



ADIA : Lab

An independent, Abu Dhabi-based laboratory
dedicated to basic and applied research in data
and computational sciences.



Our Vision & Mission

To drive innovation at the intersection of data, AI, and computational science, advancing global collaboration and impactful research while shaping the future through education, discovery, and transformative partnerships.



What We Do

Through cutting-edge research in Data Science, Artificial Intelligence, Machine Learning, and High-Performance Computing, ADIA Lab focuses on societally important topics, including:

Climate change and energy transition

Blockchain technology

Climate and earth modeling

Precision medicine

Digital health

Trustworthy AI

Cybersecurity

Health sciences

Education

Digital twins

AI governance and policy

Welcome to ADIA Lab

by Director Dr. Horst Simon



At ADIA Lab, we believe that data and artificial intelligence (AI) are not just transforming science - they are redefining how we understand and shape the world around us. As an independent research institute, our purpose is to advance data and computational science through pioneering, multidisciplinary research that bridges discovery and real-world application.

Our mission aligns with Abu Dhabi's vision to become a global center for scientific and technological excellence. Through innovation in data science, AI, and high-performance computing, we aim to advance knowledge and enable better, evidence-based decision-making across sectors.

ADIA Lab's research spans four core verticals - Digital Economy, Health Sciences, Climate Science, and Materials Science - supported by two enabling capabilities: High-Performance Computing (HPC) and Trustworthy AI. These pillars empower us to address complex global challenges, from advancing sustainable technologies to improving health outcomes and building resilient economies, all through the power of data-driven insight.

Collaboration is central to our approach. We work with leading universities, research institutions, and global experts to expand the frontiers of knowledge and develop scalable, impactful solutions that benefit both Abu Dhabi and the wider world.

In 2025, ADIA Lab achieved important milestones, including the publication of the first volume of the Transactions of ADIA Lab and the launch of competitive research calls in our Climate and Health verticals - marking significant progress in our global scientific journey.

We also continue to invest in the future of talent through fellowships, internships, and educational programs that cultivate the next generation of computational and data scientists.

Through research, collaboration, and community engagement, ADIA Lab contributes to Abu Dhabi's ambition of becoming a global hub for innovation, knowledge, and sustainable progress.



ADIA Lab Advisory Board

ADIA Lab is supported by an Advisory Board comprising internationally recognized experts in data intensive sciences. The Advisory Board's key responsibilities include guiding research direction, ensuring ethical standards, and fostering collaboration with potential partners.

In 2025, ADIA Lab welcomed two new Advisory Board Members, Professor Robert F. Engle, Nobel Laureate in Economic Sciences (2003), and Professor Sir Konstantin Novoselov, Nobel Laureate in Physics (2010). The expansion reaffirms ADIA Lab's commitment to advancing cutting-edge research in data and computational sciences, with applications ranging from financial systems to materials innovation.



Horst D. Simon

ADIA Lab
Gordon Bell Prize



Steven Chu

Stanford University
The Nobel Prize



Jack Dongarra

University of Tennessee
A.M. Turing Prize



Robert F. Engle

NYU Stern
The Nobel Prize



Shafi Goldwasser

UC Berkeley
A.M. Turing Prize



Miguel Hernán

Harvard University
Rousseeuw Prize
for Statistics



Guido Imbens

Stanford University
The Nobel Prize



Edward Jung

Intellectual Ventures
Former CTO, Microsoft



Alex Lipton

ADIA
Inaugural Quant of the
Year Award (2000, 2021)



**Marcos López
de Prado**

ADIA,
Cornell University
Royal Order of Civil
Merit (Spain)



**Sir Konstantin
Novoselov**

National University of
Singapore
The Nobel Prize



Alex Pentland

Stanford University, MIT
National Academy
of Engineering

Research Verticals & Foundational Capabilities

Research Verticals



Climate Science

Addressing climate-related challenges is a top priority for ADIA Lab. Through cutting-edge research and collaboration with leading experts, we are dedicated to finding solutions for the critical issues facing our society. Our work leverages advanced technologies, including high-performance computing for climate modeling and assessing financial risks in infrastructure projects. We also explore material science using a data-driven approach to identify sustainable solutions that promote the transition to greener technologies.



