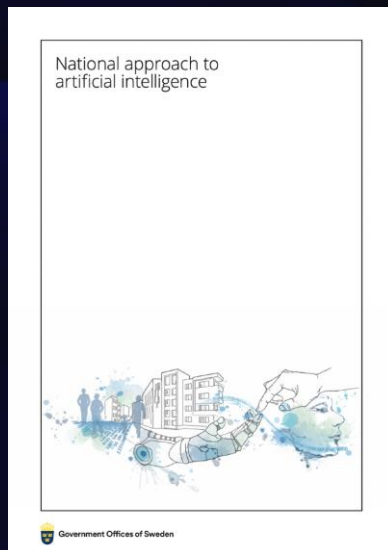
The Prime Minister said that making effective use of AI in society and using it to boost wellbeing will require not only new competences but also novel approaches, forward-thinking decisions and frameworks, and an adaptive labour market.

Sweden

AI Strategy 2018



**Åsa Zetterberg, the
Government's Chief
Digital Officer.**



The Government of the Kingdom of Sweden is the national cabinet of Sweden, and the country's executive authority.

Focus

- Education and training
- Research
- Innovation and use
- Infrastructure

Denmark

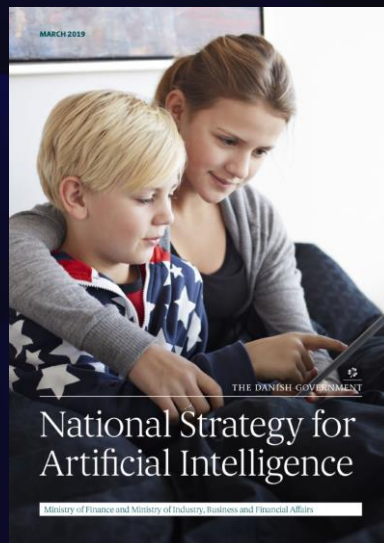
AI Strategy 2019

Priority areas:

- Healthcare
- Energy and utilities
- Agriculture
- Transport



*Launched by Rasmus Jarlov
Minister of Business Affairs –
from Ministry of Industry,
Business and Financial Affairs
at Digitalt Topmøde 2019*



FINANSMINISTERIET



**MINISTRY OF INDUSTRY, BUSINESS
AND FINANCIAL AFFAIRS**

(Erhvervsministeriet)

Norway

AI Strategy 2020

Priority areas:
“...health, seas and oceans,
public administration, energy
and mobility.”

Nikolai



National Strategy for
Artificial Intelligence

Minister for Digitalisation

Academic AI Collaborations in the Nordic countries



Finland

FCAI Finnish
Center for
Artificial
Intelligence

Finnish Center for Artificial Intelligence FCAI is a community of experts in artificial intelligence in Finland, *initiated by Aalto University, University of Helsinki, and VTT Technical Research Centre of Finland*. FCAI is one of the Academy of Finland's Finnish flagships, hubs of top-level research and impact.

