IMPACT OF AI ON SOCIETY

Erasmus Data Summit 2020

Recap Report

Erasmus Centre for Data Analytics

DATA REVOLUTION FOR A SUSTAINABLE WORLD

Erasmus University Rotterdam

No Going Back

A recap of the Erasmus Data Summit 2020 – Impact of AI on Society

Don't get too comfortable. As dramatic as the changes in our lives have been this year, we should expect more disruptive change in the near future – not from Covid-19 but the progress of artificial intelligence, experts told the 350 participants in the 2020 Summit of the Erasmus Centre for Data Analytics in July 2020.

Gerrit Schipper - Executive Director, Erasmus Centre for Data Analytics and Prof. Rutger Engels - Rector Magnificus, Erasmus University Rotterdam introduce the Summit and welcome the participants.

Keynote Speakers

Keynote speakers Frans Muller, CEO Ahold-Delhaize and Hans-Aloys Wischmann, Program Manager Artificial Intelligence at Philips outlined the changes and challenges they see ahead in retail, energy, health care and more, all driven by advances in AI. More perspectives were described by 10 Erasmus University faculty members in the breakout sessions that followed the plenary opening of the Erasmus Data Summit, conducted online and by livestream.

Keynote by Frans Muller, CEO Ahold-Delhaize
The first weeks of the pandemic in March and April 2020 were marked by empty shelves, a disrupted supply chain and broken forecasting algorithms. But not for long: Frans Muller, CEO of Ahold-Delhaize, explained how his organisation quickly leveraged its data and AI capabilities to solve these problems and navigate through the crisis. Muller also talked of the value contactless payments, frictionless pay-outs, and online ordering, which has proved its worth during this difficult period. In the future, Muller argued, retailers will need to increase their focus on how to personalise customer journeys rather than how to keep up with general consumer preferences. Enabling these customised journeys requires more than data science, he advised. It takes multi-disciplinary teams prepared to collaborate.

Keynote by Hans-Aloys Wischmann, Program Manager Artificial Intelligence at Philips
Given that the World Health Organization (WHO) predicts an increase in patients with chronic diseases in the near future, how will we ensure their care when a shortage of healthcare professionals is also forecast? In his keynote, Mr. Wischmann suggested that AI will be part of the solution, thanks to its ability to extract new insights from the thousands of exabytes of health data generated annually. At Philips, AI is not only used for analytics but also functions as a solution to create systems that can sense, reason, act, and adapt to assist with complex and repetitive tasks such as imaging and diagnosing, according to Wischmann. When deploying AI, however, it is important to implement AI in the workflows of physicians, and pair AI capabilities with deep clinical knowledge to treat patients more effectively, he advised. Right now, the main obstacle to the deployment of more AI in healthcare is not technical but economic, because clinics face difficulties in gaining a return on their investments.

Expert Tracks

Track A:
Accountability & Legality in AI

In the breakout sessions experts from Erasmus University Rotterdam continued the discussion about AI's impacts on their respective fields such as law, accounting, healthcare, and energy.

AI & legal personality

Advances in technology repeatedly blur the lines of responsibility, accountability, and liability in situations in which there are legal disputes, according to Professor Klaus Heine. Most of the challenges are found in four areas of law: in contract law, tort law, property law, and tax law. A reformation of the current legal system is needed to tackle these challenges because. In the end, Prof. Heine argued, jurisdictions that push the law to become a complementary driver for technology, and valorize technology for social inclusion and economic growth, will win.
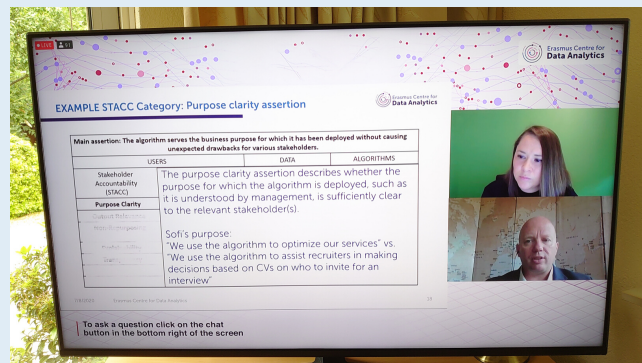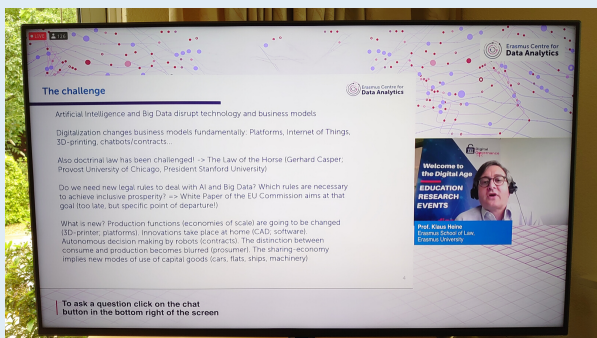
Audit of algorithms

