
POLITECNICO
MILANO 1863
The 6th ACM SIGSPATIAL International Workshop on
AI for Geographic Knowledge Discovery
GEOAI for Good
Maria Antonia Brovelli

CYBORG

Artificial intelligence (**AI**) is intelligence demonstrated by machines, as opposed to intelligence displayed by humans or by other animals. "Intelligence" encompasses the ability to learn and to reason, to generalize, and to infer meaning

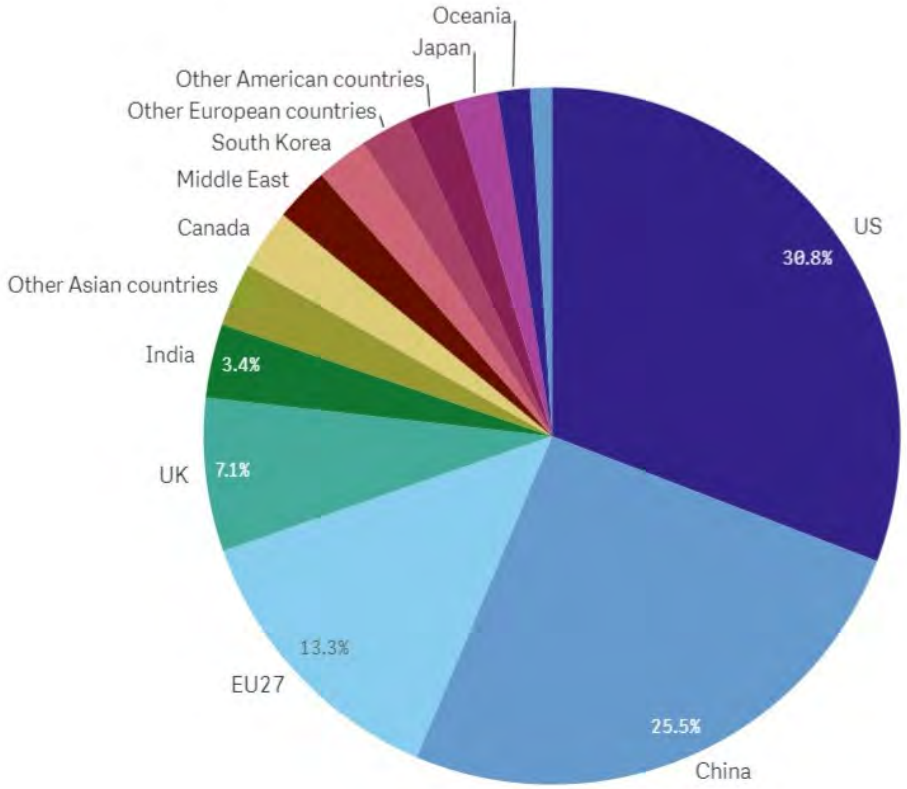
Artificial_intelligence, https://en.wikipedia.org/w/index.php?title=Artificial_intelligence&oldid=1161042240 (last visited June 20, 2023)

A Cyborg Manifesto – Donna Haraway, 1985 (Essay published in Socialist Review (US).

In it, the concept of the cyborg represents a rejection of rigid boundaries, notably those separating "human" from "animal" and "human" from "machine."

Cyborg, 1989, Lynn Randolph

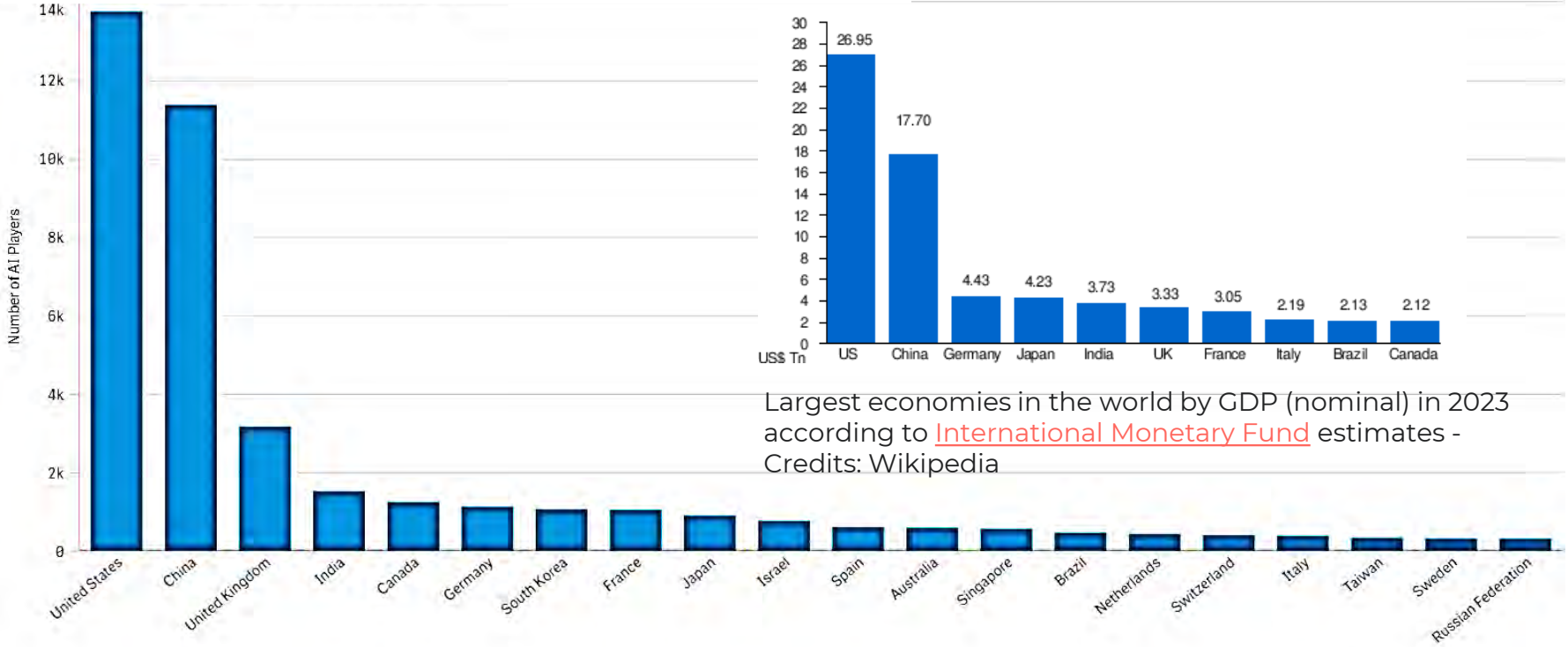
SOME STATISTICS



https://web.jrc.ec.europa.eu/dashboard/AI_WATCH_LANDSCAPE/index.html?bookmark=overview

SOME STATISTICS

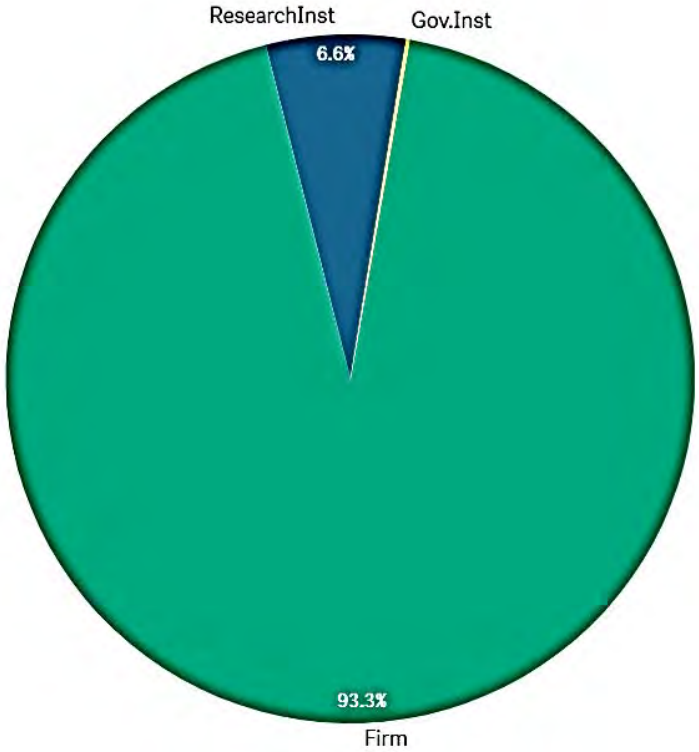
AI Players in the AI landscaper by Country (top 20)



Largest economies in the world by GDP (nominal) in 2023 according to International Monetary Fund estimates - Credits: Wikipedia

https://web.jrc.ec.europa.eu/dashboard/AI_WATCH_LANDSCAPE/index.html?bookmark=overview

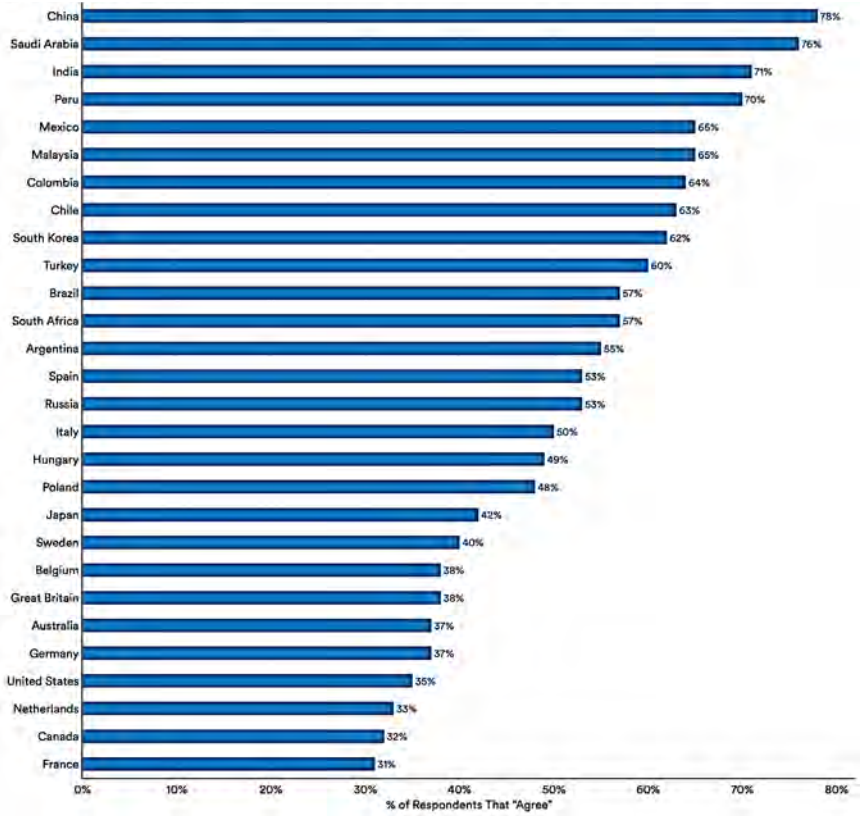
SOME STATISTICS



https://web.jrc.ec.europa.eu/dashboard/AI_WATCH_LANDSCAPE/index.html?bookmark=overview

