

World Series Events on Artificial Intelligence

Event 5 Report

Harnessing AI's power for health



United Nations
Educational, Scientific and
Cultural Organization



International Research Centre
on Artificial Intelligence
under the auspices of UNESCO



REPUBLIC OF SLOVENIA
MINISTRY OF FOREIGN AFFAIRS

About the Series



The Ministry of Foreign Affairs of the Republic of Slovenia, the Slovenian Presidency of the Council of the EU, and the International Research Centre on Artificial Intelligence, under the auspices of UNESCO (IRCAI), have joined forces to organise 12 events in close cooperation with Slovenian embassies and other permanent representations in 10 countries around the world. The aim of this effort is to set an active agenda for AI during the Slovenian Presidency, and to provide a basis for continuing and promoting bilateral discussions in the field of AI and sustainable development beyond the Presidency.

International Events

Showcasing government, research and business perspectives in AI and Sustainable Development across the world from Abu Dhabi, Ottawa, Tel Aviv, Geneva, Bucharest, Tokyo, Paris with OECD and Berlin and ending at the main stage event for DigiEduHack 2021 in Slovenia.

Digital Education Hackathon

Hosting main stage on AI and Education, themed across solutions for UN Sustainable Goals, as the final event of this international marathon. This is an EU flagship initiative, a two-day event made of 24 hours of ‘hacking’ and ‘generating ideas’.

International Network

A distributed center of excellence for research, innovation and expertise, to become a world reference in AI that can attract investments in AI and Sustainability research and the best talents in the field, and provide in-depth work based on the multistakeholder global discussions coming from the events series.

International AI Award

A pan-European and international award started by the Slovenian Presidency and to be presented annually.

Event 5: Harnessing AI's power for health



Geneva, Switzerland / online

3 November 2021 at 13:00 CET

This event is part of a series of dialogues titled “From Geneva: Reflections on digital future”. This panel discussion was facilitated by the Geneva Internet Platform (GIP) in partnership with the European Union (EU) Delegation to the United Nations (UN) in Geneva, the Permanent Mission of Switzerland to the UN in Geneva, the Permanent Mission of Slovenia to the UN in Geneva, and the International Research Centre for Artificial Intelligence under the auspices of UNESCO (IRCAI).

Agenda

In their beginning phase, health technologies were costly and complex to implement. However, as computing platforms have become more powerful and connectivity platforms have become more accessible, the healthcare sector has been adopting a rising number of technologies, including AI-powered systems. During the COVID-19 pandemic, AI has been employed to surveil the outbreak of the different variants across the globe, while healthcare workers have been assisted by various AI-powered technologies in their diagnoses, screenings, and clinical care. Meanwhile, innovations like smartwatches are allowing people to better control their own healthcare. However, the increased use of technologies in health can also pose a serious threat on our society: The mentioned threats include issues revolving around data privacy, inclusiveness, accountability, cybersecurity, and intellectual property.

To discuss how we can best harness the power of AI, whilst aiming to minimize these threats, a multi-disciplinary range of experts has been invited to the roundtable. Moderated by Tereza Hořejšová (Director for Projects and Partnerships at Diplo), the panel discussion is joined by Amandeep Singh Gill (CEO and Director at I-DAIR), Vida Groznik (Researcher at University of Ljubljana, Assistant Professor at University of Primorska & CEO at NEUS Diagnostics), Catherine Holloway (Professor and Academic Director at GDI Hub at UCL & Programme Committee Chair in AI and Assistive Technologies at IRCAI), Andreas Alois Reis (Co-Lead at Global Health Ethics Team, Division of the Chief Scientist at WHO) and Ulrike Till (Director for IP & Frontier Technologies at WIPO).



Event Proceedings

Powers of AI in health

The use of artificial intelligence (AI) presents healthcare workers with a whole set of opportunities which motivate a rising number of healthcare departments to adopt AI-powered technologies in their daily business. As pointed out by Amandeep, unprecedented levels of investment and attention are currently pouring into the digital health domain. Especially during the COVID-19 pandemic, communities have acquainted themselves with different facets of digital health, including telemedicine, as noted by Amandeep: By consulting patients via video-conferencing tools, doctors have managed to bridge the gap in access to health services to various communities. Andreas accentuates that many health departments are resource-intensive, such as mental health which requires a high number of psychiatrists that clients can talk to - which often lack. Digital health and AI-aided technologies can fill this gap, for example through the use of chat boxes. Vida inserts that such technologies already exist, an example being chatbots that aim to identify whether a person suffers from depression.

Amandeep also identifies the rise of AI for public health response: In fact, AI is nowadays being widely used to estimate the spread of pandemics like COVID-19 and their associated burden on the health system. Data sharing platforms like GISAIID have provided researchers with a quick and open access to pandemic virus data, helping them understand how viruses evolve and spread across the globe. Thereby, the digital sharing of genomic sequences allowed researchers to pursue a highly data-driven drug discovery prior to the rollout of COVID-19 vaccines.

However, like with many other technologies, the opportunities that arise from AI-aided health are directly linked with a series of risks revolving around data protection, inclusiveness and equity, as well as basic patient safety and cybersecurity.

Securing data protection and privacy

As pointed out by Vida, not only data retrieved during hospital treatments is relevant health data. Health data is also being gathered from individuals as they make use of their smartwatches or smartphones. Catherine adds that not all relevant data is health data either: Banks, for example, will oftentimes know “about your manic state before anybody else does”, Catherine notes, “as it will freeze your account and inform the health representative right away”. Andreas thereby accentuates that data on patients’ health issues should remain confidential as those often tend to be highly stigmatized. Thus, any data put into technologies like chat boxes should be highly protected from further use. He adds that health technologies often involve stakeholders across national borders, meaning that any such data privacy regulation should be harmonized on an international level.