Algorithms are not perfect – and can sometimes even be biased, said Dr Otto Koppius from the department of Technology and Operations Management and Dr Iuliana Sandu from the department of Accounting and Control at Rotterdam School of Management, Erasmus University (RSM). This can lead to dangerous situations and unfair discrimination against certain customers. To prevent these problems, they argue that only algorithms that should be permitted are those that serve the organisational purpose without causing negative effects for any of the organisation's stakeholders. Framing the purpose of an algorithm in this way is beneficial because it calls for a balanced judgement that upholds the interests of different stakeholders. Bias and discriminatory issues can then be reframed as separate and workable assertions, which in turn encourages organisations to create better, non-discriminating algorithms.

Expert Tracks

Track B:
## Combatting COVID-19 with AI

COVID-19 and beyond

The pandemic has turned the world upside down, said Prof. Peter van der Spek, Principal Investigator in the department of Pathology at Erasmus Medical Center. He discussed a technical aspect of the crisis, emphasising the importance of openness in the collection and aggregation of health data used to study biological processes. Aggregation is particularly important when applying AI methods to extract relevant information from the data to understand and combat viral diseases, Prof. van der Spek noted.
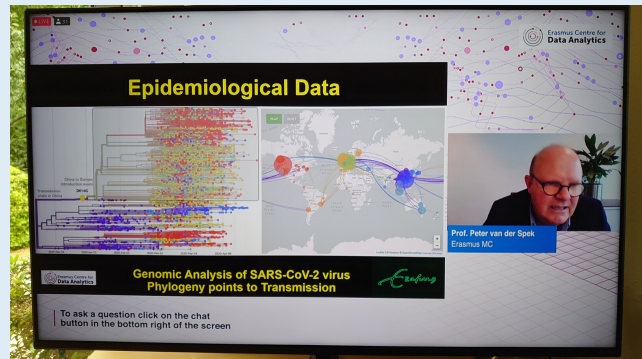
Assessing digital solutions for COVID-19

The COVID-19 pandemic has shown the importance of AI expertise to the world, bringing its abilities into sharp focus recently, so naturally it provided topical material for several of the Summit's speakers. Dr Jeffrey Sweeney from RSM's department of Technology and Operations Management explained how digital solutions including smartphone apps have enabled citizens to combat the virus. Governments in several countries have rolled out programmes that track and trace potentially infected individuals, detect hotspots for infection, and educate populations. However, these techniques are accompanied by a serious dilemma about privacy. For example, it is possible for tracking and tracing apps on smartphones to be used as Trojan horses for highly invasive surveillance tools. This undermines public trust in governments and politicians, and can reduce the effectiveness of the technology because fewer people are likely to use it.
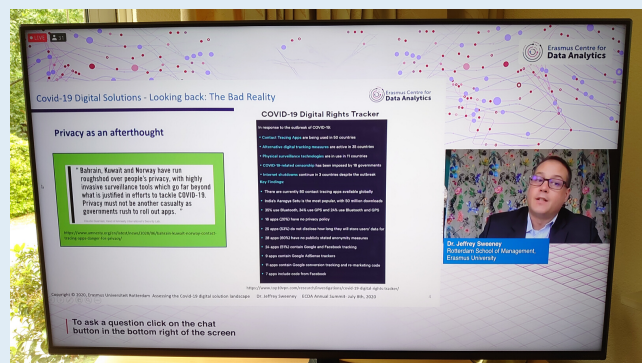
To solve this problem, Dr Sweeney advocated improving the underlying processes of digital techniques – i.e. detection, prevention, and tracing – and ensuring integrated flows of information between those components in a privacy-protected, empowered, and equitable manner.