Health Sciences

ADIA Lab applies data science and AI to address key challenges in health sciences, focusing on trustworthy AI. We prioritise transparency, explainability, and reliability to ensure our systems meet the high standards of healthcare, enabling real-world applications that advance precision medicine, disease modeling, and health system optimisation. By fostering collaboration between clinicians, data scientists, and AI experts, we aim to drive meaningful advancements in health sciences.



Digital Economy

ADIA Lab explores the intersection of data science, AI, and the digital economy, focusing on the transformative potential of emerging technologies like digital twins, blockchain, and Web3. Our research addresses critical areas such as cybersecurity, digital currencies, and interpretable digital services architecture, ensuring safe and reliable innovations. Our goal is to help shape the future of digital economies by fostering innovation and promoting sustainable growth.



Materials Science (New for 2026)

ADIA Lab will focus on AI-guided discovery and modeling of advanced materials for extreme environments. Our work will aim to advance accelerated simulation platforms for materials design and testing, use data-driven approaches to study sustainable and recyclable materials for industrial applications, and integrate quantum computing techniques for predictive materials modeling.

Foundational Capabilities

Trustworthy AI

ADIA Lab focuses on robust and transparent AI models for high-stakes decision-making. We research bias mitigation and fairness evaluation in machine learning systems, explainability and interpretability of deep learning models, adversarial robustness and security in AI pipelines, and certification and auditing frameworks for AI systems.

Supercomputing

ADIA Lab is advancing beyond-exascale computing capabilities to accelerate scientific discovery. Our research will focus on energy-efficient algorithms for large-scale simulation and modeling, AI-accelerated high-performance computing workflows, and advanced architectures for quantum-classical hybrid systems to maximize performance and impact.

ADIA Lab Fellowship

ADIA Lab hosts a distinguished community of fellows who contribute to next-generation research in AI and data science. Our fellowship structure supports collaboration across research verticals and strengthens ADIA Lab's global network of expertise.

Senior Fellows

ADIA Lab currently has four Senior Fellows.



Torsten Hoefler

ETH Zurich



Michael Wolf

University of Zurich



Thomas Hardjono

Massachusetts Institute
of Technology



Paco Herrera

University of Granada

They support ADIA Lab by mentoring interns, leading seminars and summer schools, contributing to publications, and engaging in collaborative research initiatives.

Visiting Fellows

Visiting Fellows are academics and professionals who join ADIA Lab for shorter-term engagements. Their participation expands ADIA Lab's global research network, fosters cross-disciplinary collaboration, and brings fresh perspectives to ongoing projects across all research verticals.

The fellowship community collectively contributes to seminars, workshops, summer schools, collaborative research, and mentoring programs, ensuring knowledge sharing and innovation remain central to ADIA Lab's mission.



