AI for Good

GeoAI and Beyond: Advancing the UN Sustainable Development Goals within the AI for Good Global Platform

Andrea Manara
International Telecommunication Union

Artificial Intelligence for NMC
Joint Workshop organised by EuroGeographics and EuroSDR
27 September 2023

ITU

Agenda

- The ITU and AI for Good
- GeoAI activities
  - Discovery Channel
  - Body of Knowledge
  - Challenges

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The International Telecommunication Union

ITU-R global management of the radio-frequency spectrum and satellite orbits

ITU-T technical standards to ensure ICT networks and devices interoperability

ITU-D improve access to ICTs to underserved communities worldwide.

General Secretariat corporate functions and strategic planning

Membership

- 193 Member States
- Almost 800 private-sector entities and academic institutions

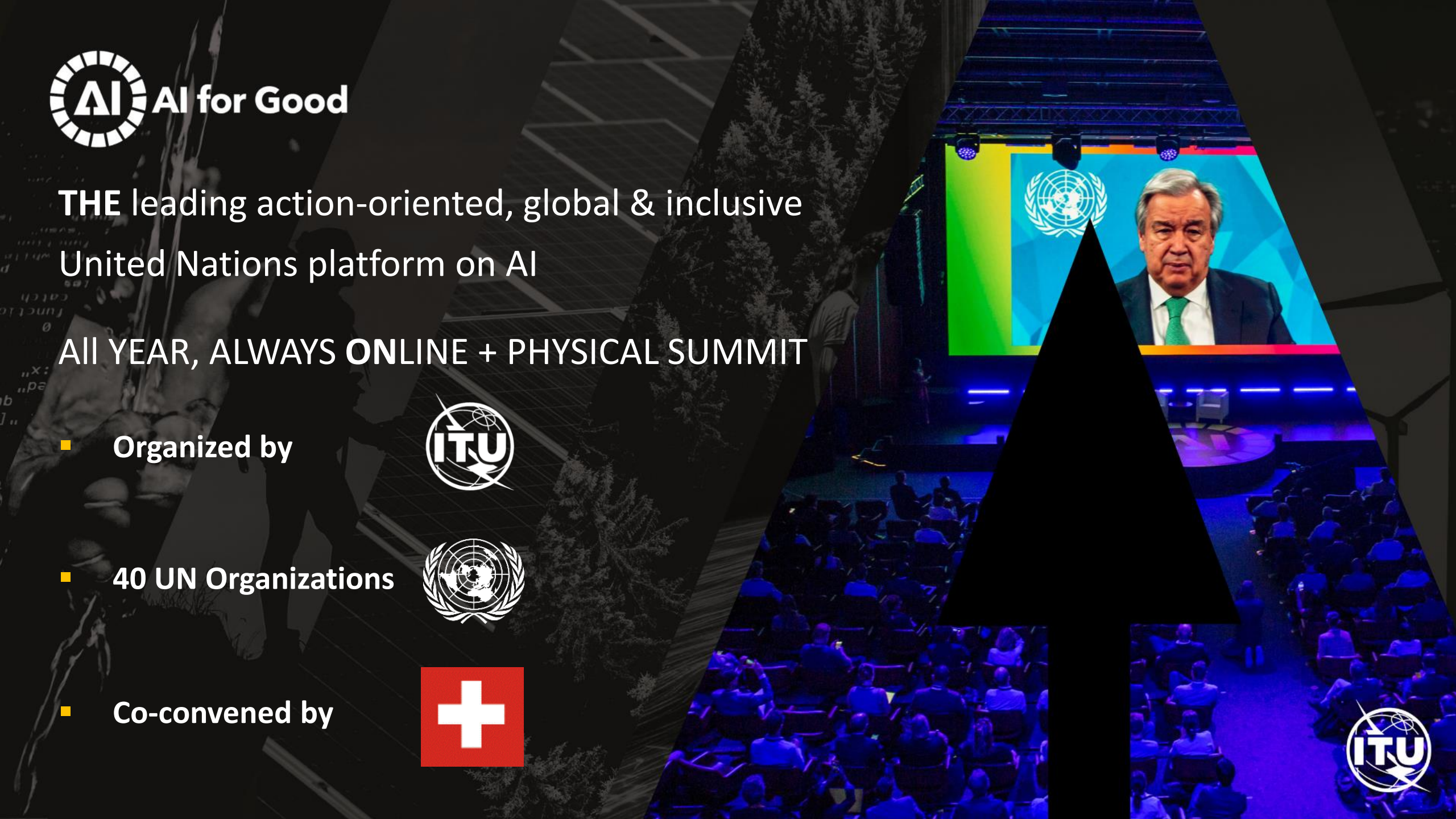
ITU

AI for Good

THE leading action-oriented, global & inclusive United Nations platform on AI

All YEAR, ALWAYS **ON**LINE + PHYSICAL SUMMIT

- **Organized by**
- **40 UN Organizations**
- **Co-convened by**



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Accelerating UN SDGS

Less than 10 years to achieve the United Nations Sustainable Development Goals.

AI holds great promise.

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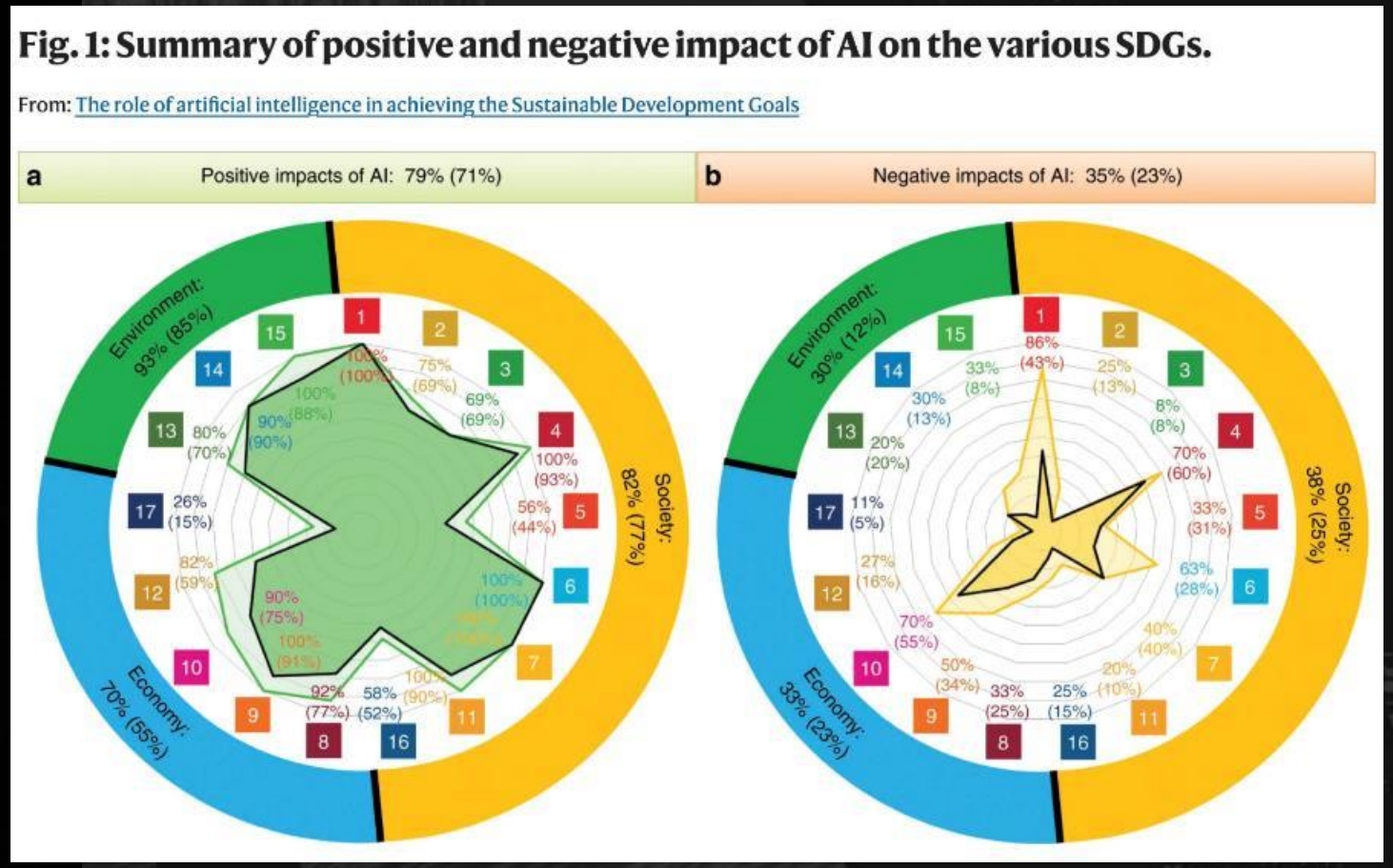
Mapping AI to SDGs

AI can help to **positively impact 134 targets** across all the goals.

