

AI:  
A Caribbean Perspective  
on its Deployment, Use, and Governance

Final Report by  
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## **Introduction**

This paper provides an overview of the progress of Artificial Intelligence in the Caribbean, primarily through discussion focused on the AI strategy of selected islands, as well as how AI is currently being deployed in those countries. The paper is divided into two sections. Section 1 discusses country-specific examples of AI deployment and governance strategies in four small island nations, namely Bahamas, Barbados, Cuba, and Jamaica. Section 2 discusses an AI policy approach for the region spearheaded by The Broadcasting Commission of Jamaica and The United Nations Educational, Scientific and Cultural Organization (UNESCO) through its Caribbean Office.

## **AI Application for Social Transformation in Specific Island Nations**

AI is already being used to impact the quality of life of ordinary people in the Bahamas, Barbados, Cuba, and Jamaica. For example, in the province of Sancti Spiritus in Cuba, artificial intelligence techniques are being used to improve electricity service, which has been unreliable due to obsolete equipment for many years.<sup>1</sup> Specifically, AI technology has been applied to the management of electricity networks, electricity transmission, and distribution and is already minimizing network failures.<sup>2</sup> AI is also being explored as a solution to inefficient sugar production.<sup>3</sup> This could help to restore sugar as a viable component of the Cuban economy. In Jamaica, a startup Stone Technologies has developed an autonomous drone security system to

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<sup>1</sup> See <http://www.escambray.cu/2020/inteligencia-artificial-en-sancti-spiritus/>

<sup>2</sup> See <http://www.escambray.cu/2020/inteligencia-artificial-en-sancti-spiritus/>

<sup>3</sup> See Ramirez N., Artificial Intelligence New Approach in the evaluation of the machines in the complex harvest-transport-reception of sugar cane (Agric Vol 4 No 2 (2014); <https://revistas.unah.edu.cu/index.php/IAgric/article/view/646>

detect intrusion and respond with drone surveillance.<sup>4</sup> This could revolutionize security and law enforcement in the country.

The Bahamas has deployed an AI-driven customs management portal to "detect inconsistencies in important trends and prices in order to plug revenue leaks and expose potential cases of fraud and tax evasion."<sup>5</sup> The Bahamas has also begun to use AI-driven road assessment tools to detect deterioration in road conditions such as potholes and inform decisions about allocating resources to prevent future damage.<sup>6</sup> This is being done through a strategic partnership with the US firm, Roadbotics.<sup>7</sup> In Barbados, AI has been deployed to monitor and map The Caribbean coral reef.<sup>8</sup> Barbados is also one of the eastern Caribbean member states which are collaborating through The Caribbean Community Implementation Agency for Crime and Security (CARICOM IMPACS) to reduce the rate of illicit maritime activities like drug smuggling and illegal fishing throughout the Gulf of Mexico and the Caribbean Sea.<sup>9</sup> This is being accomplished through the use of AI-powered risk assessments of vessels, companies, shipowners, and all other stakeholders in the maritime domain.<sup>10</sup>

### **Country-Specific AI strategies**

There seem to be two main approaches to AI in the Caribbean—a regional strategy and a global strategy. Barbados, especially under the leadership of Prime Minister Mia Motley, has

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<sup>4</sup> See <https://stonetechjm.com/about/>

<sup>5</sup> See Brathwaite, C., *Artificial Intelligence & The Caribbean: A Discussion Paper on (Potential) Applications & Ethical Considerations* (2020), p. 10

<sup>6</sup> See Brathwaite, C., *Artificial Intelligence & The Caribbean: A Discussion Paper on (Potential) Applications & Ethical Considerations* (2020), p. 10; See also <https://www.roadbotics.com/2019/03/14/roadbotics-in-bahamas-bicco/>

<sup>7</sup> See <https://www.roadbotics.com/2019/03/14/roadbotics-in-bahamas-bicco/>

<sup>8</sup> See <https://www.bluebotproject.com>

<sup>9</sup> See <https://www.thedailyherald.sx/regional/windward-chosen-by-caricom-impacs-to-enhance-caribbean-maritime-security>

<sup>10</sup> See <https://windward.ai>

focused on a regional approach by, for example hosting The Caribbean Sub-regional Consultation on the draft Recommendation on the Ethics of AI.<sup>11</sup>