SOME STATISTICS

“Products and services using AI have more benefits than drawbacks” by Country (% of Total), 2022



AI Index Report 2023 – Artificial Intelligence Index (stanford.edu)

UN High-level Advisory Body on Artificial Intelligence

United Nations | AI Advisory Body

High-level Advisory Body on Artificial Intelligence

- **The Global AI Imperative**
  Globally coordinated AI governance is the only way to harness AI for humanity, while addressing its risks and uncertainties, as AI-related applications, algorithms, computing capacity and expertise become more widespread internationally.

- **The UN's Response**
  To foster a globally inclusive approach, the UN Secretary-General is convening a multi-stakeholder High-level Advisory Body on AI to undertake analysis and advance recommendations for the international governance of AI.

- **Calling for Interdisciplinary Expertise**
  Bringing together up to 38 experts in relevant disciplines from around the world, the Body will offer diverse perspectives and options on how AI can be governed for the common good, aligning internationally interoperable governance with human rights and the Sustainable Development Goals.

- **A Multistakeholder, Networked Approach**
  The Body, which will comprise experts from government, private sector and civil society, will engage and consult widely with existing and emerging initiatives and international organizations, to bridge perspectives across stakeholder groups and networks.

- **Supporting the Body**
  The UN is calling for support to the Body's operations and the Secretariat, based in the Office of the Secretary-General's Envoy on Technology (OSET). Through their support, contributors will strengthen stakeholder cooperation on governing AI in the face of pressing technical breakthroughs, and thereby contribute to better-governed AI globally.

ROADMAP – TOWARDS GLOBALLY INCLUSIVE AI GOVERNANCE OPTIONS

AUG 2023
CALL FOR EXPERTS
1800+ nominees from across 128 countries

OCT 2023
AI ADVISORY BODY FORMED
Members of the Body appointed, work commences

NOV 2023
ANALYSIS & ENGAGEMENT
Initial consultations

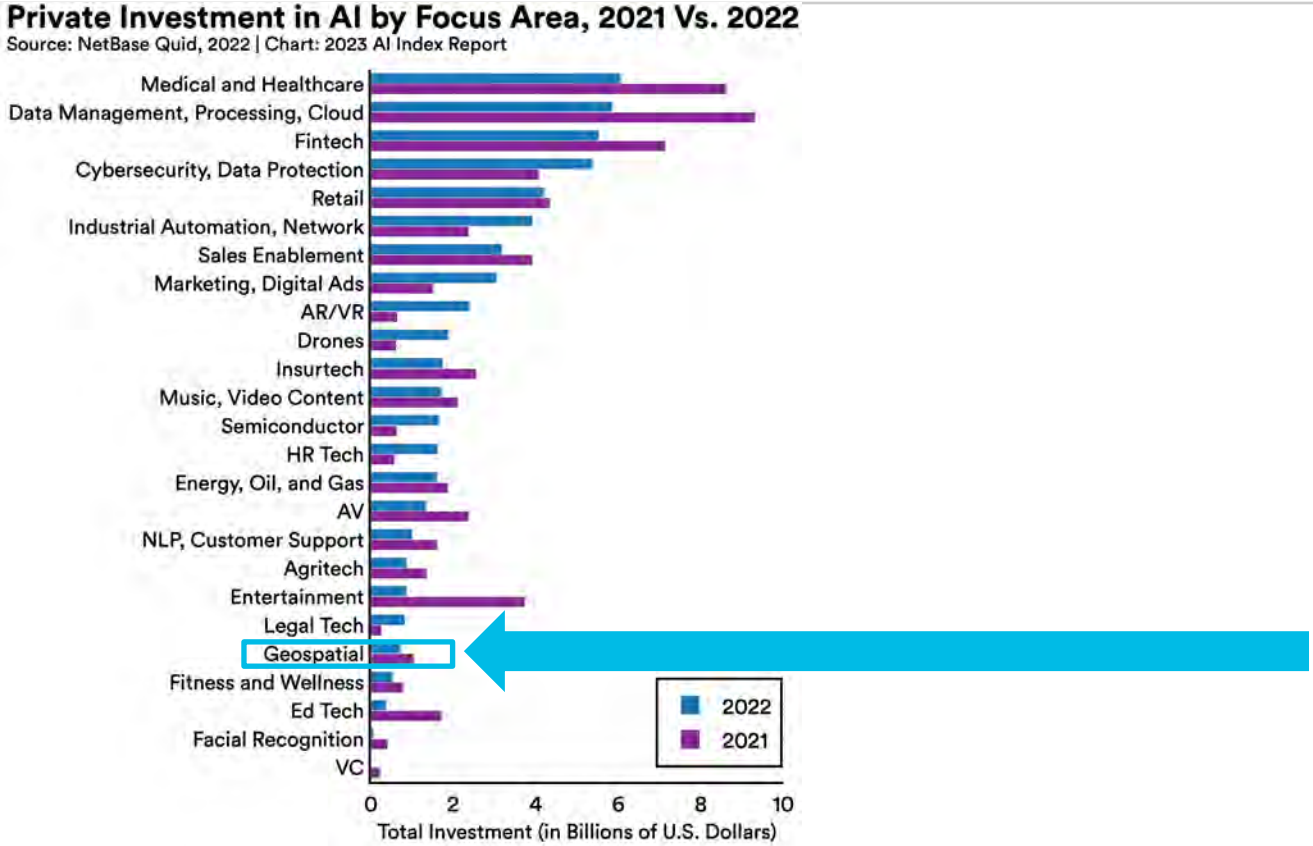
END-2023
INTERIM REPORT RELEASED
AI governance landscape mapping options

Q1 2024
FURTHER CONSULTATIONS
Across stakeholder groups and ongoing initiatives

MID-2024
FINAL REPORT
Incorporating results from consultations

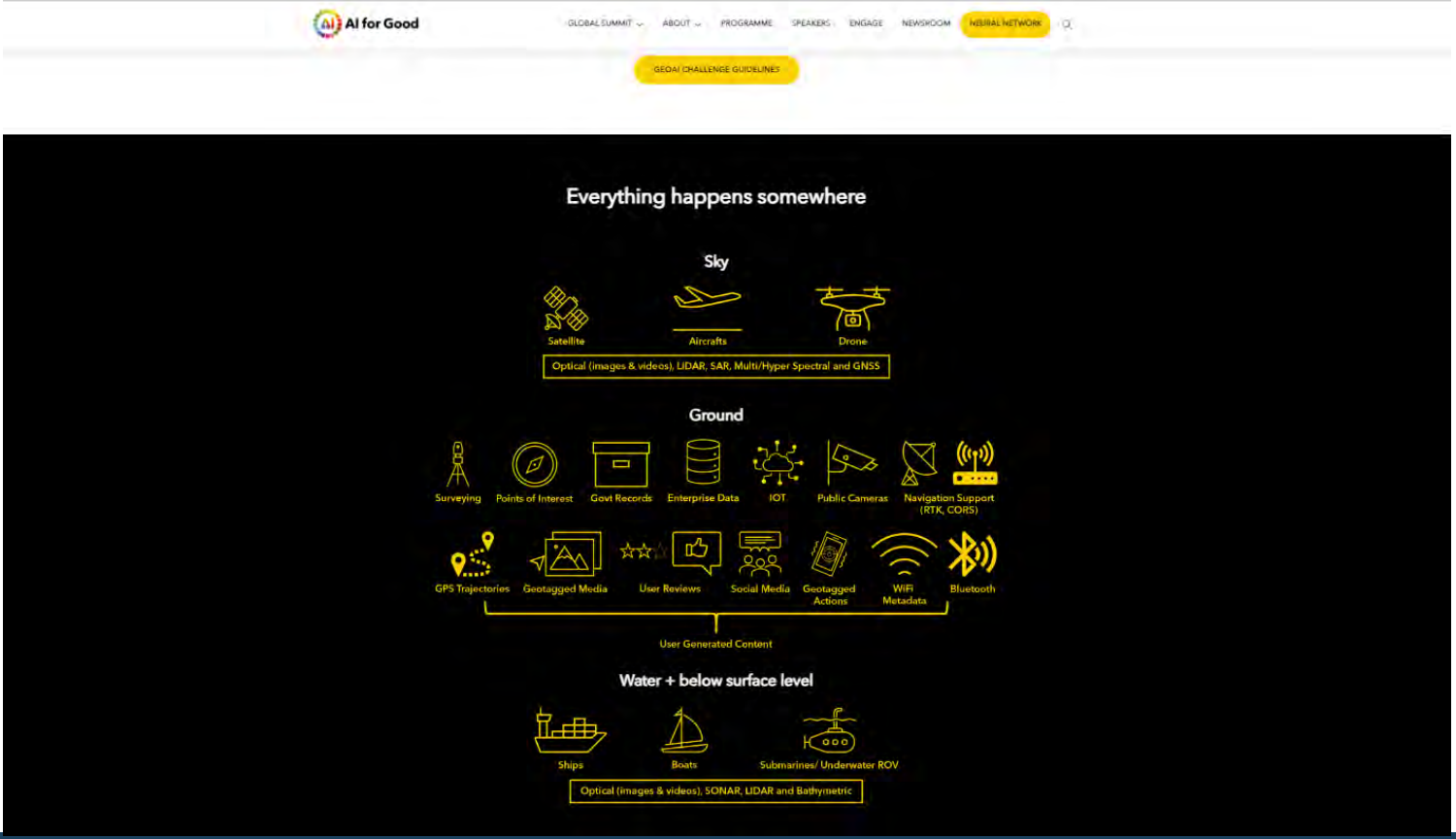
SEP 2024
SUMMIT OF THE FUTURE
Member States consider Global Digital Compact

WHY DOES GEOSPATIAL AI MATTER?