AI can also **inhibit 59 targets**.



38 UN PARTNERS

AI for Good | Multi-stakeholder
Interdisciplinary
Inter-generational

AI for Good | Influential Audience

- Leading minds in AI
- AI philosophers, authors, scientists, engineers
- C-level industry leaders, founders and presidents
- Top AI academic experts
- Heads of UN agencies
- Government officials
- Policy-makers
- Ambassadors
- NGOs & non-profit organizations
- Creative visionaries

AI for Good | 100+ Expert AI Speakers (2023 examples)

Doreen Bogdan-Martin
Secretary-General
International Telecommunication Union (ITU)

Werner Vogels
Chief Technology Officer and Vice President
Amazon

Yuval Noah Harari
Historian, philosopher, and best-selling author of 'Sapiens' and 'Homo Deus'
Sapienship
(*remote)

Lila Ibrahim
Chief Operating Officer
DeepMind

Stuart Russell
Professor of Computer Science at University of California, Berkeley, Author 'Human Compatible: Artificial Intelligence and the Problem of Control'
UC-Berkeley

Ray Kurzweil
Inventor, Futurist & Best-selling author of 'Singularity is Near'
Kurzweil Technologies
Director of Engineering,
Google
(*remote)

Gary Marcus
Scientist, best-selling author, and serial entrepreneur
NYU

Vandi Verma
Deputy Manager for Mobility and Robotics Systems
NASA JPL

Summer Chen
Vice President
ZTE
in

António Guterres
United Nations

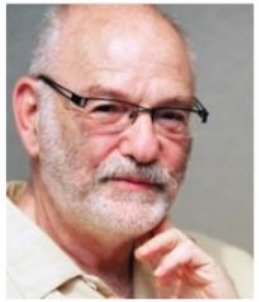
Orly Lobel
Warren Distinguished Professor of Law at the University of San Diego, Author The Equality Machine (An economist best book of 2022)

Babak Hodjat
CTO AI
Cognizant

Alessandra Sala
Sr. Director of Artificial Intelligence and Data Science
Shutterstock
President, **Women in AI**

Moriba Jah
Founder & Chief Scientist
Privateer

Renée Cummings
Professor, Data Activist in Residence, Criminologist
School of Data Science, University of Virginia



Wendell Wallach
Carnegie/Uehiro Fellow and Co-direct of the AI and Equality Initiative
Carnegie Council for Ethics in International Affairs

Ebtesam Almazrouei
Director of the AI-Cross Center Unit
Technology Innovation Institute (TII)

Baroness Joanna Shields
Group CEO
BenevolentAI
Former UK Minister for Internet Safety and Security

