Artificial Intelligence and it impact on United Nations Sustainable Development Goals

Abstract:

Artificial Intelligence (AI) has the potential to transform the planet. Its ability to detect patterns, analyze data and remodel business practices is an effective conduit for meeting global challenges. Global data sets acquired from 'frontier technologies' are an extraordinary resource for social good, if applied and managed with consideration. Using environmental scanning as a framework, the aim of this paper is to identify how artificial intelligence advances global environmental monitoring efforts while also forecasting its impact in meeting UN Sustainable Development Goals by 2030 and beyond. Moreover, it surveys some of the opportunities and challenges associated with developing universal policies for artificial intelligence governance.

Background and Challenge:

Earth's biodiversity is facing a global crisis and the management of our natural resources is paramount to our survival. According to a published 2019 United Nations Report, the last twenty years has witnessed an unprecedented decrease in the biodiversity of the planet, greater than anything ever seen in human history. At the current estimate, over one million plant and animal species are now threatened with extinction. Many factors contribute to this extinction including; greenhouse gas emissions, climate change, illegal wildlife trafficking, changes in the topography of the planet and based on evidence provided by the UN, these determinants show no sign of slowing down.

To address this global challenge and take action, the United Nations prepared seventeen Sustainable Development Goals (SDGs) in 2000. Three of these goals focus on the environment in particular and are the locus for this research; goal thirteen: take urgent action to combat climate change and its impacts, goal fourteen: conserve and sustainably use the oceans, seas and marine resources and goal fifteen: sustainably manage forests, combat desertification, halt and reverse land degradation, halt biodiversity loss. UN Nation States agreed that a substantial investment in social, political and technical resources were required to meet the SDGs by 2030 and preferred outcomes would rely heavily on shared data and collective intelligence. Knowledge gleaned from frontier technologies like; geospatial mapping systems, drones, blockchain ledgers, mobile phones, automation and artificial intelligence providing a vast amount of useful information. Information that directly affects SDG campaign goals and is vital to informing stakeholders and presenting accurate and measurable outcomes to steer policy directives.

Proposed Solution - Expanding the use of artificial intelligence/machine learning to accelerate UN Sustainable Development Goals progress

Identification, labeling and tracking data is a huge challenge, requiring countless hours of manual processing. Machine learning can sort data, detect patterns and synthesize the vast amount of information collected. Through algorithms, artificial intelligence captures and classifies thousands of images in minutes, reducing the human hours required for this time intensive process. Time that could be redirected towards analysis, insights and actionable solutions. Artificial intelligence has the

capacity to predict trends and forecast how well plants and animals will recover from changes to ocean and landscapes, illegal trafficking, climate change and other factors that contribute to its decline. Stakeholders, like the United Nations, demand accurate global biodiversity statistics and data, not only for preservation but to explore sustainability prospects. As witnessed in the last decade, this data is an effective source for informing global policies and setting (and resetting) benchmarks. A key global challenge for future studies is finding solutions to bring resources into balance; machine learning can address these issues effectively through collective intelligence. As Gordon and Glenn state, 'collective intelligence is synergy among data/knowledge, software/hardware and human minds that continually learn from feedback to produce better decisions.' It is this combination and the iterative process of knowledge gathering and dissemination that enables foresight and structured planning. Additionally, the human intelligence component is key to the success of sustainability goals. As it comprises conservation researchers, AI technicians, subject matter experts, decision makers, stakeholders and others collaborating to tackle these imminent ecological issues. Supplying new indicators for sustainability planning and governance.

Innovation In Action - Artificial Intelligence use in wildlife monitoring

Case Study: Many organizations, like the UN, have been adding AI technology to their data collection and advocacy process. Researchers, Institutes and NGOs have partnered with tech companies like WildMe, Conservation Metrics, and platforms TensorFlow and PyTorch to build robust frameworks focused on pattern recognition in photographs and video, genetic identifiers and vocalization.

Remote sensing from satellites and drones in the field send images and data to digital dashboards filling in knowledge gaps. Many of these private companies offer interlinked databases connecting citizen science discoveries, Google Earth API connections and biodiversity monitoring platforms for shared resources and collaborative knowledge sharing. Bridging both private and public sectors to assemble a broad amount of data points to observe and visualize.

Forecasting: Beyond research, AI has the capacity to predict trends and forecast how well plants and animals will recover from changes to their landscape, illegal trafficking and climate change. This data is advantageous for enacting global policies and standards, now and in the future. Global and local decision makers need to know about the global populations of its biodiversity to advance its economic, political and societal resilience. Domains for future studies and policy planning are tasked with finding solutions to bring resources into balance; machine learning can address these issues effectively. AI can provide models and data sets that are applied to visualizing changes over time; including using facial mapping to protect wildlife, mitigating detrimental impacts on wildlife species and reducing poaching activities by alerting agencies of real time threats. Depending on global policies and governance artificial intelligence, within the next decade will administer a 'global digital dashboard' enabling policy makers and the public to monitor illegal trafficking, migration patterns, the ability to recognize specific animals and the topography of their environment, as well as predict patterns of disruption. Creating collaborative data sets that can be used for sustainability efforts in all countries. Artificial intelligence and machine learning offer

boundless opportunities to identify, catalog and understand the biodiversity of this planet.

It is reducing a time intensive cataloging process, recognizing emerging issues faster than ever before and providing intelligent actionable information that drives global sustainability and policy adherence.