AI Index Report 2023 – Artificial Intelligence Index (stanford.edu)

Everything happens somewhere (and at some time)



WHY DOES GEOSPATIAL AI MATTER? FROM MAPS …

Credits:
https://luciodp.altervista.org/scuola/storia/mappe/peutingeriana.html#s05

WHY DOES GEOSPATIAL AI MATTER? … TO THE DIGITAL TWIN EARTH AND THE METAVERSE

Credits: ESA - Digital Twin Earth, quantum computing and AI take centre stage at ESA's Φ-week

- THE FUNDAMENTALS OF MACHINE LEARNING
  - A pattern exists
  - We cannot determine it mathematically (→ learning from data)
  - We have data on it

- The machine is able to **learn** from the **data** and **understand** the **underlying patterns** that are contained within it.
- **DATA and specifically GEODATA is an essential component**

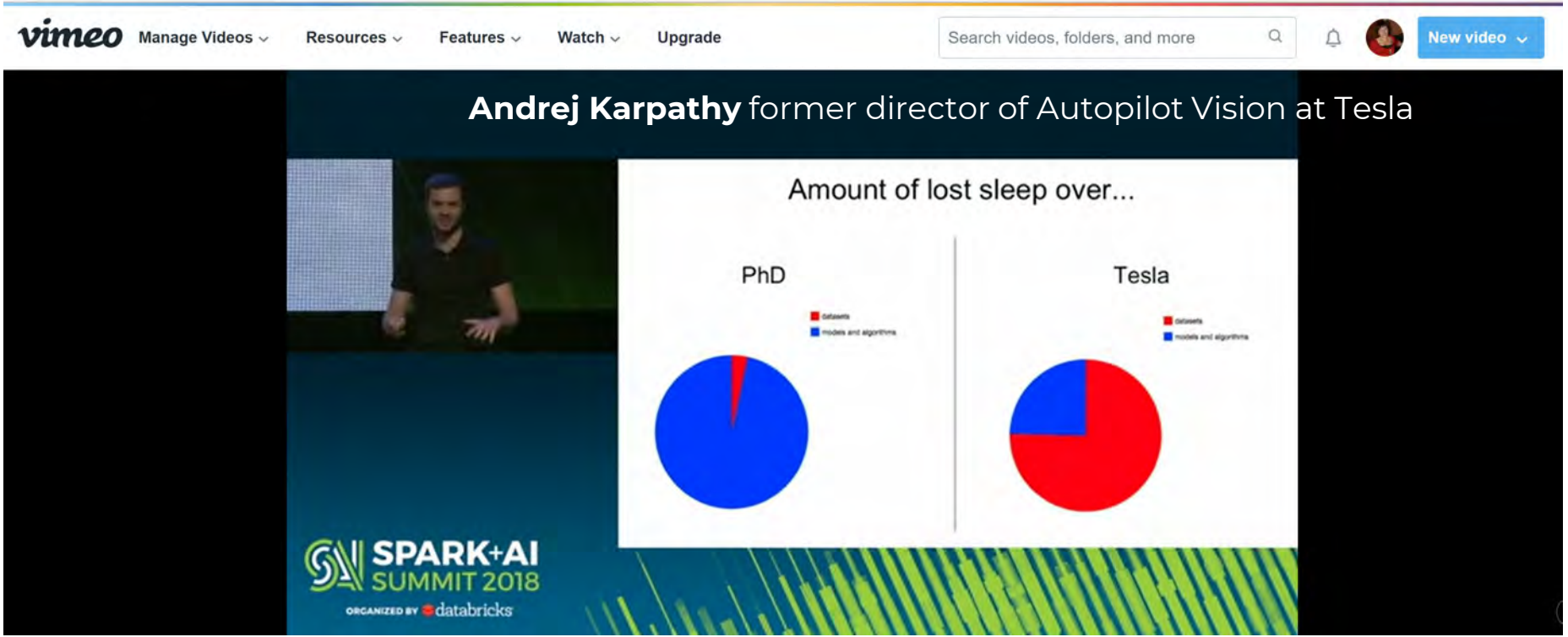
THE IMPORTANCE OF DATA

The ISO/IEC JTC 1/SC 42 Artificial intelligence Committee was established in 2017.

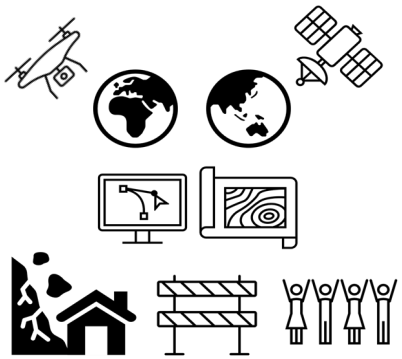
Areas of interest:

- foundational standards
- **data**
- trustworthiness
- use cases and applications
- computational approaches

THE IMPORTANCE OF DATA



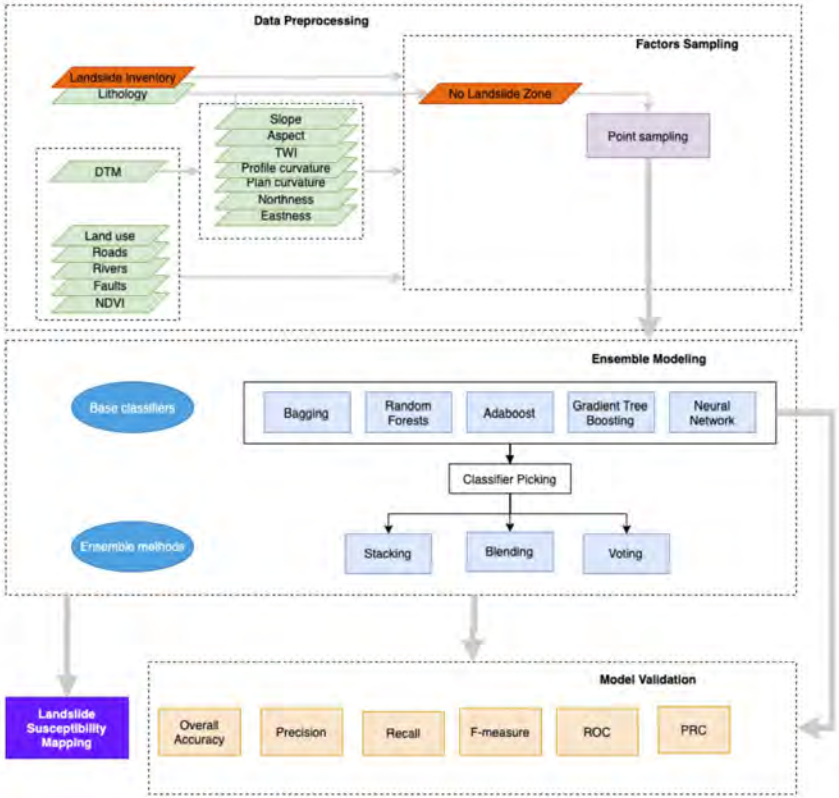
AN EXAMPLE: CREATING LANDSLIDE SUSCEPTIBILITY MODEL AND MAP



- Authoritative maps
- Satellite/aerial/drone imagery
- Authoritative databases
- Crowdsourced data

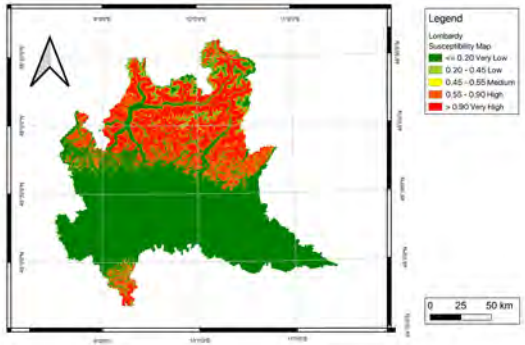
Aim: generate landslide susceptibility maps using different ensemble methods. The case study was the Lombardy region (Northern Italy). The analyses were first applied to some smaller regions (Val Tartano/Upper Valtellina/Val Chiavenna), and then extended to the whole region.

AN EXAMPLE: CREATING LANDSLIDE SUSCEPTIBILITY MODEL AND MAP



OA = 95.93%,
Precision = 95.41%,
Recall 96.51%,
F1 = 95.96%

Map produced based on Neural Networks model trained on Val Tartano, Valchiavenna and Upper Valtellina.



Xu Qiongjie, Vasil Jordanov, Maria A Brovelli

How much geodata we need?

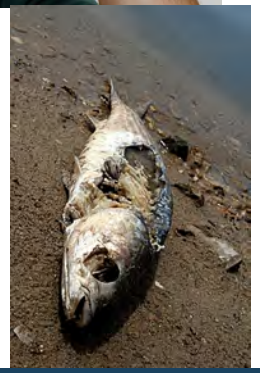
The amount of data required for machine learning depends strongly on

- **The complexity of the problem**, i.e., the unknown underlying function that best link the input variables to the output variable.
- **The complexity of the learning algorithm**, i.e., the algorithm used to learn the unknown underlying mapping function from specific examples.

→ **THE MORE DATA WE HAVE, THE BETTER IS (PROVIDED THAT THE DATA ARE GOOD)**

- The sample of data must be
  - **representative** of the problem to be solved
  - **good quality**

A gastronomic comparison: the choice of ingredients



A BIG NUMBER IS NOT ENOUGH

Are the technology or the experience of the chef enough for ensuring a delicious dish?

Use domain knowledge or find a domain expert to justify the domain and amount of data that may be needed to properly understand the complexity of the problem.

