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"The intersections between the AI and the climatic crisis are multiple. Starting with the modelling and prediction of the planet's climate and natural disasters. There is also a close interaction between renewable energy and AI. Having accurate forecasts is essential for solar and wind energy. With AI techniques, it is possible to predict demand and thus optimise the efficiency of the electricity grid, avoiding overloads. There is, on the other hand, a huge movement in what is understood as precision agriculture, optimizing crops to the characteristics of the soil, climate, water or historical farming on that soil". Nuria Oliver dares to say that "we will not be able to tackle the climate crisis without AI. It is not the solution, but it will be part of most of the solutions and technologies that we use to combat the crisis".

### **"The SDGs will be more difficult without AI"**

Nuria Oliver recalls how at the same time that the 17 goals were defined, the UN commissioned a report on "The value of data in a world that counts". As the 17 agreed Sustainable Development Goals (SDGs) were accepted in 2016, a global movement developed on how data can help their achievement in two ways. First to be able to better measure whether we are achieving the goals. "To be able to affirm that the first goal on poverty eradication is being met or not, it is not feasible to ask the more than 7 billion people on the planet. Thanks to AI techniques, it is possible to estimate global poverty from different data sources on energy consumption, mobile phone network usage, etc. The same is true for the other goals."

In addition to measuring, the aim is to accelerate the achievement of these objectives. How? In the case of the first objective, for example, by helping to detect early stages of decline, so that preventive action can be taken to halt the deterioration.

Nuria Oliver has personally worked on several projects on financial inclusion of the unbanked population (which amount to more than 1 billion people). "Without access to credit they can hardly prosper, but most people have access to a mobile phone. Using AI algorithms, 'credit risk models' can be developed'. These models can help them demonstrate their trustworthiness to a financial institution and thus get credit more advantageously. This work inspired tech giant Mahindra to create the financial inclusion company Yabx".

### **AI is too important to be left to the Internet giants**

For a decade now, we have been witnessing the increasing ubiquity of AI and the reality that surrounds us allows us to do things more efficiently. "As AI algorithms penetrate decision-making in areas that have a direct impact on people's lives: medical diagnoses, granting credit, court rulings or recruitment processes, regulation is indispensable. Without it, there are no guarantees that algorithms do not discriminate, that they are transparent. The European Commission has published a proposal for AI regulation in Europe, pending approval by EU governments and the European Parliament itself, "to eradicate possible cases of discrimination or potential manipulation of human beings". "The key will be in the implementation and supervision that the regulation is complied with and the consequences of not doing so. This is a very complex task because algorithms permeate all areas of our society," said Nuria Oliver, PhD in AI from MIT and co-founder of ELLIS Alicante (**European Laboratory for Learning and Intelligent Systems**).

Moreover, AI algorithms are software, which can be permanently updated and improved in very short cycles. The next months and years will be decisive in verifying the impact of this regulation.

All these ideas will be presented in the course "Inteligencia Artificial para el Bienestar y Sostenibilidad de las Sociedades" **in the Summer Courses of the UPV/EHU. The course is jointly organised by the Basque Centre for Climate Change (BC3) and the Basque Centre for Applied Mathematics (BCAM).**

Biases in AI can be due, among other things, to the fact that the data used to train them have biases that often exist in reality. There is an area of research focused on the so-called **Algorithmic Justice** to ensure that AI algorithms do not promote discrimination, instead they minimise it and, at the same time, try to maximise their performance and good use. It is one of the lines of research of the Ellis unit in Alicante, where Nuria Oliver is scientific director, and which goes by the nickname of the **Institute for Human-Centred Artificial Intelligence**. "It is a non-profit foundation founded a year ago for world-class research at the intersection of humans and AI". It is the only ELLIS unit in Spain. ELLIS is a European network of excellence in artificial intelligence research based on learning from data.

Nuria Oliver has been a member of the European Commission's High Level Expert Group on Business to Government (B2G) data exchange. "Data of various kinds that are now held by private institutions are of enormous value for the common good". The group presented a series of recommendations to the European Commission in February 2020.

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"With the pandemic it has been possible to corroborate the value of the data." Since March 2020, Nuria has been leading a group of around 20 researchers in Valencia to help with the use of artificial intelligence and data science to make decisions in the context of the pandemic. The first line of work is the modelling of human mobility on a large scale, since an infectious disease transmitted from human to human - such as the coronavirus - does not become a pandemic if we do not move. Hence the confinement measures and the importance of being able to measure mobility. It is important to measure whether the containment measures are working or not, and to assess whether that containment is sufficient to control the pandemic. This work was done through the analysis of anonymised and aggregated data derived from the mobile telephone antennas of the three most important telecommunications companies in our country, shared by the INE. The Comunitat Valenciana was considered the pilot region during the spring of 2020. These data are publicly available on INE's website since summer of 2020. "It is an inspiring example of public-private collaboration for social good, which is currently not very common."

The recommendations made to the European Commission included incentives for such data sharing; the creation and training of the data coordinator; consideration of possible sustainable business models for private companies depending on the severity, impact or urgency of the use of such data.

Nuria Oliver considers that "large technology companies are aware of the value of their data for the common good and most of them have projects for this use, something that was not the case only 5 years ago. Facebook, Microsoft or Google are exploring SDG-oriented data use cases.

But we should also not forget that "we all interact with artificial intelligence algorithms that recommend all kinds of things to us every day with the services we use. They are subliminally influencing and manipulating our behaviour, with a direct impact on the principle of human autonomy, according to which humans should be free in our actions and thoughts.

Nuria Oliver makes a clear distinction between what can be traditional advertising and hyper-personalised advertising. "What I see, is only showed to me and it is optimised based on my demographic profile, my interests, my tastes and even my behaviour. It is not an ad on a billboard in my city or in the newspaper I buy. Algorithms can identify my weaknesses and take advantage of them without us being aware of it. "