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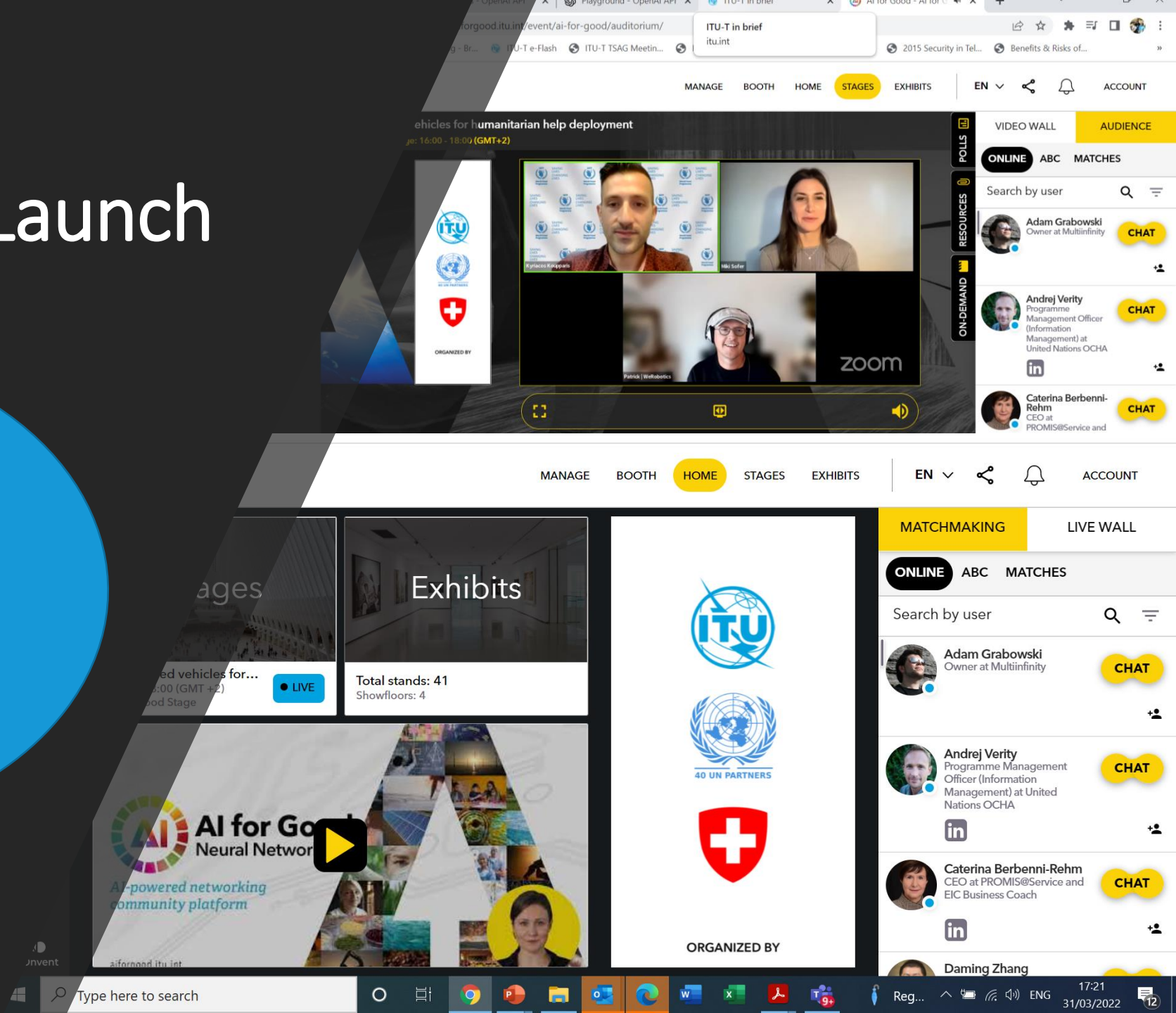
Neural Network Launch

"This is a truly amazing and original platform that doesn't yet exist. You may want to think about copyrighting it."

Philippe Jegou - AWS,
UN Account Manager



AI for Good | PRODUCTS

Learn

- AI for Good Keynotes
- AI for Good Webinars
- AI for Good Discovery
- AI for Good Perspectives
- AI for Good On the Go
- AI for Good Blog

Build

- AI for Good Innovation Factory
- AI for Good Machine Learning in 5G Challenge
- AI for Good GeoAI Challenge
- AI for Good tinyML Challenge
- AI for Good Breakthroughs
- AI: ITU Focus Groups

Connect

- AI for Good Global Summit
- AI for Good Neural Network
- AI for Good Artistic Intelligence
- AI for Good UN AI Actions
- AI for Good SDGs Gateway
- AI for Good Brain Trust

AI for Good | AI-RELATED FOCUS GROUPS & INITIATIVES

AI for Health
ITU-WHO Focus Group

World Health Organization

AI and Internet of Things for Digital Agriculture
ITU Focus Group

FAO

AI for Natural Disaster Management
ITU Focus Group

WORLD METEOROLOGICAL ORGANIZATION + UN environment programme

Machine Learning and 5G
ITU Focus Group

AI for Environmental Efficiency
ITU Focus Group

AI and Data Commons
Global Initiative

AI for Road Safety
Global Initiative

=

AI for Autonomous and Assisted Driving
ITU Focus Group

+ UN Special Envoy for Road Safety + UN Envoy on Technology

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ITU Events
AI for Good
Global Summit
Accelerating the United Nations
Sustainable Development Goals
30-31 May 2024
Geneva, Switzerland
aiforgood.itu.int/
40 UN PARTNERS
ITU

