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Algorithms at the Service of Agroindustry

The third discussion series on future technology organized by the National Institute of Agricultural Technology (INTA) and INTAL/IDB included the seminar "Algorithms at the Service of Agroindustry," which took place on July 12 in Buenos Aires. The event brought together government officials, members of the business community, and researchers to discuss the future of artificial intelligence (AI) in Argentina.

Different local experts examined the technological, economic, and social implications of the growing use of AI in agroindustry. Present at the event was the international expert Kevin LaGrandeur, a researcher at the Institute of Ethics and Emerging Technology (IEET) who also

teaches at the New York Institute of Technology (NYIT) and co-authored the book *Surviving the Machine Age: Intelligent Technology and the Transformation of Human Work.*

The opening words came from Héctor Espina, national director of INTA, and Gustavo Beliz, director of INTAL/IDB. Mr. Espina stressed the importance of "creating spaces for reflecting on the future" and added that "we are transitioning from a form of agriculture that made intensive use of agrochemicals to one that makes intensive use of knowledge and enormous quantities of data that are transformed into information."

Along similar lines, Mr. Beliz said that "we are focusing on exponential technological breakthroughs and disruptive change because we believe that these are an enormous opportunity for diversifying the local productive matrix. We also think we are running the risk of being left behind by technological progress. This is not about the future. This is already happening." He went on to stress the need for a "humanist approach to AI."

Mr. Beliz underlined three key aspects of this transformation. First, the need for active states that use public policy to create innovation-related advantages for different sectors of their economies, as "automation processes don't just trickle down." In this regard, he argued that Latin America "needs to develop a regional AI strategy." Second, Mr. Beliz referred to the "ethical dimension" of AI. "We're talking about the rise of machines that can perceive things and learn by themselves, so we can't leave ethics out of the discussion. We need to regulate on this issue and establish appropriate legal frameworks," he added. Finally, he looked at the impact of new technologies on the future of work and society, which implies considering "how far the emergence of a new technology will generate, destroy, and replace jobs," which he described as "a three-dimensional issue, because all three of these things are going to happen."

According to Mr. LaGrandeur, the key challenge is a short-term one. "What can we as a society do for the workers who will be replaced by machines? This is a particular concern for workers who carry out repetitive manual tasks, as they are most at risk of being replaced," he said.

Industry 4.0: Manufacturing the Future

The UIA hosted the launch of *Industry 4.0: Manufacturing the Future*, a new book on what Revolution 4.0 might hold for Argentinian industry.

The Argentine Industrial Union (UIA) partnered with INTAL and the IDB's Integration and Trade Sector to create the publication. The launch was a unique opportunity for distinguished academics, business people, and government officials to debate the future of industry in the country. Some of the book's conclusions were analyzed at a breakfast meeting organized by the UIA, including the technologies that form the so-called Fourth Industrial Revolution, the impact these are having on the manufacturing industry, labor, global value chains, and trade, and the challenges and opportunities they may bring to Argentina.

“Political leaders need to be aware of the potential of AI”

In a conversation with INTAL, the Argentinian expert Carlos Chesñevar, director of the Institute of Computational Science and Engineering (ICIC), which depends on the National University of the South (UNS) and Conicet, discussed the current outlook for AI: its development, its applications in e-governance platforms, what Latin American universities can contribute, and how it impacts the economy and employment.

Big Data and Climate Change

As they go about their daily lives, people generate huge quantities of information that may prove useful in tackling the effects of climate change. Although Latin America and the Caribbean contribute relatively little to climate change compared to other regions, its effects threaten major sectors of their economies and the most vulnerable members of their population. The use of big data in public policy may bring great opportunities (and challenges) when it comes to mitigating climate change and improving the way countries adapt to its effects. Climate change is increasing the temperature of our atmosphere and oceans, changing rainfall patterns, increasing the frequency of extreme weather events, melting the polar ice caps, and making sea levels rise.