A BIG NUMBER IS NOT ENOUGH: A CHALLENGE BUT ALSO AN OPPORTUNITY

Data **collection** process, **aggregating**, **combining**, **labelling**, **pre-processing**, **quality evaluation** and **data governance** are key steps in building a quality AI system.

Real-world datasets are often 'dirty' and come with a variety of data **quality problems**.

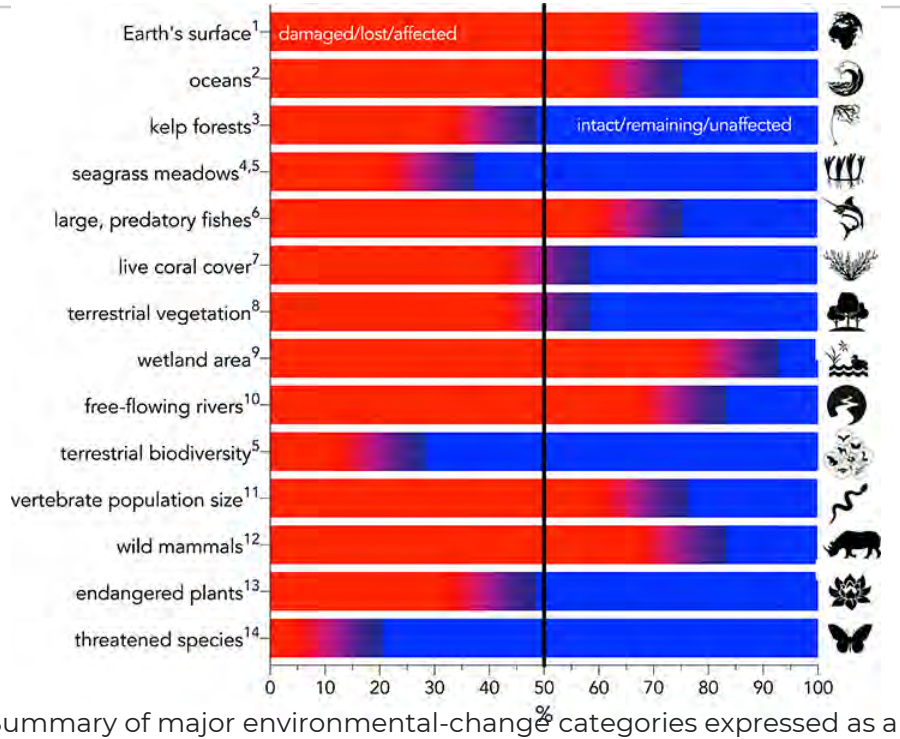
But **data quality is crucial** to ensure that the ML system using that data can accurately represent and predict the phenomena it is claiming to measure. Understanding and improving data quality to **avoid the garbage in, garbage out** problem is fundamental.

Very often we need specialized datasets by **region**, demographics, phenomena, or species, and **we are experiencing lack of data especially in under-digitized environments**.

With limited digital infrastructures and fewer socio-economic datasets, data collection must be done from scratch through **field partners**. This is a cost but can be also an opportunity of **introducing AI literacy to partners**.

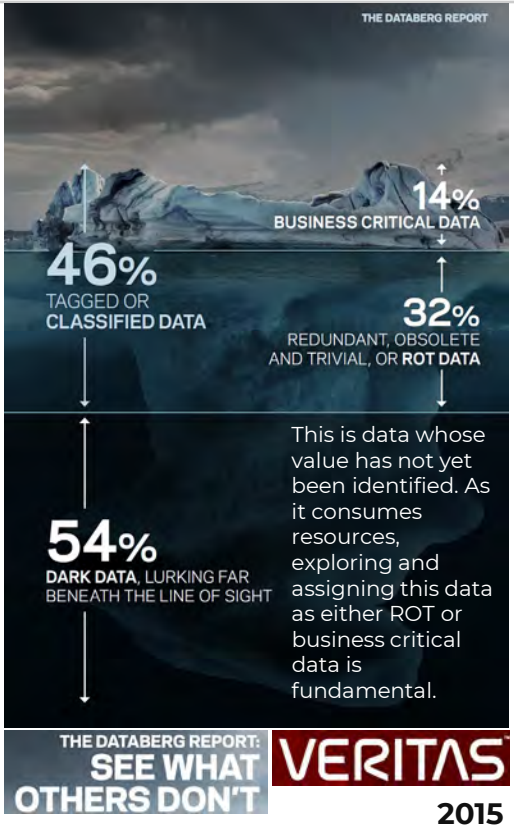
Public Participatory GIS and Spatial Data Infrastructure in Disaster Management
(QField, Epicollect, LandslideSurvey, Geopaparazzi and everything you want to know about OSM)

A BIG NUMBER IS NOT ENOUGH: A CHALLENGE BUT ALSO AN OPPORTUNITY



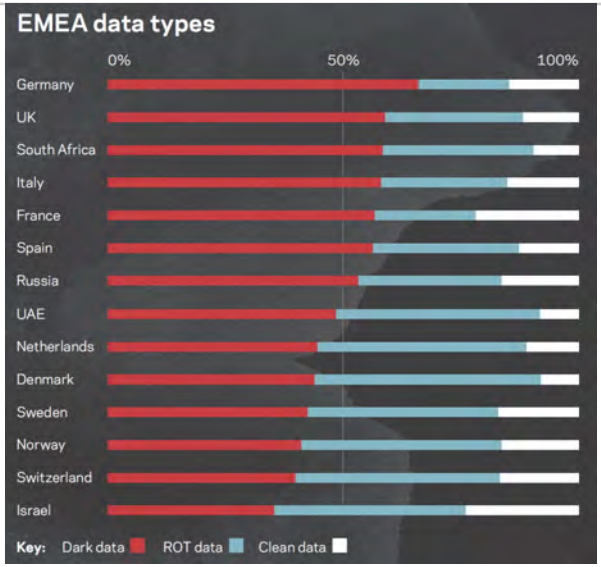
Summary of major environmental-change categories expressed as a percentage change relative to the baseline given in the text. Red indicates the percentage of the category that is damaged, lost, or otherwise affected, whereas blue indicates the percentage that is intact, remaining, or otherwise unaffected. Credits: Wikipedia (Biodiversity loss)

A BIG NUMBER IS NOT ENOUGH: A CHALLENGE BUT ALSO AN OPPORTUNITY



2015

Europe, Middle East, and Africa



A BIG NUMBER IS NOT ENOUGH: A CHALLENGE BUT ALSO AN OPPORTUNITY

- **After the intoxication of big data, we must begin to think about the ECOLOGY OF DATA, especially in the era of machines that must be fed with data**

DATA FOR TRAINING THE MACHINES

- **Open Data Aggregators (Kaggle, Google Search, DataHub, OpenML, VisualData, SpaceNet, Radiant Earth Foundation)**

- **Public Authoritative Datasets (Europe: Copernicus, INSPIRE)**
  →Open Data Directive (Directive EU 2019/1024), the European Commission was tasked to adopt an implementing act (December 2022) specifying **high-value datasets** (HVDs) that organizations in the scope of the Directive will have to make available **free of charge, in machine-readable format** and **via APIs**, and, where relevant, **as a bulk download.**

- **Citizen Science Projects**

List of high-value datasets (Geospatial and Earth Observation and environment)

Geospatial

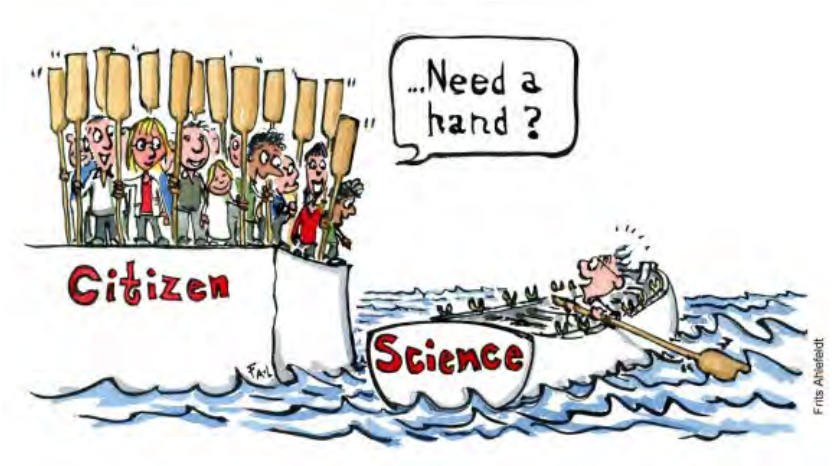
- Administrative units
- Geographical names
- Addresses
- Buildings
- Cadastral parcels
- Reference parcels
- Agricultural parcels

Earth observation and environment

- Hydrography
- Protected sites
- Elevation
- Geology
- Land cover
- Orthoimagery
- Area management/restriction / regulation zones & reporting units
- Bio-geographical regions
- Energy resources
- Environmental monitoring facilities
- Habitats and biotopes
- Land use
- Mineral resources
- Natural risk zones
- Oceanographic geographical features
- Production and industrial facilities
- Sea regions
- Soil
- Species distribution
- Air
- Climate
- Emissions
- Nature preservation and biodiversity
- Noise
- Waste
- Water

→ License (CC BY 4.0, CC0 or any equivalent or less restrictive license)

DATA FOR TRAINING THE MACHINES: CITIZEN SCIENCE AND VGI



The partnership of citizen science and machine learning: Benefits, risks and future challenges for engagement, data collection and data quality
Lotfian, M., Ingensand, J., Brovelli, M.A.
Sustainability (Switzerland), 2021, 13(14), 8087

Integration of machine learning and citizen science to address the challenges of public engagement and data validation
Lotfian Maryam, PhD thesis, 2021.

DATA FOR TRAINING THE MACHINES: CITIZEN SCIENCE AND VGI

Planet OSM

The files found here are regularly-updated, complete copies of the OpenStreetMap.org database, and those published before the 12 September 2012 are distributed under a Creative Commons Attribution-ShareAlike 2.0 license, those published after are Open Data Commons Open Database License 1.0 licensed. For more information, see the project wiki.