Securing inclusiveness and equity

Another challenge mentioned by various panelists is to ensure that all communities benefit equally from the rapid developments in the field of digital health. Andreas underlines that there is a notorious digital divide across different countries but also within countries, engendering vast disparities in terms of access to digital health services across the population. Thus, while telemedicine can, for example, bridge the gap in access to health services to some communities, others can be deprived from such innovations. Moreover, the mainstreaming of health technologies also requires high digital literacy rates among healthcare workers. Therefore, as health technologies are being developed, healthcare workers across the globe should be trained to use them.

Moreover, several panelists accentuate that we should aim to design health technology such that it reflects the largest possible variety of socio-economic and healthcare settings. AI systems are often trained primarily on data collected from individuals in higher-income countries, conducting

to the fact that the technologies do not perform as well for individual in lower-income settings. Amandeep stresses the importance of including more researchers from the Global South in the R&D behind the health technology innovation. He adds: “We would have to find new ways of empowering patients and those who contribute the data, such that they get visibility into the knowledge making and the value derived from that data.”

Catherine adds that the mainstreaming of telemedicine also risks to undermine the inclusion of hearing- and visually-impaired individuals, as AI-aided technologies often fail to communicate medical information with them. She accentuates that, instead, it is important to “make sure that these technologies bring societies closer together”.

Securing mechanisms for intellectual property, accountability, and cybersecurity

As indicated by Ulrike, health technologies are increasingly pushing the boundaries of technological capabilities in the health sector. Nowadays, frontier technologies are operating at the intersection of scientific breakthrough and real-life implementation, challenging policymakers to implement adequate intellectual property rights. Ulrike stresses that intellectual property should be made “accessible, understandable and explainable to the widest set of people”, to lay the groundwork for a “huge wave of innovation”. However, a positive interplay must be ensured between the measures promoting innovation and those that ensure access to vital medical technologies.

Andreas brings to the panel the theme of “dealing with false positives and false negatives”. Catherine agrees that sometimes it is highly difficult to define who should be held accountable if individuals are adversely affected by algorithm-based decisions made by health technology: “If your limb is fitted by a surgeon, the surgeon or the prosthesis signs off that limb. But if that limb was

designed by an algorithm and it fails, who is at risk of that limb?”. Thus, an effective mechanism should be made available that can redress for patients that are adversely affected by AI-aided health technology.

Amandeep thereby sheds light upon the burden regulatory constraints can pose. For example, for clinical trials, data can only be used once and cannot be repurposed for further discovery through AI and data, hampering the potential of further research. Sometimes standards also fail to serve their purpose. As for cybersecurity, for example, even in countries with defined cybersecurity standards like the UK or Singapore, cybersecurity threats pertain to represent a serious impediment to collaboration around data. We must therefore shift the focus to harmonize the efforts to “actively track the threats out there” and “implement security by design”, says Amandeep.

All hands on deck: The vitality of collaboration in AI & health

Being involved in both academia and business, Vida highlights the low degrees of collaboration between these two worlds. According to Vida, academic research is often discredited for being inapplicable in business. Vida’s NEUS Diagnostics, however, strives to combat this stereotype by turning research about diagnostic methods for neurodegenerative diseases into working products that comply with regulations for medical devices. Catherine responds that academia is indeed no longer just collecting knowledge. Instead, it is also seeking to provide practical applications, for example in the development of data-driven diagnostic tools in the disability space. The main challenge in her eyes is to attract investments into domains like assistive technologies: “When you speak to venture capitalists or governments to invest into the core technologies, they think it’s only a small proportion of the population.”, Catherine says.

Therefore, Amandeep suggests to form stronger communities of trust aiming to stimulate collaboration between clinical scientists, public health experts, computer scientists through neutral convening platforms and neutral trusted infrastructures to store aggregated data. Thereby, places like Geneva are well-suited to facilitate this kind of dialogue among the different stakeholders. Geneva brings together “not only first-rate academic institutions, but also many international organizations and NGOs”, as pointed out by Andreas. Ulrike notes that issues like cybersecurity behind health technology require answers from experts in various fields. Thus, Geneva is “unique in providing a field where different facets can be brought around the table to discuss such matters”. Amandeep adds that - besides hosting this variety of institutions - Geneva also has the connotation of being a neutral convening space which gave rise to this transdisciplinary community present in the city that can truly advance AI and data use in health – in a responsible, inclusive, and impactful manner.

[The full transcript of the panel discussion can be found here.](#)

Quotes

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“It is important to be inclusive in the data collection as well as in the design of these [health] technologies, so we include vulnerable groups and individuals.”

Andreas Alois Reis (Co-Lead of Global Health Ethics Team at WHO)

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“Will the divisions become wider? I think it’s imperative on us not to let that be the case. It is important to make sure that these technologies bring societies closer together.”

Catherine Holloway (Professor at UCL, Academic Director at GDI Hub & PC in AI and Assistive Technologies at IRCAI)

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“The biggest challenge I see is that – despite all complexities and very intricate subject matters - we need to make the topics of IP and technologies accessible, understandable, and explainable to the widest set of people.”

Ulrike Till (Director for IP & Frontier Technologies at WIPO)

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“The attack surface is expanding with more types of data for health being available and the associated increase in the sheer number of users”

Amandeep Singh Gill (CEO & Director at I-DAIR)

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“What is usually thought about academia is that what we do is basic research, which cannot be then used in the industry. This is where the main problem lies. This is why there is not more research exported to the industry”

Vida Groznik (Researcher at University of Ljubljana, Assistant Professor at University of Primorska & CEO at NEUS Diagnostics)