

ARTIFICIAL INTELLIGENCE: ETHICS, SOCIAL IMPACT, REGULATION, AND KNOWLEDGE SHARING

Task Force 1 - S20 Brasil 2024

This is a Chair's summary of S20 Brasil 2024 discussions; the positions are not necessarily shared by all S20 members.

Preamble

In September 2015, at the United Nations Headquarters, representatives of 193 countries approved a global agenda to be achieved by 2030. The signatory countries recognized that to make our planet suitable for sustainable living, we urgently need to take action on the 17 Sustainable Development Goals (SDGs). Among the most important identified was eradicating poverty in all its forms and dimensions, including extreme poverty, which is the greatest global challenge and an indispensable requirement for sustainable development. Bold and transformative measures were outlined, with our governments committing to embrace them to steer the world towards a sustainable and resilient path. These actions are integrated and indivisible and must balance the three dimensions of sustainable development: social, economic, and environmental. Science and international scientific collaboration serve as key mechanisms to reach these goals. With this standpoint, under the motto "Science for Global Transformation", the S20 Academies of Sciences met in Rio de Janeiro in 2024, and focused the discussions on five themes related to the UN 2030 Agenda: (1) Artificial Intelligence; (2) Bioeconomy; (3) Energy Transition Process; (4) Health Challenges; and (5) Social Justice.

We present to the G20 governments and society, the S20 Brasil 2024 recommendations with the expectation that these will be considered by our governments and help guide the final document of the G20. We also draw attention to the fact that G20 countries should consider their demographic trends, proactively anticipating and adapting to changes in their workforce size and age distribution, as these factors will significantly impact social security, pension systems, health and welfare programs, thereby affecting economic growth and competitiveness. It is essential for the educational system to address the diverse needs of both aging and youthful populations. Grasping social and demographic trends is essential for anticipating technological requirements and driving innovation.

Introduction

Science plays a crucial role in shaping the future of societies worldwide. Advances in artificial intelligence (AI) are essential as they affect diverse socio-economic aspects, and drive discoveries across all scientific domains. The G20 framework in collaboration with other significant international organizations, has the potential to spearhead global conversations on AI governance, promote knowledge sharing, support the advancement of scientific tools, and address ethical, privacy, and regulatory issues.

The advancement of AI technologies has the potential to enhance quality of life, drive scientific breakthroughs, and boost research productivity. AI can equip scientists across various fields with innovative tools and new research opportunities. By integrating digital technologies and data science with disciplines such as physics, chemistry, biology, medicine, materials science, engineering, and social sciences, the pace of scientific research can be significantly expedited, leading to valuable societal impacts. Although AI has been used in various sectors and phases of scientific research, its complete potential remains largely untapped. Both developed and developing nations aiming for scientific and technological relevance must equip their scientific communities with the skills and resources to work with, conduct research on, and develop AI technologies, preparing for these transformative changes. G20 countries need to collaborate as partners and active participants to construct large, valuable, comprehensive and well-curated scientific databases, mastering relevant methods and techniques within their respective fields of interest. This requires investment in data infrastructure, high-performance computing, and training personnel to effectively use AI technologies.

AI technologies can boost economic and social growth in both developed and developing countries. The use of AI across disciplines must be expanded to cover cutting-edge science and critical areas such as healthcare, education and climate change. AI technologies offer great benefits but also carry risks, often worsening economic inequality and disproportionately affecting different communities. It is crucial to address fairness, transparency,

accountability, diversity, data privacy, and protection of intellectual property. The energy demands of AI should be managed responsibly. Citizens must make informed decisions about AI, understanding its potential, benefits, limitations, and consequences. Finally, as AI technology advances, it is essential to solve the problem of constraining and aligning the behavior of systems that may become, in many senses, more capable than ourselves.

AI and Sustainable Development Goals (SDGs)

G20 countries account for 85% of the world's GDP and 66% of its population, playing a key role in shaping global digital technology. Despite various initiatives, progress in using AI for Sustainable Development Goals (SDGs) has been insufficient, indicating a need for reevaluation and greater efforts. The pervasive influence of AI extends across various sectors, including agriculture, biotechnology, education, engineering, social sciences, environment, and health, among others. Investing in AI research and development can lead to innovations that further transform education by customizing learning for each student, improving learning results, and reducing educational gaps. G20 countries must provide a specific impetus to AI for SDGs. In recent years, the G20 has increasingly focused on major global challenges like healthcare and climate change. The COVID-19 pandemic highlighted the crucial need for coordinated digital health responses among countries and healthcare providers. AI's capacity to analyze large datasets and predict trends can revolutionize healthcare. However, the significant electricity consumption by datacenters, both during the training and deployment of AI models, highlights the urgent need for sustainable practices. G20 countries should prioritize investments in research and develop policies aimed at reducing the energy demands of datacenters.