Complete OSM Data

Latest Weekly Planet XML File (torrent) (RSS)
128 GB, created 3 hours ago.
md5: 3fbad6f8f84827344939fa8737928675.

Latest Weekly Changesets (torrent) (RSS)
5.8 GB, created 3 hours ago.
md5: 862c17ee0d03c80aaf5c1a56b46b7456.

Latest Weekly Planet PBF File (torrent) (RSS)
70 GB, created 3 hours ago.
md5: cbe463be01a70ec4115272acb9f34f1f.

Each week, a new and complete copy of all data in OpenStreetMap is made available as both a compressed XML file and a custom PBF format file. Also available is the 'history' file which contains not only up-to-date data but also older versions of data and deleted data items.

A smaller file with complete metadata for all changes ('changesets') in XML format is also available.

Using The Data

You are granted permission to use OpenStreetMap data by the OpenStreetMap License, which also describes your obligations.

You can process the file or extracts with a variety of tools. Osmosis is a general-purpose command-line tool for converting the data among different formats and databases, and Osm2pgsql is a tool for importing the data into a Postgis database for rendering maps.

Processed coastline data derived from OSM data is also needed for rendering usable maps.

Extracts & Mirrors

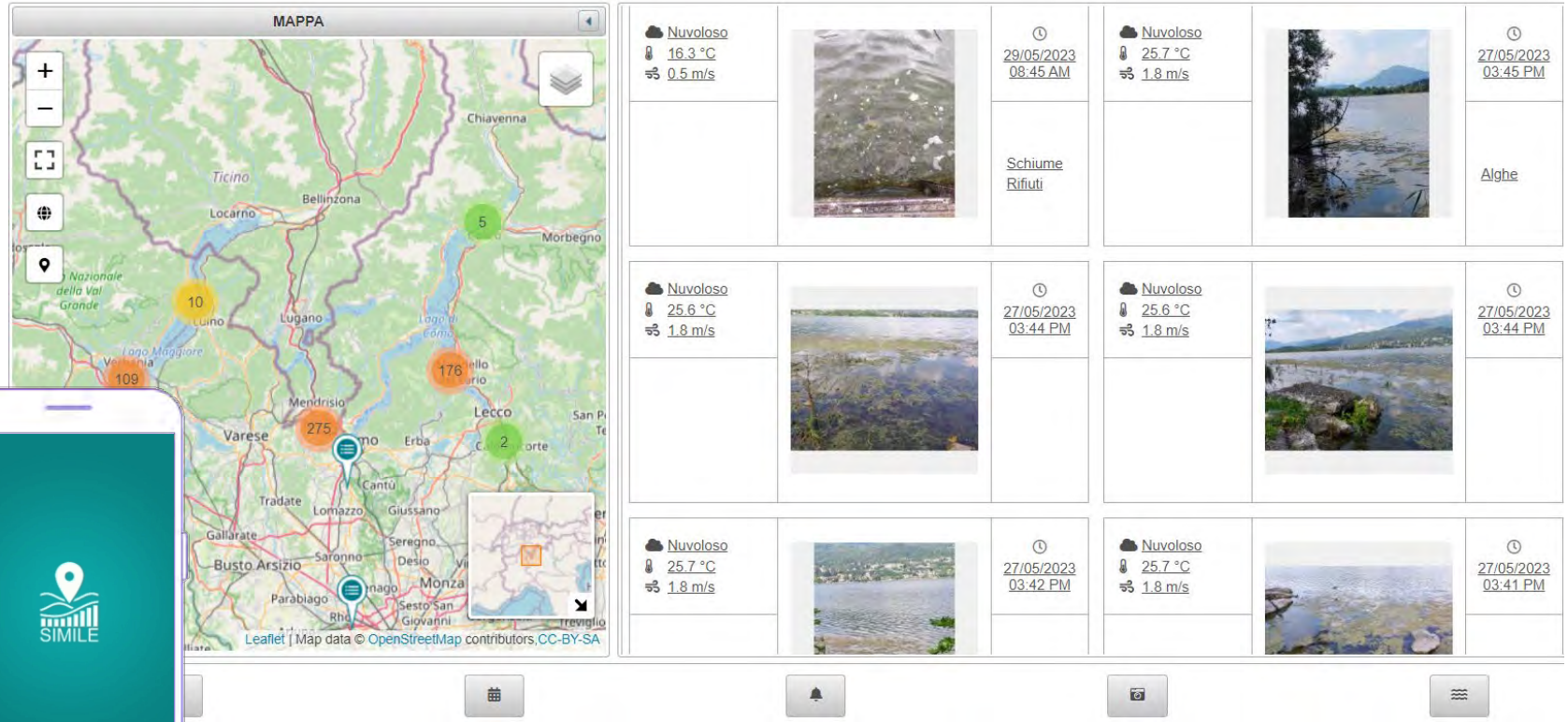
The complete planet is very large, so you may prefer to use one of several periodic extracts (individual countries or states) from third parties. GeoFabrik.de and BBBike.org are two providers of extracts with up-to-date worldwide coverage.

A New Method for the Assessment of Spatial Accuracy and Completeness of OpenStreetMap Building Footprints, Brovelli, M.A.; Zamboni, G. *ISPRS Int. J. Geo-Inf.* (2018), *7*, 289. https://doi.org/10.3390/ijgi7080289

Assessing OSM building completeness using population data,
Yuheng Zhang, Qi Zhou, Maria Antonia Brovelli & Wanjing Li (2022) International Journal of Geographical Information Science, DOI: 10.1080/13658816.2021.2023158

Assessing OSM building completeness for almost 13,000 cities globally
Qi Zhou, Yuheng Zhang, Ke Chang and Maria Antonia Brovelli (2022) INTERNATIONAL JOURNAL OF DIGITAL EARTH2022, VOL. 15, NO. 1, 2400–2421
https://doi.org/10.1080/17538947.2022.2159550

Example: SIMILE project (SIMILE Web App)



FROM MODEL-CENTRIC TO DATA-CENTRIC AI

A Chat with Andrew on MLOps: From Model-centric to Data-centric AI

196K views · 10 months ago
YouTube › DeepLearningAI

Big Data To Good Data: Andrew Ng - Be More Data-Centric And Less Mo...

1,9K views · 10 months ago
YouTube › Analytics India Magazine

Andrew NG urges data centric and use ML Ops

706 views · 10 months ago
YouTube › The Tesseract Academy

The Current And Future State of AI - with Dr. Andrew Ng

3,5K views · 3 months ago
YouTube › Bernard Marr

Andrew Ng Announces The Launch Of NeurIPS Data-Centric AI Worksh...

200 views · 5 months ago
YouTube › IIT Madras - BSc Degree Student Co...

Data-Centric AI Competition | From Model-centric to Data-centric AI | A...

200 views · 6 months ago
YouTube › Hidden Box

Data-centric AI: Real World Approaches

30K views · 6 months ago
YouTube › DeepLearningAI

Data Centric AI Systems

489 views · 5 months ago
YouTube › Greg Diamos

Nithya Sambasivan, Shivani Kapania, Hannah Highfill, Diana Akrong, Praveen Paritosh, Lora Aroyo. 2021. "***Everyone wants to do the model work, not the data work***": Data Cascades in High-Stakes AI . In *CHI Conference on Human Factors in Computing Systems (CHI '21), May 8–13, 2021, Yokohama, Japan.* ACM, New York, NY, USA, 15 pages. https://doi.org/10.1145/3411764.3445518

DATA CENTRIC VS MODEL CENTRIC APPROACH IN ML

MODEL CENTRIC

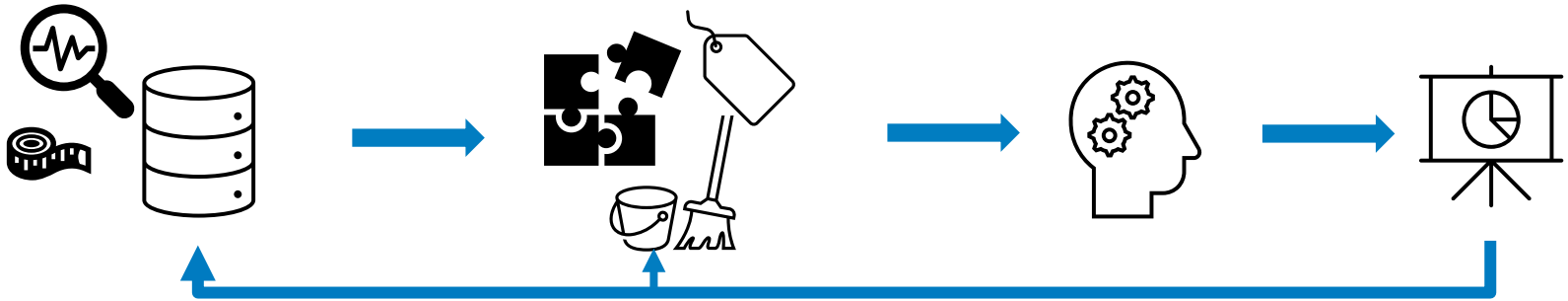
- Keep the data the same and improve the code or model architecture. Working on code is the central objective of this approach (**90% of research papers in the ML domain are model-centric**)