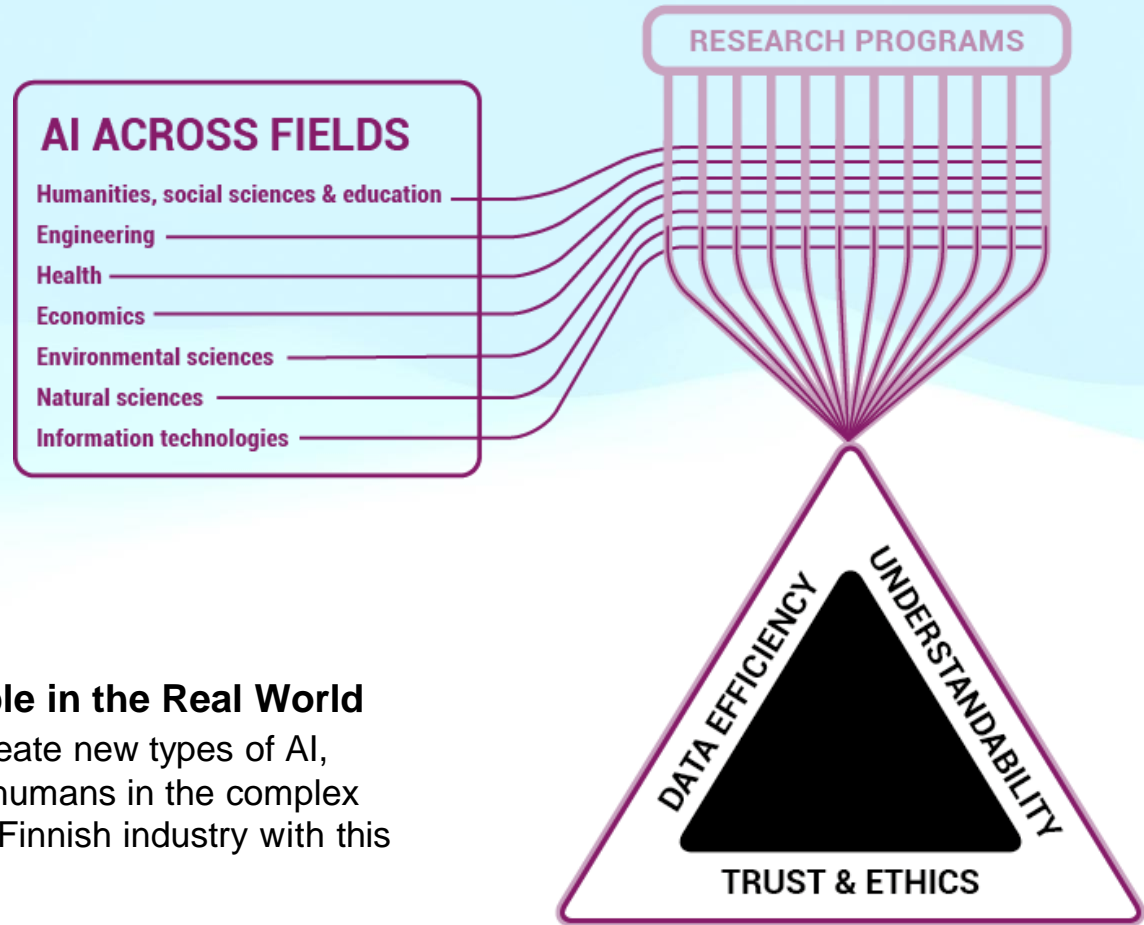
The second Flagship term lasts until the end of 2026. Overall, the Academy funding makes up only a fraction of FCAI's overall budget of approximately 250 million euros.

FCAI

MISSION

Real AI for Real People in the Real World

Our goal in FCAI is to create new types of AI, which can operate with humans in the complex world, and to renew the Finnish industry with this new AI.



Sweden 

WASP | WALLEMBERG AI,
AUTONOMOUS SYSTEMS
AND SOFTWARE PROGRAM

“The Wallenberg AI, Autonomous Systems and Software Program (WASP) is a major national initiative for strategically motivated basic research, education and faculty recruitment. It is by far the largest individual research program in Sweden.”

- **Launched in 2015**
- **Will continue at least until 2031**
- **Funding in total 6 billion SEK (€560M) (4.9 billion SEK from Wallenberg family)**