| 2024 Summit Snapshot

AI for Good

- Focus on solutions, experiences, networking and matchmaking
  - ✓Headliners, keynotes, Ted-style talks
  - ✓2 invitation-only roundtable lunches with UN leaders, government officials, ambassadors & industry CxOs
  - ✓Leaders Lounge: VIP-to-VIP networking with complimentary refreshments
  - ✓3 exciting talk/demo zones: Robotics for Good – SDG stage – Discovery zone
  - ✓2 AI start-up pitching sessions with grand prize
  - ✓Artistic AI performances + competition
  - ✓VIP receptions & dinners
  - ✓Expert level pre-Summit ML workshops (27 to 28 May)
  - ✓AI Governance Day (29 May)
  - ✓Networking breaks, lunches & social events
  - ✓In-person & virtual audience
  - ✓No parallel sessions when main stage is live!

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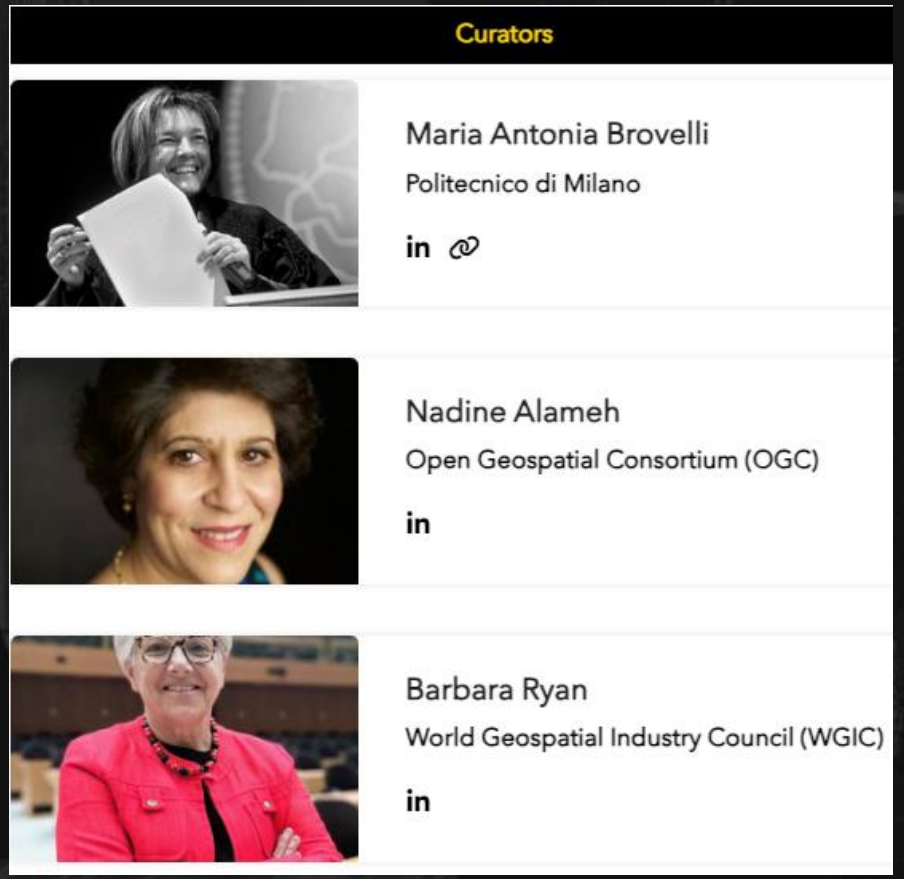
GeoAI activities

- **GeoAI Discovery** Channel on GeoAI applications, highlighting its relevance to the Sustainable Development Goals.

- **GeoAI Challenge**, a competition aimed at providing solutions for collaboratively addressing real-world geospatial problems by applying artificial intelligence (AI)/machine learning (ML).