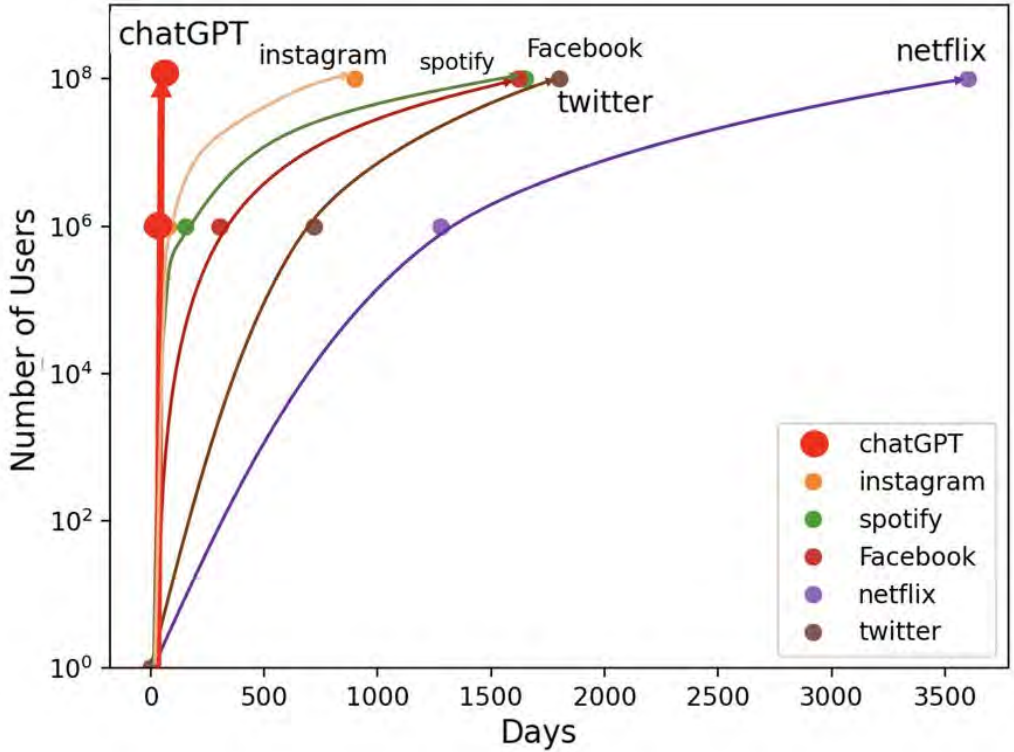
DATA CENTRIC

- Systematically improving datasets to increase the accuracy of ML applications. **Working on data is the central objective of this approach**.

DATA CENTRIC VS MODEL CENTRIC APPROACH IN ML

Model-centric ML	Data-centric ML
Central objective: working on code	Central objective: working on data
Optimizing the model to deal with the noise in the data	Invest in data quality tools
Inconsistent data labels	Data consistency is key
Data is fixed after standard preprocessing	Code/algorithms are fixed
Model is improved iteratively	Iterated the data quality





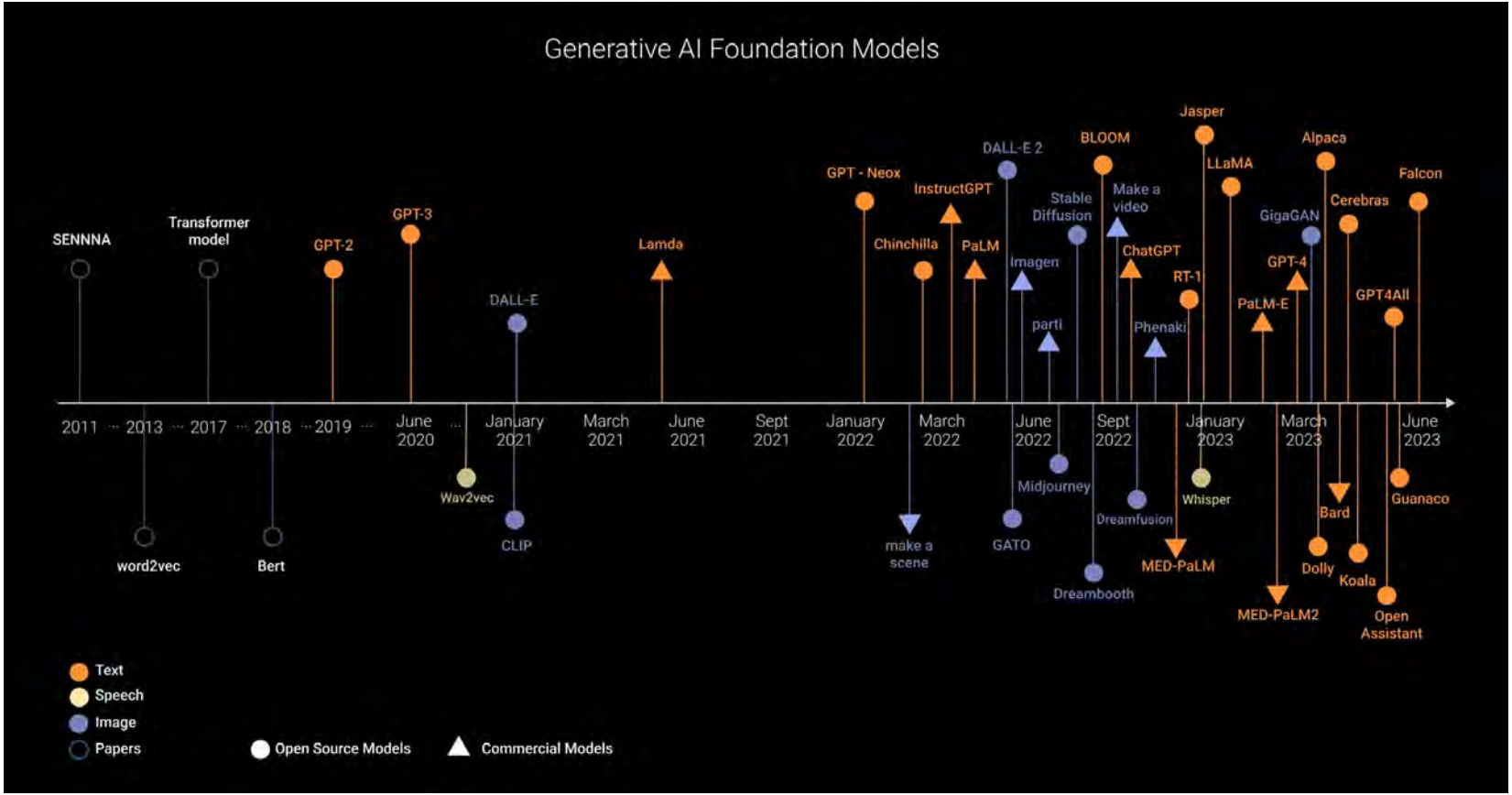
Number of days to 1M and 100M users – Kyle Hayley (9 February 2023)

Large Language Models (LLM) are based on deep learning neural networks and are trained on massive amounts of text data. The more data it is trained on, the better it will be at generating new content.

Foundation Models (FM) are artificial intelligence systems with versatile capabilities that can be tailored for various specific purposes. The primary model serves as a base or foundation upon which other components can be constructed. LLM is an example of FM referring to languages.

Generative Artificial Intelligence (also generative AI or GenAI) is artificial intelligence capable of generating text, images, or other media, using generative models. Generative AI models learn the patterns and structure of their input training data and then generate new data that has similar characteristics.

Generative AI Foundation Models



https://www.ml6.eu/resources/foundation-models Credits: ML6

Geospatial knowledge is not solely confined to vector and raster data; it also encompasses **textual, graphical, and chart-based representations**. The latter formats incorporate analytical assessments, qualitative information, and non-conventional insights beyond what is typically found in conventional geographic information system (GIS) data.

The connection between information and location can be present in **metadata**, embedded in documents, or inferred from the contextual details we extract.

But geospatial has much more: **Raster and Vector data**.

ChatGPT code interpreter plugin equips ChatGPT with the capacity to formulate and run code in natural language, facilitating effective data examination, file transformations, and beyond.

ChatGPT's Code Interpreter executes Python code

Data Analysis and Visualization: Analyze and visualize your data offline using packages like pandas, numpy, scipy, xarray, matplotlib, seaborn, plotly, and bokeh.

Natural Language Processing and Machine Learning: Dive into text data with nltk, spacy, textblob, and gensim, or build machine learning models with scikit-learn, xgboost, keras, and torch.

Image and Audio Processing: Manipulate and analyze images and audio with pillow, imageio, opencv-python, scikit-image, librosa, pyaudio, and soundfile.

File Format Manipulation and Web Development: Handle various file formats with openpyxl, xlrd, pyPDF2, python-docx, or build web applications with flask, django, tornado, and quart.

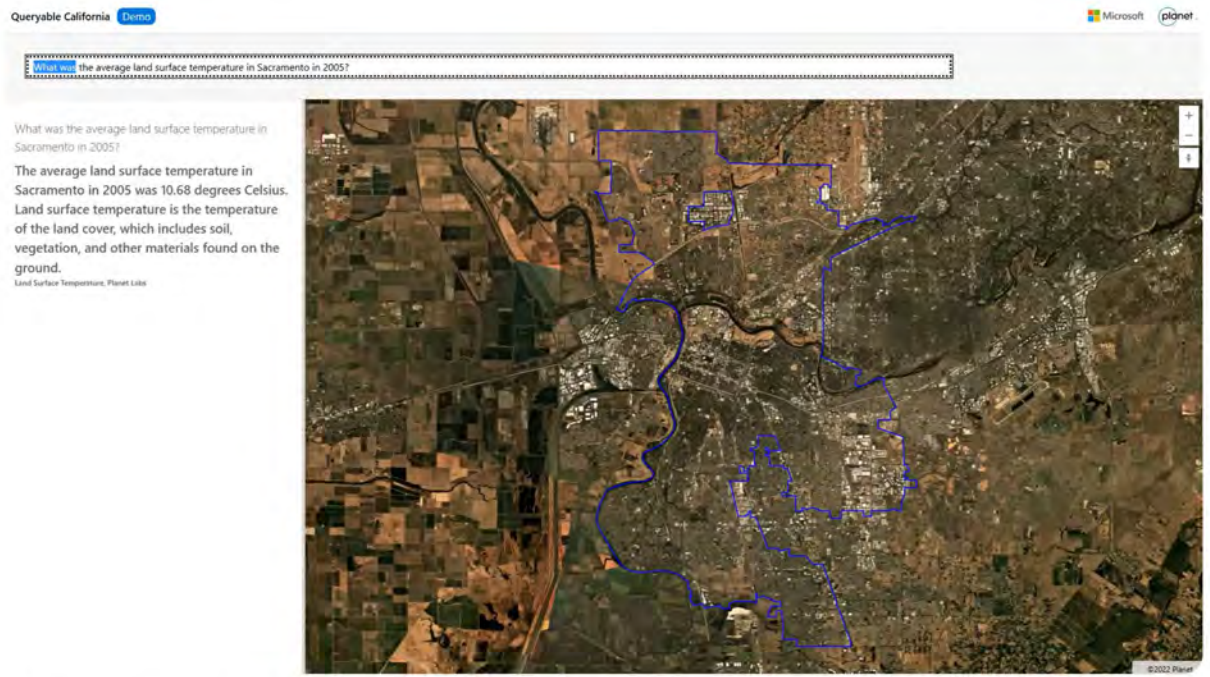
https://wfhbrian.com/mastering-chatgpts-code-interpreter-list-of-python-packages/