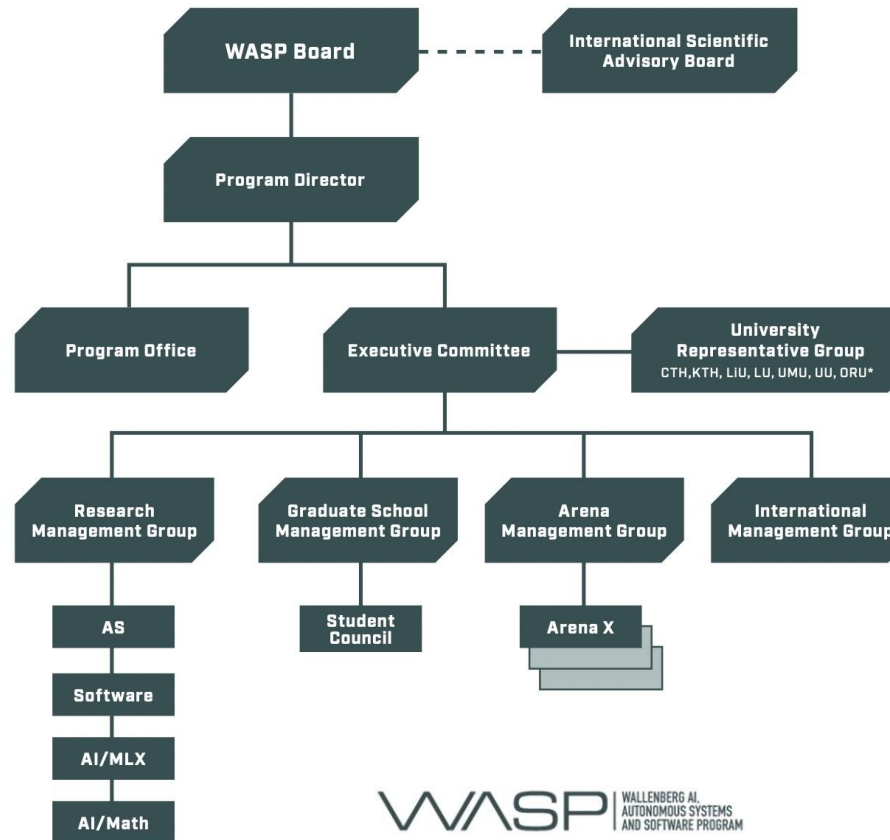
VISION Excellent research and competence in artificial intelligence, autonomous systems and software for the benefit of Swedish industry.

MISSION Build a world-leading platform for academic research that interacts with leading companies in Sweden to develop knowledge and competence for the future.

Strategic instruments

1. A challenging research program
2. A national graduate school
3. Strategic international faculty recruitment
4. Research Arenas
5. Internationalization by exclusive university partnerships
6. Communication, events and networking

WASP Governance Structure



WASP | WALLENBERG AI
AUTONOMOUS SYSTEMS
AND SOFTWARE PROGRAM



“AI Sweden is the Swedish national center for applied artificial intelligence. Our mission is to accelerate the use of AI for the benefit of our society, our competitiveness, and for everyone living in Sweden”

AI SWEDEN

Last year in numbers

105

PARTNERS

8

OFFICES, ONE IN MONTREAL

140

MSEK TOTAL INVESTMENT 2022
Including non-cash contributions by partners

78%

of AI Sweden partners report an increase in the AI readiness level of the organization in the last year.

Source: AI Sweden's yearly partner survey



Denmark



PIONEER CENTRE FOR
ARTIFICIAL INTELLIGENCE

A total of more than **DKK 350 million** has been allocated to the Centre over the **next 13 years**. Funding from the Danish National Research Foundation, the Novo Nordisk Foundation, the Carlsberg Foundation, the Villum Foundation and the Lundbeck Foundation

Our research is organized into seven collaboratories



ex

Causality and explainability

Led by [Aasa Feragen](#), [I. @ Assent](#) and [Jonas Peters](#)



XR

Extended reality

Led by [Dan Witzner Hansen](#), [Hans Gellersen](#) and [Kasirer Hornbæk](#)



FG

Fine grained analysis

Led by [Mads Nielsen](#) and [Thomas Moeslund](#)



IO

Learning theory and optimization

Led by [Christian Igel](#) and [Ole Winther](#)



SD

Signals and decoding

Led by [Lars Kai Hansen](#) and [Zheng-Hua Tan](#)



SL

Speech and language

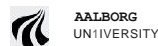
Led by [Anders Søgaard](#) and [Barbara Plank](#)



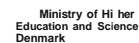
NG

Networks and graphs

Led by [Roberta Sinatra](#) and [Sune Lehmann Jørgensen](#)