Expert Tracks

Track C:
Systemic Impact of AI

Future of Energy Systems: digital, intelligent, integrated, and decarbonized

Dr Yashar Ghiassi-Farrokhfal from RSM's department of Technology and Operations Management explained how energy systems are being revolutionised for the better. There is a paradigm shift away from centralised power that's mainly fossil-based and towards clean, locally generated power. Technology will play an increasingly important role in the intelligent design of local microgrids; its tole is underpinned by three main pillars: digitalisation, decentralisation, and decarbonisation. For households, this transition will be marked by the shift from being passive consumers to becoming active prosumers of energy.

Dr Ghiassi-Farrokhfal identified digitalisation, data and AI as the enablers of this transition and pointed to the crucial role of smart design, efficient operations, and decision making to ensure proper integration. But for the digitalisation process, first there are several barriers that must be removed to unlock the full potential of modern energy systems and lead us into a greener future, he warned.
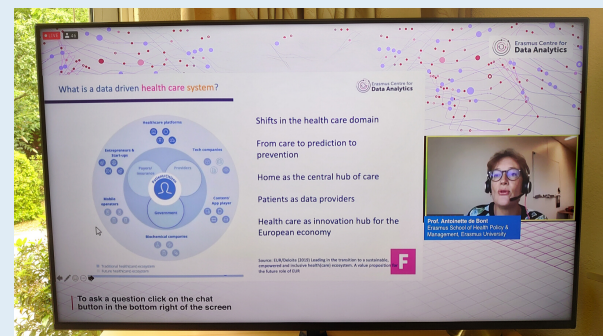

Policy & management of data-driven healthcare

The importance of data to public health formed a red thread through the Summit's presentations and sessions. Professor Antoinette de Bont from the Erasmus School of Health Policy & Management explained what is needed for data-driven care and how the system will change. Data-driven care using analytics can be used to cut treatment time in the management of chronic diseases; it can be used in tracking infections; and it can be used in deep imaging for precision diagnostics. A healthcare system in which these technologies are applied creates new roles for technology companies, for hospitals, and for citizens alike. We will see a future in which healthcare undergoes a transformation into the prediction and prevention of disease. Homes will become the central hub of care, and patients will become data providers. Prof. De Bont explained that these reforms of the Dutch healthcare system will not happen overnight and will most likely follow a path of gradual institutional change.

Expert Tracks

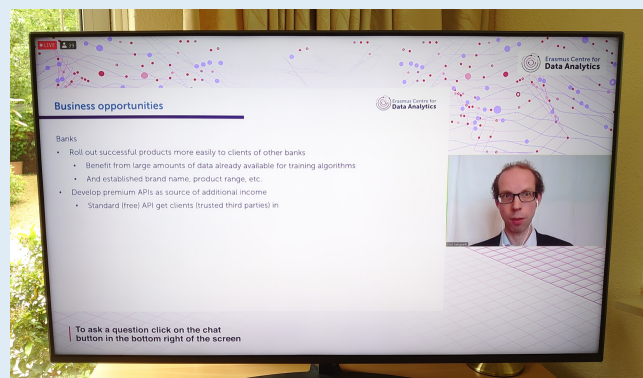## Track D:
Business Value of AI
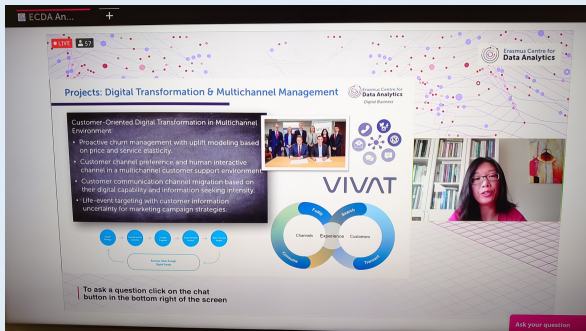
Competing in the age of AI