Building Capacity in Artificial Intelligence

Countries need AI education at all levels and enhanced research capacities to develop solutions to their specific problems, advance AI research, and play their part in the international scientific and technological arena. Therefore, effective investment in research, development, innovation, and specialized human resource training is essential. These investments should pave the way for seeking solutions to countries' challenges, promoting responsible innovation, contributing to the public good, protecting people's rights and safety, helping post-conflict reconstruction and peacebuilding, advancing democratic values, and reducing the current world poverty and educational gap. To develop AI talent, the country's education system must implement various approaches and initiatives to build a skilled national workforce and minimize brain drain. It is crucial to educate young individuals who understand AI, think critically, innovate, and address local needs. Engaging with AI responsibly in education is essential to uphold human rights, tackle ethical issues related to intellectual property, and combat misinformation and disinformation.

Artificial Intelligence in the Developing Countries

The rapid progress of AI raises legitimate concerns, such as the potential for widespread job displacement, particularly in economically disadvantaged regions, exacerbating inequality. Adopting AI in public services requires a comprehensive and reflective assessment of its effects. This evaluation should encompass not only the immediate costs and benefits, but also the implications for democratic institutions and social cohesion. Developing AI technology to address national and global challenges can have a positive impact on social and economic fronts. It's crucial to consider AI's benefits to society, its role in promoting social inclusion, and its potential to enhance the efficiency of public services. Developing countries cannot afford to rely solely on AI solutions from abroad. Dependence on external technology and major corporations can weaken national security and the competitiveness of local businesses domestically and internationally. Governments and industries should dedicate significant investment to AI research and development to cultivate local AI capabilities, including people, infrastructure, and networks. By prioritizing AI research, developing countries can address unique challenges and contribute to the global AI landscape. Governments should also promote international scientific collaboration to advance AI technology.

Ethical Concerns and Regulatory Measures

Despite its many potential benefits, clear evidence shows that the misuse of AI can have adverse effects on individuals, groups, societies, and the environment. Concerns include privacy violations, anti-competitive behavior, manipulation of public opinion, the spread of disinformation, and environmental impacts due to AI's high energy and water consumption. AI algorithms already enable the identification and exploitation of vulnerabilities and biases, including cases of perpetuating racial issues and other forms of discrimination.

Maintaining ethical standards in using AI in the public sector ensures that it benefits everyone responsibly. It is also important to recognize risks like AI misuse threatening democracy and address global dangers through effective regulations and international cooperation. It is crucial that ethical and social risk considerations guide the establishment of principles, rules, and legislation to minimize technology risks. Furthermore, it is essential that society participates in discussions about the limits of AI use. Since the Internet and AI technologies cross national borders, it is crucial to negotiate international agreements. Public policies and regulations aimed at mitigating large-scale societal harms should be synchronized globally, while allowing flexibility for individual countries to tailor them to their specific environments. G20 countries should engage in discussions to establish intergovernmental regulatory institutions and frameworks specifically designed to oversee AI technologies that could potentially operate beyond human control or oversight.

Final Remarks

It is vital to establish ethical principles in the AI domain that prioritize human welfare and the planet's health. AI development and use should prioritize fundamental values such as fairness, accountability, transparency, explainability, and safety, with a strong focus on people. Additionally, an adaptable approach to promoting innovation and flexible regulation should be sought, steering clear of overregulation and excessive legislation. G20 countries should also establish global standards for developing safe AI technologies.

Ensuring inclusion and preventing biases in AI technologies is crucial. To tackle these issues, creating a global AI governance framework might be essential. This structure should be designed to accommodate and respect cultural differences while bridging gaps between diverse national legal frameworks. By prioritizing ethical principles, promoting inclusive development, and engaging in constructive discussions on AI governance, we can foster an AI landscape that aligns with human values, safeguards against risks and promotes the well-being of individuals and societies worldwide. A global AI governance framework should ensure equal inclusion of all countries and the fair distribution of benefits from AI advancements.

The sense of urgency regarding investments in AI and the formulation of public policies have emerged as a crucial priority worldwide, encompassing both developed and developing countries. There is a need to accelerate discussions on AI regulation worldwide, as this is of key importance for establishing international partnerships and collaborations in the field of AI. The primary challenge in crafting AI national regulation is ensuring the rules and laws are fair, egalitarian, inclusive, relevant and protect society and democracy. At the same time, they should not impede or halt the development of emerging technologies within an overarching framework of safety and fairness. This is a sensitive, dynamic challenge that various sectors of society should discuss. The variety of emerging models for governing AI technologies across various countries highlights that the development of AI is influenced by multiple factors, including each nation's public policies concerning public and private data. As the world becomes increasingly data-driven, a common and effective foundation for data governance would support the rapid expansion of AI applications across all fields of knowledge, leading to significant implications for productivity, competitiveness, and global trade.