Luis Seco
University of Toronto



Farah Shamout
NYU Abu Dhabi



Siddiq Anwar
Khalifa University



Saleh Ibrahim
Khalifa University



Gerard Biau
Sorbonne University



Jorge P. Zubelli
Khalifa University



Parag Khanna
AlphaGeo



**Mecit Can Emre
Simsekler**
Khalifa University



Carme Artigas
United Nations



**Praneeth
Vepakomma**
Massachusetts Institute
of Technology



Oskar Mencer
Stanford University



Emilio Porcu
Khalifa University



Davor Svetinovic
Khalifa Univeristy

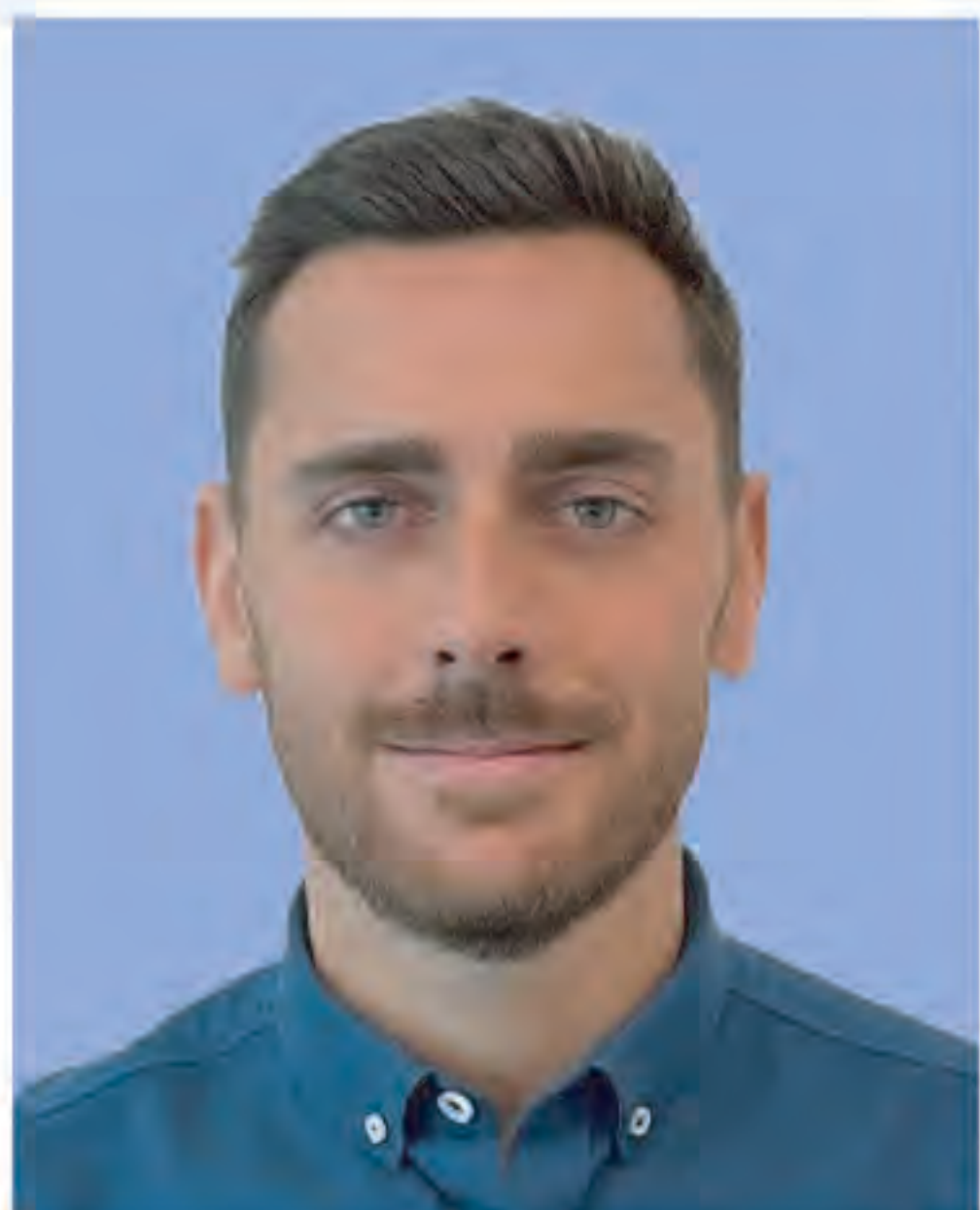
Health, Climate and Digital Leads

ADIA Lab's Senior Scientists lead and author cutting-edge research in computational data science and AI, addressing open challenges across societally important domains such as climate, health, and the digital economy. They conduct original studies, publish impactful results, and foster collaboration across disciplines. By building strong partnerships with universities, industry, and research institutions worldwide, they expand ADIA Lab's global network of excellence. In addition to their research leadership, they mentor junior scientists and students, helping to shape a vibrant and collaborative research community.



Shadab Khan, Health Sciences Lead at ADIA Lab

Dr. Shadab Khan leads the Healthcare research at ADIA Lab. Most recently, he was the SVP of AI and Applied Sciences at M42, where he led a team of scientists and engineers to solve problems in Healthcare AI. At M42, his team developed Generative AI solutions such as Med42, a leading open-access LLM for clinical text, as well as solutions for real-world evidence (RWE). Before joining M42, he was a Healthcare AI researcher at Inception (G42) in UAE. At Inception, Dr. Khan was a founding faculty member at the Mohamed Bin Zayed University of AI (MBZUAI).



Youssef Wehbe, Climate Science Lead at ADIA Lab

Dr. Youssef Wehbe leads the Climate Science research at ADIA Lab. He is also the Chief Science Officer for the UAE Research Program for Rain Enhancement Science at the National Center of Meteorology and spearheads the monitoring and evaluation process for international research and technology development programs and seed funds (\$30M+). Dr. Wehbe also serves as an Engineering Duty Officer in the US Navy Reserve and is a Non-Resident Scholar with the Climate and Water Program at the Middle East Institute, Washington, DC.