Large Language Models and the Geospatial Domain: not only text and geospatial semantics

An attempt to build a Geospatial FM is Queriable Earth (Microsoft AI for Good Lab and Planet): ‘how next-gen AI can make satellite data more accessible for all by making it searchable, conversational and context-aware.’

https://youtu.be/dNaPmRu0b9Q

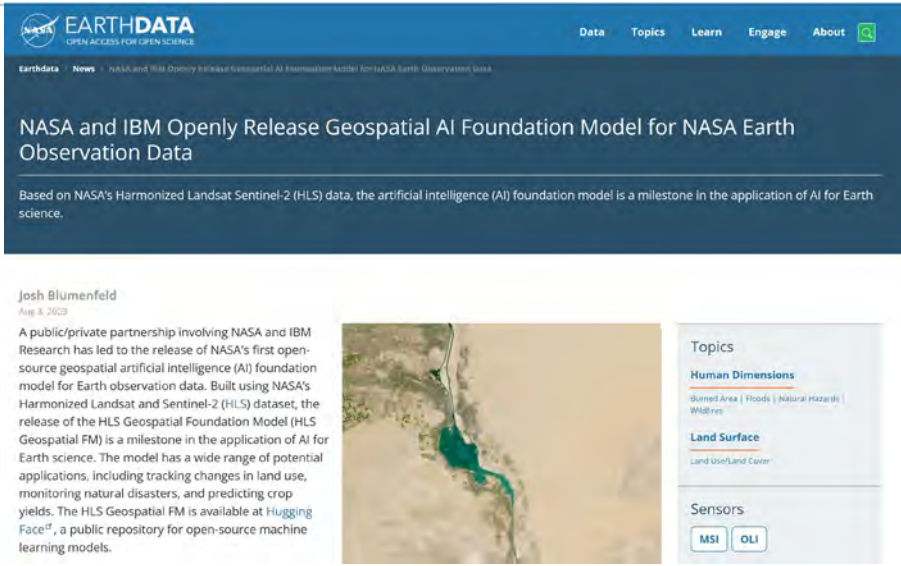
Credits: Planet



Queryable Earth: combining satellite imagery and next-generation AI

Large Language Models and the Geospatial Domain: not only text and geospatial semantics

A significant achievement has been reached through a collaborative effort between NASA and IBM Research in a public/private partnership. This collaboration has resulted in the introduction of NASA's inaugural open-source geospatial artificial intelligence (AI) foundational model designed for Earth observation data. The model, HLS Geospatial FM, has been developed utilizing NASA's Harmonized Landsat and Sentinel-2 (HLS) dataset



https://www.earthdata.nasa.gov/news/impact-ibm-hls-foundation-model

Geographic Bias:

- the training data is collected on a large scale, which is prone **to being influenced by overrepresented communities or regions**;
- the extensive number of parameters and intricate model structures pose **challenges in interpreting and mitigating biases**;
- the geographical bias present in the foundation models can be effortlessly **passed on to all subsequent adapted models**.

→ **We need data everywhere and this in principle can be also an opportunity**

Spatial (and Temporal) Scale.

Generalizability vs Spatial Heterogeneity → When working with geospatial data of **diverse spatial scales**, it is desirable to have a FM that can learn overarching spatial patterns while retaining specific details associated with each location.


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

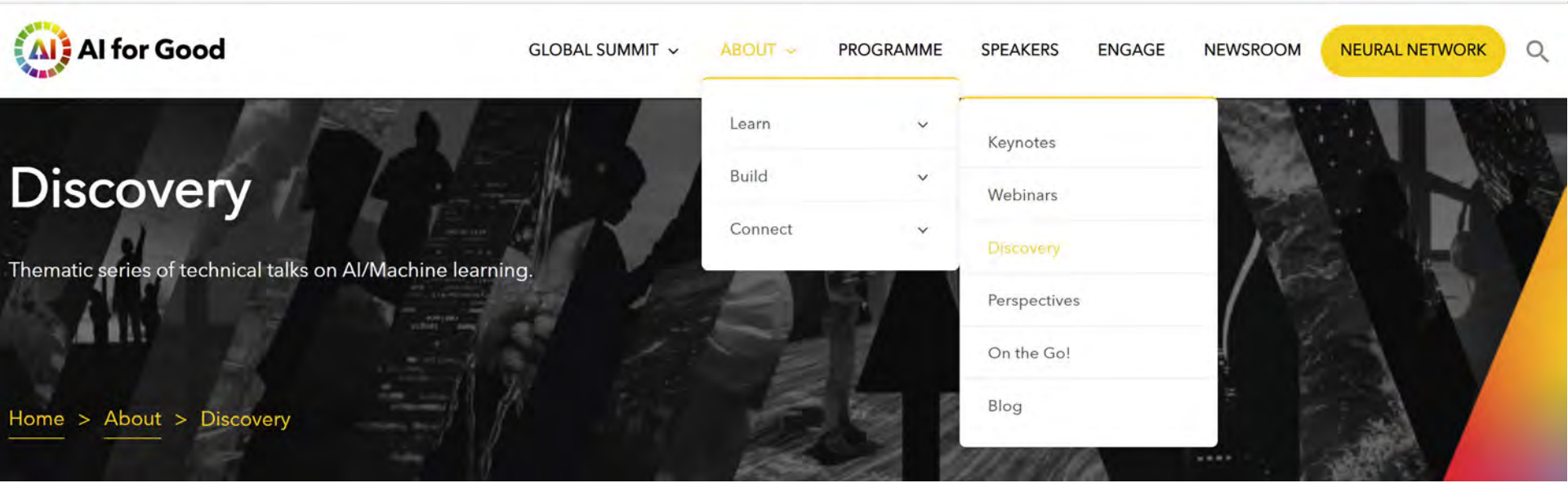
- **GeoAI Discovery** Channel on GeoAI applications, highlighting its relevance to the Sustainable Development Goals.

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

Reinhard Scholl

Thomas Basikolo

Andrea Manara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Thematic series of technical talks on AI/Machine learning.
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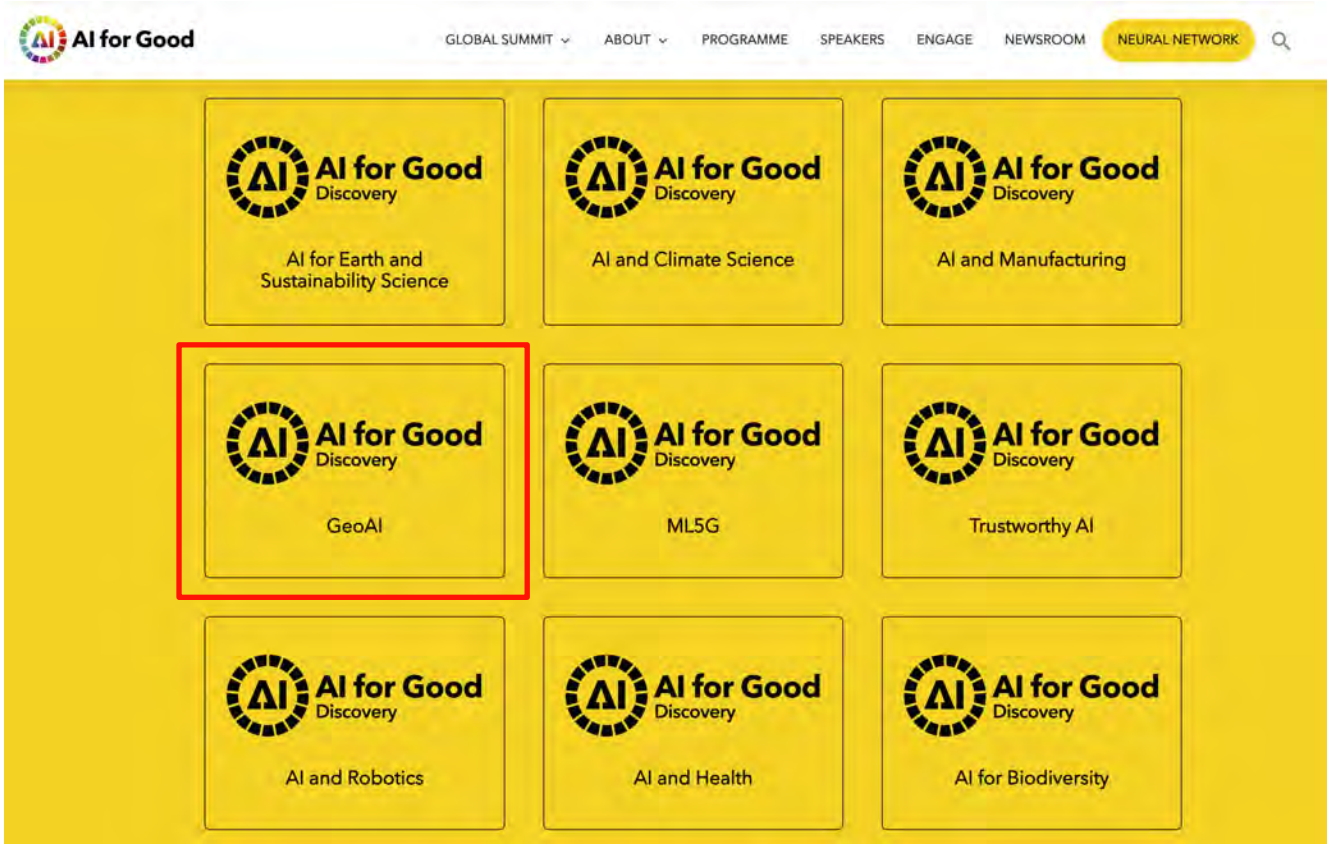
AI for Good
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AI and Health
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GeoAI

Geospatial AI (GeoAI), the emerging scientific discipline at the intersection of geospatial data and artificial intelligence, is the new frontier of technological innovation that promises to transform entire business industries.