Creating value with AI and advanced technologies is not easy and can be seen as one of the biggest business challenges of our time, explained Professor Ting Li of RSM's department of Technology and Operations Management. She described several AI-related business projects. She and her team help companies in a multitude of industries rethink their AI strategies to create value. A majority of the projects include the transformation of operating models, data, algorithms, and experiments with these. Projects ranged from digital transformations and multichannel management to marketing projects such as digital advertising and auction markets. She shared observations from her and her team's multitude of projects that illustrate a couple of important shifts in focus. In business operations, a transition will take place from a focus on process to a more customer-oriented way of operating. In algorithms, there is a shift away from efficiency and automation towards transparency and equity, fairness and inclusivity.

Open banking and the potential role of AI

Banks are slowing down, yet banking is booming. In his talk, Dr Dion Bongaerts from RSM's department of Finance explained how Fintech and Big Tech are revolutionising the banking industry by introducing the new system of Open Banking, marked by widely available bank transaction data that can be obtained by non-banks and third parties with a special PSD2 licence (a European regulation for electronic payment services). The combination of this transaction data with other relevant data, e.g. Google search history, forms a big opportunity for new and existing players to improve their products and create new ones. More opportunities lie in the personalisation of offerings to improve the customer journey, and the use of AI in fraud detection on both sides of transactions. Dr Bongaerts ended his webinar with an open invitation for parties interested in collaborating to unlock their potential with data and PSD2.

Expert Tracks

Track E:

Social & Psychological Implications of AI

**Human Judgement in the Age of AI**

Like the emergence of impressionism in art in response to the invention of the photographic camera, the role of human labour in the age of AI will now be changed forever, said Professor Stefano Puntoni from RSM's department of Marketing Management. Just as the photographic camera enabled us to capture reality in a more efficient way – rendering the creation of realistic paintings obsolete even as it paved the way for new art movements and expressions of human creativity – AI will play a formative role on how our work and creativity now evolve. Prof. Puntoni introduced a new decision-making framework, one in which a novel division of labour separates functions not by whether they should be run entirely by a human or a machine, but by using cognitive building blocks, and by assigning steps to either humans or machines to increase the effectiveness of their processes.
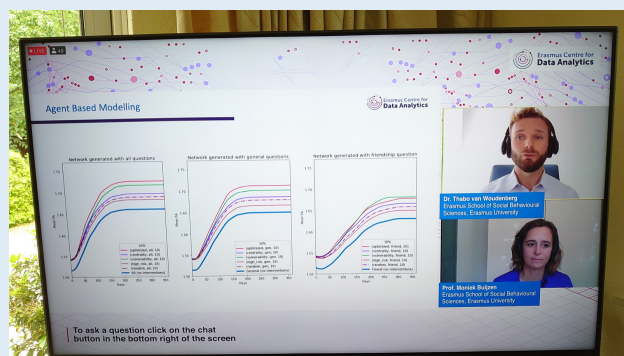
AI for effective and responsible social networking campaigns

Sometimes we forget that data is about humans, said Professor Moniek Buijzen and Dr Thabo van Woudenberg, both from the Erasmus School of Social and Behavioural Sciences. They elaborated on the data-gathering techniques of their project, MyMovez. Their research focuses on healthy lifestyles for young people and how communication campaigns can help improve those lifestyles. The role of "influence agents" is hugely important for increasing the effectiveness of such campaigns, and how to identify these influence agents was the million-dollar question in this project. To do so, the researchers deferred from the traditional, mainly theoretical, methods of social network intervention and found more strategic ways in which data was combined with theory.