Massimo Morini, Digital Economy Lead at ADIA Lab

Massimo Morini leads the Digital Economy research at ADIA Lab. He was Chief Economist at Algorand Blockchain from 2019 to 2023 and Head of Interest Rate and Credit Modelling team at Intesa Bank from 2008 to 2019. He has been Senior Advisor for the World Bank and the Monetary Authority of Singapore, and a Board member of the Blockchain consortium R3. Massimo is Professor of Finance at Bocconi University and of Blockchain and Cryptocurrencies at USI Lugano and Politecnico di Milano.

ADIA Lab's National and International Collaborations

ADIA Lab collaborates with leading universities and research institutions worldwide, facilitating the exchange of knowledge and expertise to push the frontiers of AI and data science. These partnerships play a crucial role in strengthening Abu Dhabi's digital ecosystem by connecting the local academic and research community with international researchers. Additionally, ADIA Lab aims to attract talent to the region, creating opportunities for local researchers to gain insights and expertise from global leaders. This collaborative approach supports Abu Dhabi's position at the forefront of scientific, digital and technological advancements and promotes a thriving, innovation-driven environment.

Collaborations

- Khalifa University
- Mohamed bin Zayed University of Artificial Intelligence
- New York University Abu Dhabi
- Sheikh Shakhboub Medical City
- Abu Dhabi Investment Office
- ADGM Academy
- Sorbonne University Abu Dhabi
- Inception - G42

University and Industry Research Collaborations

- Harvard University
- The Fields Institute for Research in Mathematical Sciences, University of Toronto, Canada
- Simons Institute for the Theory of Computing, University of California, Berkeley, USA
- Santa Fe Institute, USA
- ETH Zurich, Switzerland
- Rigetti Computing, Berkeley, USA
- Minsait, Madrid, Spain
- FeiShu, Shanghai
- United Nations University Institute for Water, Environment and Health Partners
- Luxembourg Institute of Science and Technology (LIST)
- Microsoft AI for Good Lab
- University of California San Diego

National Research Collaborations with Spain

- Three research programmes with Universities of Granada, Salamanca, Santiago de Compostela
- Promoting scientific exchange and industrial growth between Spain and the UAE

Student Projects with Several Universities

- University College London (UCL)
- London School of Economics (LSE)
- University of Toronto
- Institut Louis Bachelier