Cuba and The Bahamas, on the other hand, have pursued a glocal strategy. Cuba's approach, in particular, is quite interesting. Its strategy seems to be heavily focused on artificial intelligence research and capacity building. The Cuban Government announced the establishment of research institutes to develop skilled individuals in Machine Learning (ML) and Artificial Intelligence (AI).<sup>12</sup> This is being done through strategic collaborations with China, which, according to a 2017 blueprint issued by the State Council, has ambitions to be the world's primary AI innovation center by 2030.<sup>13</sup>

It appears Cuba is positioning itself to benefit from China's rise as an AI superpower. On November 12, 2020, the two countries signed an agreement to establish a Chinese-Cuban Center for studies on the application of Artificial Intelligence in the diagnosis of neurodegenerative diseases.<sup>14</sup> The President of the Cuban Academy of Sciences, Luis Velázquez Pérez, has hailed the development as being important to the scientific, social, and economic development of the two countries.<sup>15</sup> Cuba has also positioned itself to benefit from cooperation with European academic institutions. On February 3, 2020, the Cuban University of Camagüey (UC) entered into an agreement with Flemish Universities of Belgium (VLIR) to open the Winter School.<sup>16</sup>

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<sup>11</sup> See <https://en.unesco.org/news/caribbean-experts-discuss-ethics-artificial-intelligence-set-global-norms>

<sup>12</sup> See <https://ai-forum.com/news-item/cuba-and-china-collaborate-in-creation-of-artificial-intelligence-institute/>

<sup>13</sup> See <https://macropolo.org/digital-projects/chinai/the-plan/> ; see also <https://thediplomat.com/2017/07/chinas-artificial-intelligence-revolution/>

<sup>14</sup> See Ravelo, L., University of Camaguey and China advance in artificial intelligence issues <http://www.adelante.cu/index.php/es/noticias/de-camagueey/21619-universidad-de-camagueey-y-china-avanzan-en-temas-de-inteligencia-artificial>

<sup>15</sup> See <http://www.adelante.cu/index.php/es/noticias/de-camagueey/21619-universidad-de-camagueey-y-china-avanzan-en-temas-de-inteligencia-artificial>

<sup>16</sup> See <http://www.periodicovictoria.cu/inteligencia-artificial-vinculo-docente-entre-belgica-y-cuba/>; See also <https://cdn.vliruos.be/vliruos/32683fce71a3a598194177388e8a88d6.pdf>

The program will include academic exchanges between leading specialists in artificial intelligence. There are also plans to establish similar relations with Spain.<sup>17</sup>

Jamaica has combined a regional and global approach. The country has emerged as a regional thought leader in AI governance through, for example, its' spearheading of the Caribbean Artificial Intelligence Initiative in collaboration with the UNESCO Cluster Office for the Caribbean. The country also punches above its weight in international fora such as UNESCO Intergovernmental negotiations on the Recommendation of ethics on AI and the UNESCO Information for all program. Jamaica has also championed the UNESCO proposal, which resulted in the United Nations Declaration of October 24-28 as global media information literacy week.<sup>18</sup> This initiative will help to address the digital literacy components of AI and promote equality in AI coding.

Despite their different strategic approaches, these countries seem to share an awareness that despite the benefits of AI, there are also risks that need focused attention. Speaking at a UNESCO, in 2020, Barbados Prime Minister Mia Mottley strongly expressed and supported the need to define ethical principles of AI and for AI to be a catalyst in achieving the sustainable development goals in Caribbean small island developing states (SIDS) urged collaborative efforts.<sup>19</sup> On April 26, 2021, at the Intergovernmental Meeting of the Special Committee of the Legal and Expert Group, as part of the consultation process on the UNESCO Recommendation on the ethics of artificial intelligence, Cuba's representative endorsed UNESCO's human-centric approach to AI governance and advocated for the development of AI in a manner which does not

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<sup>17</sup> See <https://oncubanews.com/en/cuba/cuba-and-china-agree-to-develop-artificial-intelligence-on-the-island/>

<sup>18</sup> See <https://www.un.int/jamaica/news/resolution-global-media-and-information-literacy-week>

<sup>19</sup> See <https://en.unesco.org/news/caribbean-experts-discuss-ethics-artificial-intelligence-set-global-norms>

aggravate inequalities between developed and developing countries.<sup>20</sup> Jamaica expressed similar sentiments.