Geographic information systems (GIS) have been used widely to present a view of our world based on geographic and geospatial data. Started as the basic capability to visualize information on maps to improve efficiency and decision-making, GIS has conceptually evolved to include the Digital Twin Earths for revisiting the past, understanding the present and predicting the future.

Nowadays we are undergoing significant new developments expanding the use of geographic data in a way that promises to disrupt entire sectors as energy, transportation, healthcare, agriculture, insurance and institutions in the public/private sector (weather centres, national labs)

Behind the rise of geospatial AI are three trends: increased availability of geospatial Earth Observation data both from flying (satellites, airplanes, and UAVs (unmanned aerial vehicle)) and on the ground sensors , the advancement of AI (particularly machine and deep learning), and the availability of massive computational power.

This series provides a forum for leading voices in the fields of geospatial and AI across various sectors (private sector, academia, governments, national and international organizations) to describe latest research and real applications of GeoAI to meet the Sustainable Development Goals.

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Curators

Maria Antonia Brovelli
Professor
Politecnico di Milano
in

Nadine Alameh
CEO
Open Geospatial Consortium (OGC)
in

Barbara Ryan
Executive Director
World Geospatial Industry Council (WGIC)
in

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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

Maria Antonia Brovelli
Professor
Politecnico di Milano

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

AI for Good

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

POLITECNICO MILANO 1863

UN-GGIM | ACADEMIC NETWORK unggim.academicnetwork.org

- WG1 – GEOAI Syllabus for developers
- WG2 – GEOAI Syllabus for appliers
- WG3 – GEOAI Syllabus for decision-makers
- WG4 – GEOAI Body of Knowledge

If interested in participating to the WG activities, contact Andrea Manara (andrea.manara@itu.int and/or me maria.brovelli@polimi.it)

GEOAI Challenge 2023

Join the GeoAI Challenge in 2023 (second edition), a competition aimed at providing solutions for collaboratively addressing real-world geospatial problems by applying artificial intelligence (AI)/machine learning (ML). Through this platform, participants will attempt to address the UN Sustainable Development Goals (SDGs) related problems using real-world data. In addition, participants will acquire hands-on experience in AI/ML in areas relevant to solving SDGs and compete for prizes, recognition, and certificates.

LEARN MORE

Andrea Manara – ITU (Geneve, CH)

Zhongxin Chen - FAO (Rome, IT)

Maria A Brovelli – Politecnico di Milano (Milan, IT)

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

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

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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

Cropland mapping with satellite imagery

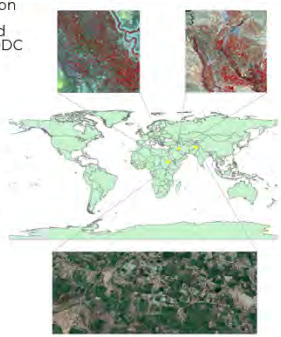
Dr. Pengyu Hao
Information Technology Officer
Digitalization and Informatics Division, FAO

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

جامعة حمد بن خليفة
HAMAD BIN KHALIFA UNIVERSITY

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.

QCRI
Qatar Computing Research Institute

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.

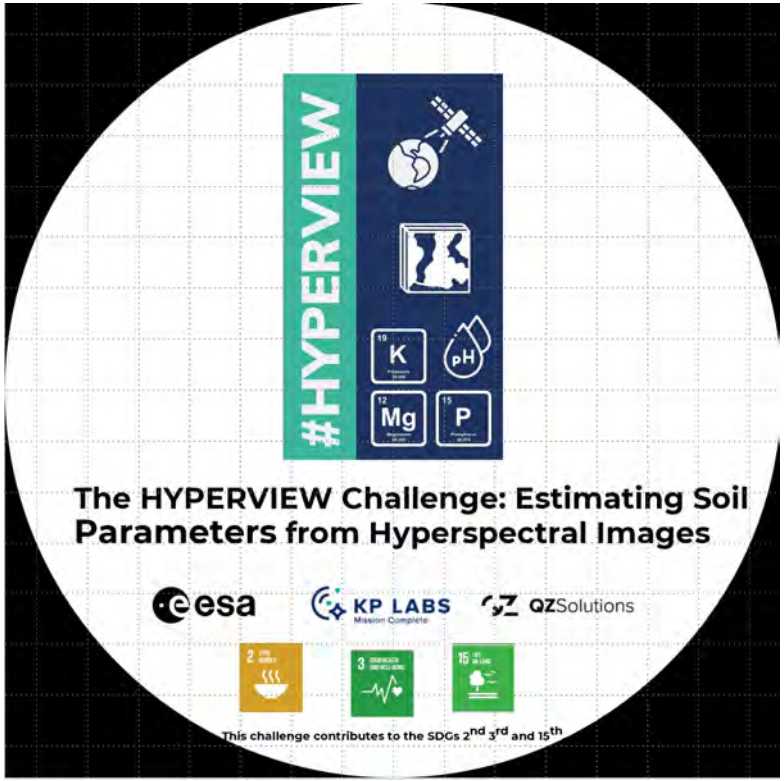
Reem Suwaileh
Research Associate @ HBKU

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

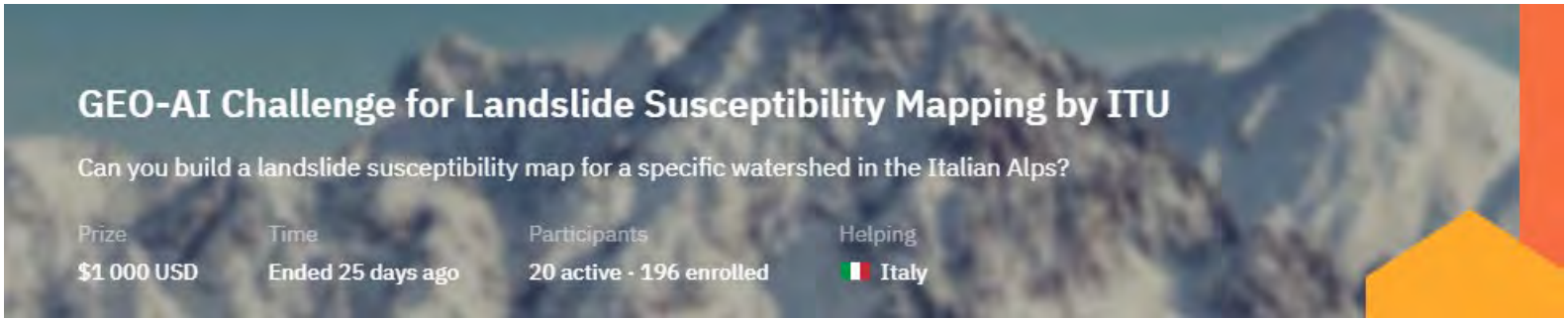
Lokendra Chauhan
Founder & CEO, Qen Labs Inc

10 REDUCED INEQUALITIES
11 SUSTAINABLE CITIES AND COMMUNITIES

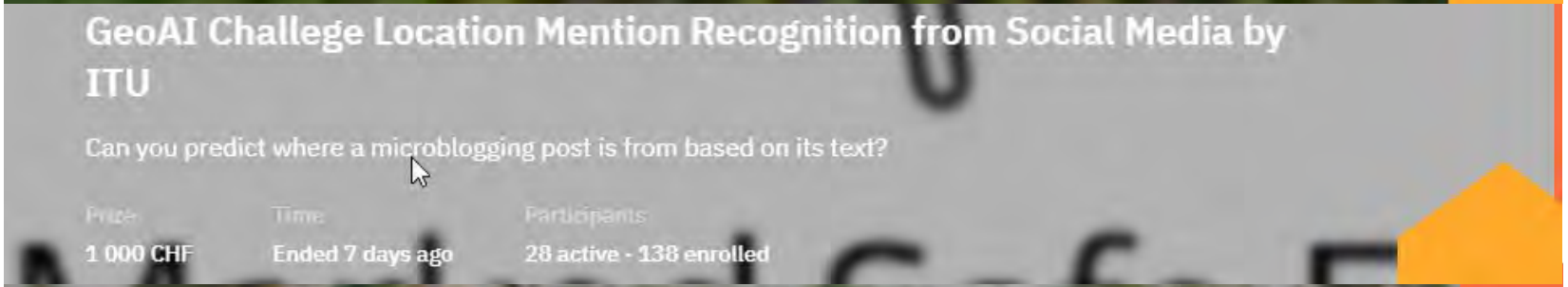
This challenge contributes to the SDGs 10 and 11.


#HYPERVIEW
19 K
pH
12 Mg
15 P
The HYPERVIEW Challenge: Estimating Soil Parameters from Hyperspectral Images
esa
KP LABS
Mission Complete
QZSolutions
This challenge contributes to the SDGs 2nd 3rd and 15th

GEOAI Challenge 2023




GEO-AI Challenge for Cropland Mapping by ITU
Can you develop a cropland mapping tool with machine learning?
Prize
$4 000 USD
Time
Ended 24 days ago
Participants
74 active · 326 enrolled
Helping
Iran (Islamic Republic of), Sudan and Afghanistan


GeoAI Challege Location Mention Recognition from Social Media by ITU
Can you predict where a microblogging post is from based on its text?
Prize
1 000 CHF
Time
Ended 7 days ago
Participants
28 active · 138 enrolled


GeoAI Challenge Estimating Soil Parameters from Hyperspectral Images by ITU
Can you predict soil parameters from hyperspectral earth observation data?
Prize
$1 000 USD
Time
14 days to go
Participants
36 active · 164 enrolled

THANKS FOR YOUR ATTENTION

Special thanks to:

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Bruno Martins, University of Lisbon, Portugal
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Song Gao, University of Wisconsin Madison, USA

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