Expert Tracks

Prof. Payal Arora
Erasmus School of Philosophy,
Erasmus University
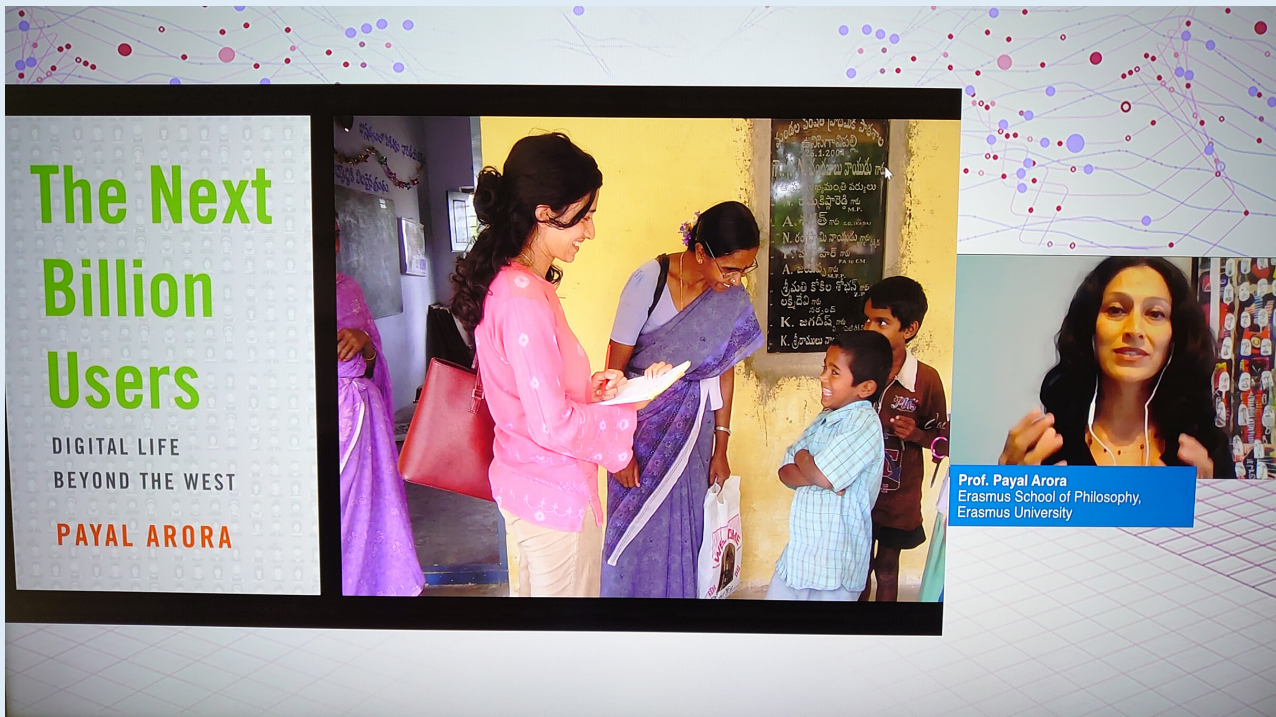
Tech design for the next billion

Organisations are keen to gain a better understanding of 'the next billion users' said digital anthropologist, Professor Payal Arora from the Erasmus School of Philosophy. She described her decade-long research of digital users in developing markets in countries such as Brazil and India. Her research constructs a foundation to understand and explain the next billion users of the internet. In the near future, this young demographic group will make up the majority of internet users – forming an enormous untapped marketplace for many organisations. Prof. Arora continues to identify a growing gender gap among internet users in developing countries, with an enormous 25 per cent of women being less likely to have access to the internet. Organisations can help to empower this disadvantaged group while creating a potential new market, she said, and recommended they strive for meaningful interactions with the next billion internet users. These interactions and relationships can be helped to form with five design codes: fun, flexibility, fusion, friction, and fabulousness. In her book, The Next Billion Users: Digital Life Beyond the West, she explains in depth how these codes come in play to create societal and business value.

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Erasmus Data Summit 2020

For more information about expertise and research on the themes followed in the Erasmus Data Summit 2020,
see www.rsm.nl/ECDA.