### **An AI Policy Perspective for Small Island Developing States: The Caribbean Approach**

This section of the paper summarizes an advanced draft of the 2021 UNESCO Caribbean AI Policy Roadmap. It is an output document of the Caribbean AI Initiative, a project that the Broadcasting Commission of Jamaica is implementing in partnership with the UNESCO Cluster Office for the Caribbean with the support of UNESCO's Information For All Programme (IFAP).

Following a series of forums and consultation workshops, the policy brief sets out a number of priorities and recommendations as a guide for Small Island Developing States of the Caribbean as they transition to digital economies and societies, a process which will be undergirded by artificial intelligence. The roadmap emphasizes that the region's most valuable renewable resource is its human creativity, and it must be protected against being compromised by AI. Human-centricity in the Caribbean's AI strategy is presented not only as a matter of valuing human rights but also as a bulwark of tangible and intangible wealth.

In just a little over a half-century since most of the islands gained their independence and with a collective population size of approximately forty-four million people or just about 0.56% of the total world population, Caribbean people "have emerged as some of the warmest, resilient, innovative and globally competitive human resources and cultural creators of non-perishable consumables - Nobel laureates, exceptional sportsmen and sportswoman, globally influential artists, thinkers, and leaders."<sup>21</sup> This illustrates the potpourri of "thought data" and "cultural data"

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<sup>20</sup> See <http://www.cubanews.acn.cu/world/11680-cuba-supports-inclusive-development-of-artificial-intelligence>

<sup>21</sup> See UNESCO, Caribbean Artificial Intelligence Policy Roadmap (2021), p.1

spanning art, music, film, fashion, and sports, which helps to contextualize the national, global, economic, and social importance of Caribbean creativity.

In stark contrast to their profile of data richness, several Caribbean islands cannot confidently claim to have had a proper data protection regime enacted. The Caribbean AI Roadmap reports that "data has renewable exponential value ... but data collection has long been a regional weakness. The need for big data will require a big push to get data in the Caribbean ready for general consumption of AI systems."<sup>22</sup> This is foreboding. If "we are our data," the Caribbean AI profile is one of very high risk for data exploitation, data colonization, and digital stagnation. It is therefore critical that a strategy and action plan be developed.

The policy roadmap proposes a six-pronged strategy:<sup>23</sup>

1. **Resiliency** – Protect the Environment by leveraging the power of AI to produce strategies and solutions for climate change mitigation and environmental preservation, including early warning systems, remote monitoring, disaster management, structural improvements, and public education. The application of AI to this concern is critical because the Caribbean is the second most environmental hazard-prone region in the world. Coupled with climate change, this places the region at high risk and high priority for technologically driven mitigation action.
2. **Governance** – AI must be developed and promoted as a tool for service to humanity. Common values and principles should be established to ensure fairness, transparency, and accountability in digital transformation and increased integration of AI algorithms. It is also important to establish national and regional AI Governance Committees / Oversight

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<sup>22</sup> See UNESCO, Caribbean Artificial Intelligence Policy Roadmap (2021), p.3

<sup>23</sup> See UNESCO, Caribbean Artificial Intelligence Policy Roadmap (2021), p.41

Boards as well as national and regional licensing regimes to manage and monitor the development of standards that govern the industry, including technical code of conduct for developers, procurement guidelines for buyers, design and use principles and ethically aligned design standards that include manual override option and open data protocol. Caribbean Small Island Developing States (SIDS) should also develop an AI Appeal Court and Online Dispute Resolution System, increase advocacy for AI ethics at global forums, and host a global software conference to network, lobby, share research and initiate collaborations with big tech. The region should develop the capacity to test AI for biases and identify AI applications in most need of governance. New financial instruments should be introduced, including digital currencies, and align legislative frameworks nationally, regionally, and internationally. The AI industry should be regulated to provide redress and punishment for individuals & companies that violate citizen rights and wellbeing, including prohibiting cyberbullying, hate crimes, discriminatory algorithms, disinformation, and graphically violent images, and other harmful uses of AI. AI should deliver efficiencies to support a more efficient justice system and protect the stability of the region's democratic institutions, social values, and ideals.