IT UNIVERSITY OF COPENHAGEN



O/R BERG FOUNDATION



VILLUM FONDEN

X



Norway

NORA

NORA – a national AI research consortium



8 universities
3 university colleges
5 research institutes

NORA

PARTNERS



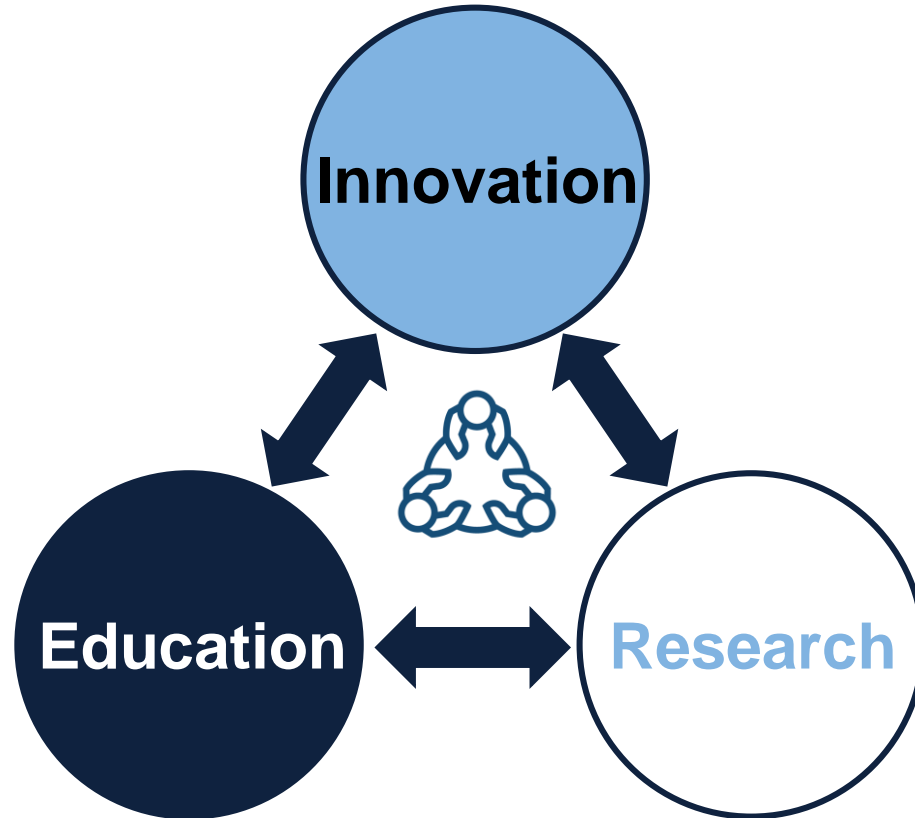
LABS/
CENTRES



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Strategic partners





NORA.startup is NORA's innovation network

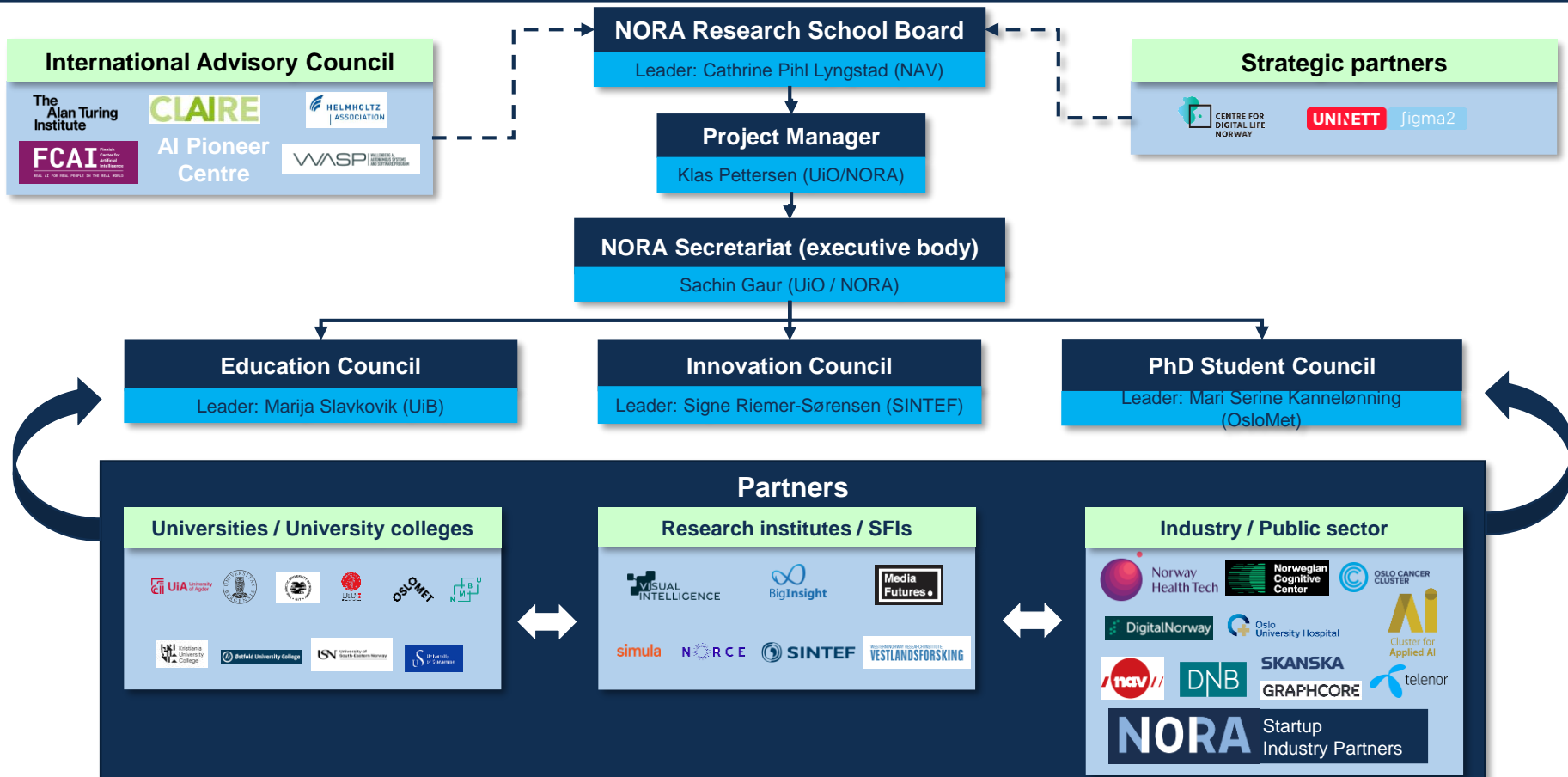