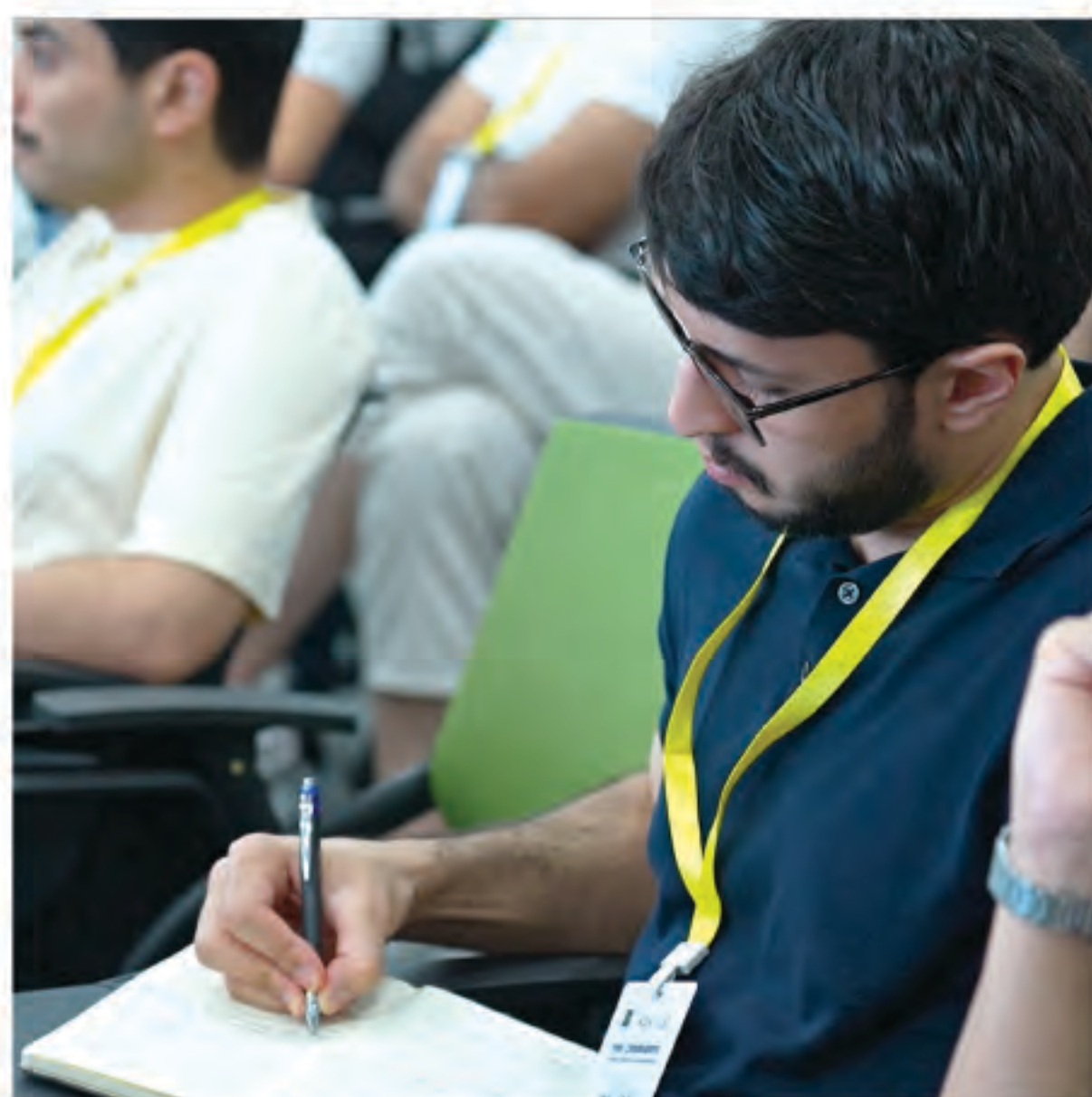
ADIA Lab Activities



Summer School in Granada

From May 19 to 30, the ADIA Lab Summer School on Explainable AI was held in Granada, in collaboration with the University of Granada. Master's and PhD students from around the world attended to explore the latest advancements in AI transparency, interpretability and trust, through group project work and in-depth, hands-on sessions led by leaders in their field.





Summer School in Shanghai

From July 21 to August 1, the ADIA Lab Summer School on Sustainable AI took place in Shanghai, held in collaboration with the Fields Centre for Sustainable Development and Fields Institute for Mathematical Sciences' China Centre (Fei Shu). The program brought together researchers as well as master's and PhD students to explore how AI can be developed and applied to support global sustainability goals.





ADIA Lab Internship 2025

In 2025, ADIA Lab welcomed a new cohort of 15 interns, providing them with a unique opportunity to work on research projects under the mentorship of experts in their fields for up to eight weeks.

The projects included:

1. Analyzing the Role of Foundation Models in Clinical Decision Support
2. Collaborative Data Science Methods for Efficient LLM Fine-Tuning
3. AI Safety Policies and Human-AI Collaboration in Healthcare - A Comparative Analysis
4. Health Data Wallet
5. Longevity Economics: A Causal Inference Approach to Sustainable Communities
6. Detecting Structural Breaks in Carbon Emissions and Financial Markets Using Machine Learning
7. Federated Learning for Privacy with FLEX: Client Selection and Quality Analysis
8. Explainable Artificial Intelligence (XAI): Designing Explanations for Users



Transactions of ADIA Lab

This year, ADIA Lab published the first volume of Transactions of ADIA Lab, a peer-reviewed collection of interdisciplinary research that reflects our growing role as a global hub for applied science in artificial intelligence, computational finance, and digital innovation.

This inaugural volume showcases work by leading international researchers who apply advanced computational methods to address some of today's most complex and high-stakes challenges - from climate modelling and financial system resilience to trustworthy AI and quantum-safe encryption.



ADIA Lab Seminar Series 2025

In 2025, ADIA Lab hosted a number of seminars on a diverse range of topics, led by fellows, researchers, professors and other thought leaders.