UN GEOSPATIAL NETWORK
UNITED NATIONS COMMITTEE OF EXPERTS ON GLOBAL GEOSPATIAL INFORMATION MANAGEMENT

UN-GGIM
ACADEMIC NETWORK

UN Open GIS
INITIATIVE

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GeoAI Discovery Channel

Title	Date	Unique live attendees	Total replays on NN	YouTube views
Geospatial AI/ML applications and policies – A global perspective *(Zoom)*	13 April 2021	260	-	284
Workshop: Satellite data analysis and machine learning classification with QGIS – Part 1 *(Zoom)*	27 April 2021	1347	-	6887
Workshop: Satellite data analysis and machine learning classification with QGIS – Part 2 *(Zoom)*	11 May 2021	896	-	4515
What will it take for AI to work with geospatial data?	1 February 2022	207	165	530
Where ethics and geospatial AI meet	22 February 2022	81	91	162
Analyzing the Amazon Deforestation with Machine Learning and the Google Earth Engine – Part 1	15 March 2022	212	121	910
Analyzing the Amazon Deforestation with Machine Learning and the Google Earth Engine – Part 2	29 March 2022	116	20	421
Climate action and GeoAI: Innovative applications for climate change mitigation and adaptation	26 April 2022	149	33	270
Spatial Digital Twins and AI: Racing into the Future	7 June 2022	121	59	314
The future of GeoAI for Good with Google Earth Engine	23 June 2022	138	91	893
GeoAI and Health	27 June 2022	103	91	817
Launch of the ITU GeoAI Challenge	28 June 2022	86	54	376
Deep Earth Query: Information Discovery from Big Earth Observation Data Archives	12 July 2022	78	69	457
GeoAI and the digital transformation of agriculture, water and food systems	21 Sept 2022	93	88	189

Building a foundation for geospatial AI: defining a syllabus and body of knowledge

5 July 2023

In person and Online

Building a foundation for geospatial AI: defining a syllabus and body of knowledge -

updated on June 15th

14:00 - 17:30

Maria Antonia Brovelli (Politecnico di Milano), Andrea Manara (ITU), Andrew Zolli (Planet)...

Workshop

Education in GEOAI: a challenge and an opportunity

AI for Good Workshop "Building a foundation for geospatial AI: defining a syllabus and body of knowledge"
Geneve, 5 July 2023

Prof. Maria Antonia Brovelli
Chair of the UN-GGIM Academic Network
Politecnico di Milano

UN-GGIM | ACADEMIC NETWORK

unggim.academicnetwork.org

Building a foundation for geospatial AI: defining a syllabus and body of knowledge

Expression of interest until October 10th (Google Form) to participate in the Working Groups

- WP1 – GEOAI Syllabus for developers
- WP2 – GEOAI Syllabus for appliers
- WP3 – GEOAI Syllabus for decision-makers
- WP4 – GEOAI Body of Knowledge