Through cooperation between academia, incubators and start-up companies, NORA.startup is building a national innovation network for research-based innovation

NORA.startup members



Education: NORA Norwegian AI Research School

NORA





National strategy year released

2017

2018

2019

2020

National research AI network

FCAI

WASP AI
SWEDEN

PIONEER CENTRE FOR
ARTIFICIAL INTELLIGENCE

NORA

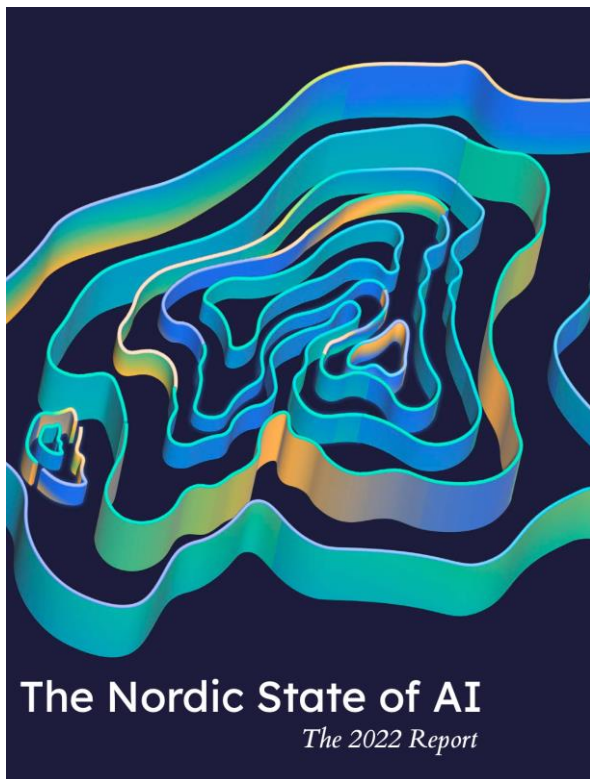
Key sector priorities AI strat.