3. **Investment & Infrastructure Transformation** –The region should launch a Caribbean R&D Tech Fund and provide incentives to establish new AI-assisted industries, including medical cannabis, e-health, e-education, mariculture, wellbeing management, software development, e-sports, e-translation services, and data management services, leveraging the region’s linguistic plurality and cultural diversity. AI should be deployed in the modernization and transformation of priority industries, including manufacturing, agriculture, transportation, tourism, financial services, and the creative industries.



4. **Upskilling** – This prong is premised on service to Humanity. Equitable access to high-speed internet should be provided as a basic human right in the 21st century, and utilize equitable machine learning algorithms to develop online platforms facilitating e-learning and public education. A Caribbean AI Institute should be established to offer diploma and certificate programs, integrate AI into primary and secondary school courses to facilitate technical AI training, and advance regional AI research and development. This should be complemented by courses in digital literacy and AI Ethics. There is also an opportunity for the Caribbean to contribute to the development of AI tools that are focused on fighting bias, discrimination and promote transparency and fairness. The region has a very vibrant cultural and creative industry that can be paired with technology and engineering to produce these new products for deployment across industry sectors.
5. **Preservation of Culture, Environment & Society** – AI should be used to support the preservation and management of the unique cultural, historical & sociological data assets with aggregated regional data banks to handle big data and boundaries of creativity. Establishing new modes of digitalization and commodification of Caribbean culture in the digital economy and information age where content is still king is critical. The region should: (1) digitize creative, cultural, and environmental content while building data management capacity and service (2) develop e-tourism and e-culture augmented reality experiences for the region's globally competitive tourism, hospitality, and creative industries (3) acquire high-speed broadband and independent secure storage space (4) initiate 3D Mapping of Caribbean SIDs Capitals and their cultural, historical, social and environmental assets and (5) establish a big data preservation program anchored by

national and regional tri-level data management infrastructure to capture, classify, clean, format, store, analyze and archive data.

6. **Sustainability** – AI should be used to support Caribbean attainment of the UN sustainable development goals for SIDS, including gender equality, poverty eradication, climate justice, and environmental protection.

It is proposed that these strategies should be targeted at the priority industries which have been defined by the CARICOM Council for Trade and Economic Development (COTED), including Healthcare, Financial Services, Education, Security, Environment, Culture, Manufacturing, Agriculture, and Tourism.

The Caribbean AI Policy Brief is not a perfect document. It is a work in progress. Unsurprisingly, it raises more questions than have been answered. What of the vast majority of the people who are poor and under-educated, the missing stakeholders? As one contributor, Professor Anthony Clayton, Director of the Institute of Sustainable Development, UWI, Mona, and Chairman of the Broadcasting Commission of Jamaica, observed, the future could be one of poverty and unrest by the unskilled and those whose skills are no longer necessary.<sup>24</sup>

The already fragile Caribbean SIDS economies, perennially characterized by stagnant growth, have been weakened further by the Covid-19 pandemic. Even were they so inclined, governments are not in the fiscal position to make the massive investments that the roadmap seems to assume as a critical success factor. The private sector appears to be no more encouraging. A snap poll of stakeholders revealed that only 12% of businesses in the Caribbean are using AI, with

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<sup>24</sup> See UNESCO, Caribbean Artificial Intelligence Policy Roadmap (2021), p.21

adoption being low even among the prominent digital leaders in the region.<sup>25</sup> This is a very weak base on which to build a regional AI offensive in pursuit of the sustainable development goals.

On the other hand, the optimist would argue that it is precisely in this time of crisis that the opportunity must be seized to focus the attention of governments, bureaucrats, regulators, and industry bodies on the strong probability that the strategic deployment of AI would yield very high dividends. It is also opportune that the Caribbean AI Policy brief coincides with the highly anticipated promulgation of UNESCO's inter-governmental Recommendation on the Ethics of AI and the EU's announcement of sweeping hard law regulation of AI. These are global imprimaturs for Caribbean Small Island Developing States to make a bold move on artificial intelligence governance and use in the region.

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<sup>25</sup> See UNESCO, Caribbean Artificial Intelligence Policy Roadmap (2021), p.31