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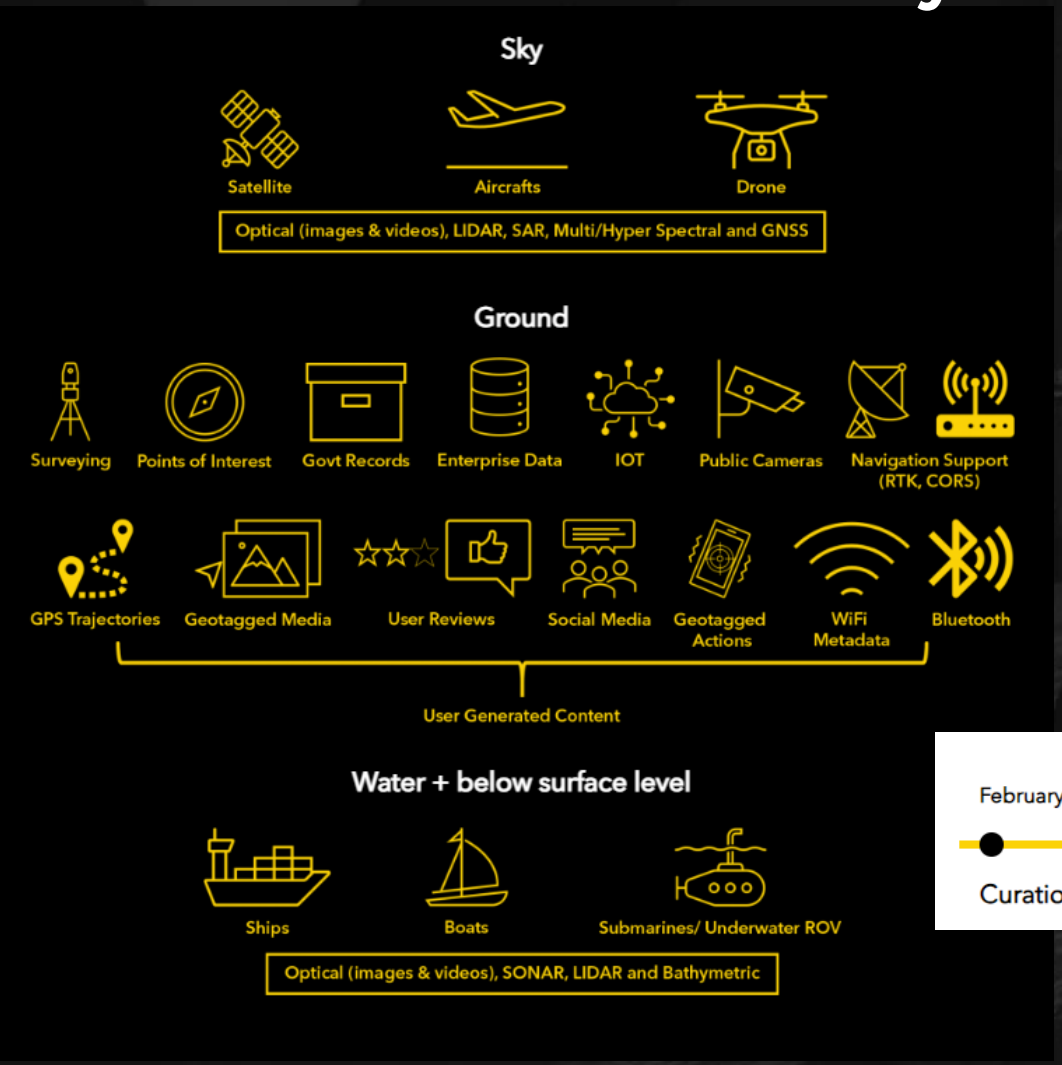
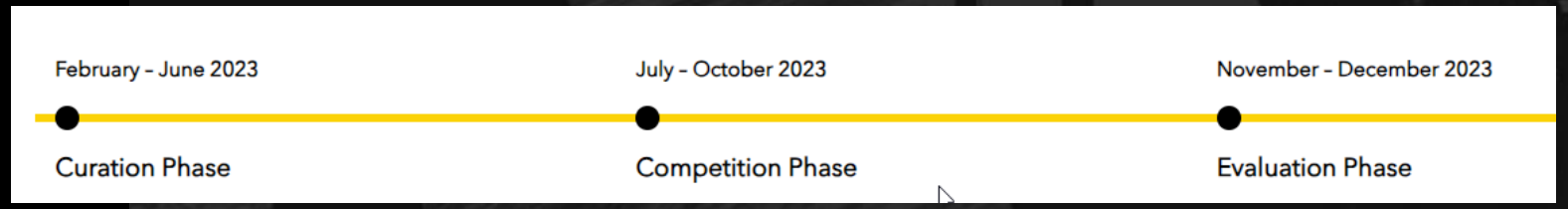
ITU GeoAI Challenge

Everything happens somewhere – applying machine learning to geospatial analysis



To solve real-world geospatial problems by applying artificial intelligence (AI) / machine learning (ML) to advance the United Nations Sustainable Development Goals (SDGs).
https://aiforgood.itu.int/about-ai-for-good/geoai-challenge/



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ITU GeoAI Challenge 2023

Landslide Susceptibility Mapping

Develop ML algorithms that can analyze large dataset to identify patterns indicating high probability of landslide occurrence and create a landslide susceptibility map.

Curated by **GEOlab at Polytechnic di Milano**

LEARN MORE

Cropland Mapping

Develop accurate, cost-effective classification model for cropland extent mapping with ML techniques in three test regions.

Curated by **UNODC** (United Nations Office on Drugs and Crime) and **FAO** (Food and Agriculture Organization of the United Nations)

LEARN MORE

Air Pollution Susceptibility Mapping

Implement a machine learning method which can accurately estimate the pollution levels (AQI) of the metropolitan city of Milan

Curated by **GEOlab at Polytechnic di Milano**

LEARN MORE

The Hyperview Challenge

Estimating soil parameters from hyperspectral images.