The Green Agenda

How different technologies are being used to study, improve, and protect the environment: a selection of case studies that range from satellite solutions to AI.

Throughout the world, countless applications are being developed to find solutions to the challenges of climate change and protecting the environment. These use different approaches and technologies which range from aerospace engineering, telecommunications, and the use of sensors to AI, the Internet of Things, big data, and blockchain. The following is a very brief selection of these: The combination of aerospace technologies, sensors, ICTs, and data analysis can be used to study the environment. A good example of this is the Irazú Project, Costa Rica’s first satellite, which was launched in April 2018. Its mission is to monitor carbon fixing and tree growth in the country’s forests in real time. The initiative was led by the Costa Rica Institute of Technology, a university that was founded in 1971, and the Central American Association for Aeronautics and Space (ACAE). It entailed the design, construction, launching, and operation of a nanosatellite (using CubeSat technology) and the development of a sensor-based device that sends information through the internet.

Latin America's Knowledge-Based Bioeconomy

Recent G20 meetings have highlighted the value of the bioeconomy for improving food security, protecting the environment, and boosting the economy as a whole. What is the bioeconomy's potential in Latin America?

The bioeconomy is the "production of knowledge-based goods and services and the use of biological resources—biomass—within a sustainable economic system." It includes those parts of the economy that use renewable biological resources from land and sea—including crops, forests, fish, animals, and microorganisms—to produce food, materials, pharmaceutical compounds, and energy. In other words, the bioeconomy is as old as the human race. However, in recent years, the bioeconomy paradigm is becoming increasingly significant, driven by two major factors: i) the growing need for a more sustainable use of natural resources and ii) the opportunities that new technologies are bringing for developing a more competitive bioeconomy.

Argentina Closes In on the Exponential Matrix

Revolution 4.0 is seriously shaking up the labor market, and Argentinians are well aware of this. How do they think that new technologies will impact the world of work?

The disruptive nature of new technologies is creating tension and challenges around employment, education, social inclusion, and environmental issues. The citizens of Latin America are conscious of these challenges. Although Argentina's greater use of these technologies and its investment in them puts the country in a privileged position compared to the rest of the region, its inhabitants are not immune to the uncertainty that Revolution 4.0 has brought. Are we ready to form part of the new global economy? How will new technologies impact employment? How important do people think the internet is? How much do they use e-commerce? These are some of the questions that INTAL/IDB sought to answer in its study "Techno-Integration in Latin America: Institutions, Exponential Trade, and Equality in the Age of Algorithms," which drew on the Latinobarómetro opinion polls.

Logistics and Transportation in the Future

Just as the telegraph has been replaced by smartphones, vinyl by streaming, and printed photos by digital images, logistics and transportation are also being transformed. Most successful experiences have focused on smart cities, and have included many different technologies. One of these is the development of intelligent transportation systems (ITS), that is, "the combined application of information and communication technologies in the transportation sector." This includes the use of autonomous, electric, public vehicles in urban transportation and

development. The IDB has examined this issue through a publication that summarizes eight studies carried out in Latin America and the Caribbean. Recent articles in *INTAL Connection* have also reflected on the latest progress in autonomous vehicles and energy, how IoT can benefit global transportation chains and fleets, and how AI is transforming business.

Trade Facilitation 2.0

In recent years, exponential growth in the quantities of available data has been revolutionizing international trade. The significance of this data deluge led the World Customs Organization (WCO) to declare data analysis to be its theme for 2017, using the slogan "Data Analysis for Effective Border Management." Data analysis includes the capture, processing, and transmission of data, and these steps have become a fundamental part of trade facilitation. The challenge of obtaining inputs in real time is a key part of refining data, transforming it into business opportunities, identifying trends and patterns in international trade. Processes to harmonize and standardize data guarantee greater approval and safety in global trade, thus improving efficiency and transparency. Trade facilitation can draw on these data flows to optimize the international movement of goods by simplifying customs procedures, speeding processes up, cutting costs, and reducing the potential risks that come with trade.