All sectors, but
Mentions:
Energy;
Wellbeing;
transport

Education and
training;
research;
innovation and use;
infrastructure

Healthcare;
energy and
utilities;
agriculture;
transport

Health;
seas and oceans;
public
administration;
energy;
mobility



Norway at a glance

13th on AI readiness index

Denmark at a glance

9th on AI readiness index

Sweden at a glance

6th on AI readiness index

Finland at a glance

4th on AI readiness index



Health data sharing

100% of sharing potential

Workers receiving training

76.4%

ICT security skills in enterprises

64.8% of businesses

Highest-ranked university in AI in the Nordics: University of Oulu

Most attractive immigration destination for AI talent in the Nordics



ICT venture capital investment

0.15% of GDP

Digital-intensive sectors' contribution to growth

12.9% of total growth

The Nordic Region in 2030 – which path should we take? **NORA**



How do we use AI to improve the competitiveness of the Nordic Region without compromising individual rights?

A Nordic AI knowledge center for management of artificial intelligence



The Nordic Region in 2030 – which path should we take? **NORA**



••• 3 participants typing

Nordisk Ministerråd

Hvad tager du med dig fra dagen i dag, som den vigtigste satsning i det nordiske samarbejde?

Innovation

Samskapa

Selvtro

Human kapital

Dialog

Social sammenhængskraft

Ungdom

Gemenskap

Fælles samtale

Utdanning

Omsorg

Deltagelse

Kunskapsdelning

Tillsammans

Samarbeid

Samarbete

Nærvær

Samhällskontrakt

Samarbejde

Kreativitet

Språkmæktighet

Öppenhet

Mod

Håb

Engagemang

Frivillighet

Samverkan

Værdigrundlag

Mulighet for samarbeid

Inkludering

Mer mod

Gemensamt lärande

Menneskerettigheder

Mennesket i centrum

Fleksible

Frihet

The Nordic Region in 2030 – which path should we take? **NORA**



Yann LeCun  
@ylecun

Since AI base models are going to become a basic infrastructure, people (and the industry) will demand that it be open source. Just like the software infrastructure of the internet. Also, human feedback *must* be crowd-sourced, Wikipedia style, if we want those base systems to become the common repository of human knowledge.



Vlad Ciobanu @vlad3ciobanu · May 25

Yann LeCun makes a lot of sense short term, when he talks about human-augmenting AI and personal assistants being core infrastructure that has to be open source. @ylecun That's why I admire @StabilityAI, @MetaAI, @huggingface, @SingularityNET & co. Hope the world builds AI Linux!

4:34 PM · May 25, 2023 · **365.7K** Views

...



Yann LeCun  
@ylecun

...

AI systems are fast becoming a basic infrastructure. Historically, basic infrastructure always ends up being open source (think of the software infra of the internet, including Linux, Apache, JavaScript and browser engines, etc) It's the only way to make it reliable, secure, and customizable.

Future AI assistants will mediate everyone's interaction with the digital world. This is way too foundational and powerful to be proprietary.

In the future, AI assistants will constitute the repository of all human knowledge. If we want it to represent all the world's knowledge and culture, the training and fine-tuning will have to be crowd sourced. Just like Wikipedia.

5:42 PM · Sep 21, 2023 · **744.3K** Views

The Nordic Region in 2030 – which path should we take? **NORA**

Yann Lecun in US Senate hearing on national security implications of AI — 09/19/23



“The development of AI is as foundational as the creation of the microprocessor, the personal computer, the internet, and the mobile device.”

The Nordic Region in 2030 – which path should we take? **NORA**



“Open sourcing technology has spurred rapid progress in systems we now consider basic infrastructure, such as the internet and mobile communication networks.

This doesn't mean that every model can or should be open.

There is a role for both proprietary and open source AI models.

But an open source basic model should be the foundation on which industry can build a vibrant ecosystem.

An open source model creates an industry standard, much like the model of the internet in the mid-'90s.”

Takk!

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