Proposed Solution - Strategic Challenges and Opportunities

Humanity and the biodiversity of our planet is at a nexus. In order to meet the UN Sustainable Development Goals by 2030 and beyond, identifying potential issues, assumptions and risks to the proliferation of shared knowledge and resources must be reconciled. Recognizing the significance of using artificial intelligence for sustainability efforts across nations. As part of the environmental scanning process, it is essential to take internal and external stock of where we are now meeting the SDGs leading to 2030. Reviewing what has worked well and what hasn't, getting a clearer view of the issues, to understand the challenge and source solutions moving forward into the next twenty years of planning. It is also important to know who the actors are, ones having a direct effect on the indicators (Gordon/Glenn 2009). Future research will require a more comprehensive approach and this could be accomplished through surveys with stakeholders, interviewing intelligence teams, scenarios analysis and strategic inquiry of how/where technology was used in the last twenty years.

The next section evaluates the social, financial, technological and political actors' influence on adaptation and adherence to policy and their importance in accomplishing UN Sustainable Goals.

Assessing Assumptions and Risks to AI Policy and adoption

If the purpose of policy is to change the future (Glenn 2009) it is important to note the landscape in which open innovation thrives. It is the goal of the environmental scanning process to identify potential barriers, provide a description of the issue, assess its significance and classify it for further analysis. Evaluating social, political, technical, financial and unforeseen factors that may impact policy directives and anticipating any potential policy changes. These policy changes follow sequential patterns and may create dissonance within a society (Molitor 2001). As the course is set towards accelerating AI to meet SDGs, it is integral to frame the forces that can cause dissonance to progress.

Social: A key indicator for the success of using technology to solve global challenges is the belief that it provides a social good that benefits all. According to research (Dafoe 2018), there is a genuine fear that artificial intelligence is biased and that it creates societal problems such as; perpetuating misinformation, it is used for social control and that analyzed data is a threat to human rights. These are issues that must be addressed through communication campaigns and directed outreach. It must also be solved through the collective intelligence teams as well, making sure that algorithms,

reinforced learning, image recognition and data management is transparent and ethical. “Transparency can be a powerful thing, but not in isolation.” (Swartz 2010). Nations must see the value of sharing data and how it does not operate in a vacuum; it provides a greater good for humanity and the planet.

People must unite to solve global challenges enlisting technology as a tool for the public awareness, not for political gain. Beyond generating data, transparency has to be visioned in the interpretation of data as well. To achieve social confidence, data analysis and sharing insights with the public should help transform anxieties around the use of technology. Social acceptance and willingness to use AI in their country is a significant part of the success of meeting the SDGs and designing policy that is fair and inclusive.

Political: The implementation of technology around the world to gather data is a highly political endeavor. The UN represents a collection of member states and there are universally accepted governance policies and principles that all members must adhere to including, participating in a shared vision for success. All stakeholders must apply an active effort to present transparent processes and authorities. This is vital to success because if trust erodes among nations and information is not freely shared, then meeting SDGs will not be possible. Also, securing agreement on global policies and standards for AI governance and who owns shared data is paramount. For collaboration and intelligence, it is important to respect the values, ethics and political drivers of nation states. While also monitoring activity to make sure AI technology is not misused to increase division and widen economic disparity within the population.

Financial: Another potential risk to AI policy and adoption is the financial capital necessary to sustain it. It is critical to invest resources at the local and country level to aid data collection and provide infrastructure to support it, otherwise policy decisions are based on inaccurate information. According to a recent 2021 UN report on Technology and Innovation, the World Bank has committed over twenty five billion dollars by 2030 to building technological infrastructures around the world. Frontier technologies, like artificial intelligence, require a stable internet infrastructure and strengthening the capacity of countries to secure local area statistics is paramount for development. Without financial resources there is a substantial risk to meeting UN SDGs and universal access policies.

Technical: Over the last twenty years, global partnerships have increased data availability, yet data on the local and country level needs more observation and dissemination. Without local and country level data it is difficult for policymakers to monitor progress and identify trends. Artificial intelligence can combine and manage traditional and non-traditional sources of data and statistics is an effective way to fill this gap of 'in the field' knowledge. As per UN directive, technology must be used for insight, impact and integrity; this reduces some of the assumptions and risks previously mentioned as guiding protocols have been established. Data derived from AI and other technologies globally are being used to understand what happened, why it happened, what may happen next and how to respond. This strategy underscores the importance of investing in a robust technical infrastructure on both the local and

country levels. It adds value to all the factors listed as AI technology is seen as a strategic asset for partnership and global sustainability.

Unforeseen: As we have witnessed, a global pandemic halts all aspects of society. Its devastating impact on the social, financial, technical and political factors that determine success for the UN Sustainable Development Goals is still unknown. Member countries will have to divert resources to maintaining infrastructure and assisting its population, especially in the poorest areas of the planet. Leaving aspirational goals, like the SDGs, to fall back in order to take care of very present community issues. Additionally, collecting field data which supports policy decisions is difficult and non-existent in areas right now. Opening up an even greater opportunity to use frontier technologies to keep this work going during unforeseen events.

Conclusion:

Artificial intelligence can achieve the UN Sustainable Development Goals, specifically goals thirteen through fifteen, as it has the ability to analyze large scale interconnected global databases. Analyzing patterns and modeling possible solutions. It can identify changes in the biodiversity of this planet by interlinking satellite images, geospatial mapping, mobile phone images and location tags and other technologies faster than is humanly possible. To meet the SDGs by 2030 and beyond an accelerated plan is required. We have less than a decade to make substantial changes to save the environment and stop mass extinction of plant and animal wildlife on this planet.

A Decade Of Action (UN 2020). It will necessitate extensive research, application and iteration for success. Nation States will have to monitor and adhere to UN policies, sustain continued investment in ICT infrastructure globally which is vital to innovation and commit to equity and transparency.

Further, understanding how to disseminate data will involve skill building and bridging the digital divide, factors that are all the drivers towards sustainable change. Heeding these markers will enable humanity to actively and consciously slow this global crisis and save the planet's biodiversity from extinction.

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