ADIA Lab Seminar Series 2025

The seminars were held in collaboration with Abu Dhabi Machine Learning and the ADGM Academy Research Centre, and focused on the impact of AI across climate science, health sciences, and the digital economy.

Session 1:

“From Large Language Models to Reasoning Language Models - Three Eras in The Age of Computation”



Prof. Torsten Hoefler

Computer Science
Department, ETH
Zurich



Khaled AlNuaimi

PhD candidate,
Khalifa University



Longkang Li

PhD candidate,
MBZUAI

Session 2:

“Energy Transition: Applying Universality and Predictability of Technology Diffusion to the Forecast”



Prof. J. Doyne Farmer

Director of the
Complexity
Economics, Institute
for New Economic
Thinking at the
Oxford Martin School



Prof. Samuel Mao

Professor of
Practice,
Department of
Mechanical
Engineering, Khalifa
University

Each session brought together experts to explore challenges and opportunities in these fields. The seminars took place at the ADGM Academy in Abu Dhabi, and were attended both in person and virtually.

Session 3:
“Advancing AI for Image Analysis:
From Medicine to Earth”



Dr. Farah Shamout
Assistant Professor
of Computer
Engineering, NYU
Abu Dhabi



Dr. Dwarikanath Mahapatra
Principal AI/ML
Engineer, LocAI



Muhammad Sohail Danish
PhD candidate in
Computer Vision,
MBZUAI

Session 4:
“Technological Competition and the
Development of Green Industry in China”



Professor Ju Jiandong
Chair Professor,
PBC School of
Finance in Tsinghua
University

Session 5:
“Artificial Intelligence in Drug Discovery -
Data, Translation, and Start-Ups”



Professor Andreas Bender
Professor for
Machine Learning in
Medicine, Khalifa
University

ADIA Lab Symposium 2025

Our flagship annual event, the ADIA Lab Symposium, will be held from October 27 to 29 at Four Seasons Hotel on Al Maryah Island, Abu Dhabi and online. The Symposium brings together some of the world's most influential minds in science and technology, including four Nobel Prize laureates. Our Scientific Advisors, Research Fellows, and global partners will present groundbreaking research, exploring how AI and data science are transforming climate science, health, and the digital economy. Each day of the symposium has a dedicated theme: Day 1 focuses on AI for Climate Science, Day 2 on AI for Health Sciences and Day 3 on AI for the Digital Economy. Sessions are crafted to provide valuable insights for both technical and non-technical audiences.

Day 1 AI for Climate Science

Morning

Keynote sessions on AI for Climate Science

Afternoon

Parallel deep dive sessions on AI for Climate Science

Awards announcements and presentations

Panel discussion

Poster session and networking

Day 2 AI for Health Sciences

Morning

Keynote sessions on AI for Health Sciences

Afternoon

Parallel deep dive sessions on AI for Health Sciences

Awards announcements and presentations

Panel discussion

Poster session and networking

Day 3 AI for Climate Science

Morning

Keynote sessions on AI for the Digital Economy

Afternoon

Parallel deep dive sessions on AI for the Digital Economy

ADIA Lab 2025 Best Paper Award

Panel discussion

Closing remarks

Keynote Speakers

Day 1: AI for Climate Science



Bjorn Stevens

Director, Max Planck
Institute for Meteorology



Robert Engle

Co-Director, The Volatility
and Risk Institute, NYU
Stern

[The Nobel Prize](#)



Steven Chu

Professor of Physics and
Energy Science,
Stanford University

[The Nobel Prize](#)

Day 2: AI for Health Sciences



Ramesh Raskar

Associate Professor of
Media Arts & Sciences,
Massachusetts Institute
of Technology



Edward Jung

Co-Founder and CTO
of Intellectual Ventures

[Former CTO,
Microsoft](#)

Day 3: AI for the Digital Economy



Guido Imbens

The Applied
Econometrics Professor,
Stanford University

[The Nobel Prize](#)



**Sir Konstantin
Novoselov**

Tan Chin Tuan
Centennial Professor,
National University of
Singapore

[The Nobel Prize](#)



**Alex "Sandy"
Pentland**

Professor of Media Arts
and Sciences, Stanford
University & MIT

[National Academy
of Engineering](#)



Najwa Aaraj

CEO, Technology
Innovation Institute



**Carme Artigas,
Michael McQuade**

UN & Harvard University



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2025 Edition