Curated by **ESA** (European Space Agency)

LEARN MORE

Location Mention Recognition (LMR)

This challenge aims at automatically extracting toponyms (places or location names) from the given text.

Curated by **QCRI** (Qatar Computing Research Institute), **QU** (Qatar University), and **Qen Labs Inc.**

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ITU GeoAI Challenge 2023

Problem statement	Organizations	Participants	Prize	Days to go
Cropland Mapping	FAO, UNODC	302 (59)	4000 USD	9
Air Pollution Susceptibility Mapping	Geolab (Politecnico di Milano)	163 (22)	1000 USD	19
Landslide Susceptibility Mapping	Geolab (Politecnico di Milano)	174 (14)	1000 USD	9
Estimating soil parameters from hyperspectral images	**ESA** Φ-lab together with KP Labs, and partner QZ Solutions	66 (6)	1000 USD	60
Location Mention Recognition (LMR)	**QCRI** (Qatar Computing Research Institute), **QU** (Qatar University), and **Qen Labs Inc.**	94 (15)	1000 USD	27

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ITU GeoAI Challenge 2023

Air pollution susceptibility mapping in Milan, Italy

POLITECNICO MILANO 1863

Angelly Pugliese-Viloria

PhD student in Environmental Engineering at Polimi and consultant at the World Bank.

GEOLAB

Make cities and human settlements inclusive, safe, resilient and sustainable

Take urgent action to combat climate change and its impacts

Landslide susceptibility mapping in Northern Italy

POLITECNICO MILANO 1863

Vasil Yordanov, PhD

Research Fellow at the Department of Civil and Environmental Engineering at Politecnico di Milano..

GEOLAB

Make cities and human settlements inclusive, safe, resilient and sustainable

Take urgent action to combat climate change and its impacts

ITU

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ITU GeoAI Challenge 2023

Cropland mapping with satellite imagery

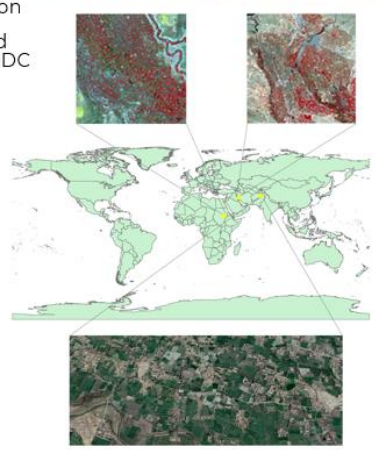
Dr. Pengyu Hao
Information Technology Officer
Digitalization and Informatics Division, FAO

Lorenzo Vita
Geospatial Information Officer
Research and Trend Analysis Branch, UNODC

Food and Agriculture Organization of the United Nations

UNODC
United Nations Office on Drugs and Crime

Develop accurate, cost-effective classification model for cropland extent mapping with ML techniques in three test regions.



Location Mention Recognition (LMR) from Social Media Crisis-related Text, Qatar

Hamad Bin Khalifa University (HBKU), a member of Qatar Foundation for Education, Science, and Community Development (QF), was founded in 2010 to continue fulfilling QF's vision of unlocking human potential.

Qatar Computing Research Institute (QCRI) is a national research institute, established in 2010 by QF. QCRI operates under the umbrella of Hamad bin Khalifa University (HBKU).

Qen Labs © Inc. is a Geospatial AI (GeoAI) company focused on enabling and measuring growth towards Sustainable Development Goals (SDG) through the fusion of geospatial data with other public and private datasets. They develop AI algorithms that leverage the spatiotemporal attributes of both structured and unstructured data to provide actionable insights.

Reem Suwaileh
Research Associate @ HBKU

Muhammad Imran
Senior Scientist @ Qatar Computing Research Institute (QCRI-HBKU)

Lokendra Chauhan
Founder & CEO, Qen Labs Inc.

10 REDUCED INEQUALITIES
11 SUSTAINABLE CITIES AND COMMUNITIES

This challenge contributes to the SDGs 10 and 11.

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Group

@itu_AIforGood

Neural Network

@AIforGood

https://space.bilibili.com/1855109650

ITU News

AIforGood.itu.int

ai@itu.int

Volunteers welcome!
Please reach out for details