Volume 03

The Next Generation of Border Security

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The rise of AI in border zones and the need for ethical adoption

On the list of hot-button AI applications, facial recognition and surveillance are consistent points of discussion even as these technologies are regularly deployed in border zones worldwide. Government agencies tasked with maintaining national security in these sensitive areas are employing innovative technologies to check for illegal entrants or other threats as new waves of people enter their countries at high rates.

AI technologies deployed in border zones are able to identify travelers, evaluate their expressions, analyze their fingerprints, and more.[1] These systems reduce the cognitive burden on humans while identifying threats or incursions more effectively and with greater speed. In many cases, national borders are areas with the widest deployment of and the most advanced uses of AI; however, AI adoption is occurring faster than regulations, legislation, and other legal frameworks can keep up.

1 Hannah Tyler, "The Increasing Use of Artificial Intelligence in Border Zones Prompts Privacy Questions," Migration Policy Institute.
 https://www.migrationpolicy.org/article/artificial-intelligence-border-zones-privacy

Real-world applications

In Dubai International Airport, a "smart tunnel" uses 80 cameras to scan travelers quickly. This tunnel employs facial and biometric scanning technologies, enabling preregistered passengers to quickly verify their identity without waiting in long lines.[2] In the U.S., similar technology is being developed, with the goal of creating a more secure air-travel experience while also increasing efficiency.[3] Additionally, the U.S. has deployed the Northern Border Remote Video Surveillance System (NBRVSS) with the express purpose of identifying smugglers, drug runners, and other criminal actors illegally crossing the U.S.-Canada border.[4] This area has long been problematic due to how remote it is, and the deployment of AI will enable detection of illegal activity faster than ever before.

Exploring AI applications in border zones has also been under discussion in the European Union, as described in a 2021 report[5] that details the AI applications the EU is or is considering using. The paper makes clear that multiple AI solutions are going to be utilized in border zones across the EU; failure to do so would put its member nations significantly behind. However, deploying AI ethically is of significant concern in the EU and globally.

2 Ibid
3 "Screening at Speed," United States Department of Homeland Security.
 https://www.dhs.gov/science-and-technology/screening-at-speed
4 Paul Koscak, "Artificial Intelligence Turns the Tide on Securing Northern Border Waterways," Frontline Magazine.
 https://www.cbp.gov/frontline/cbp-artificial-intelligence
5 Costica Dumbrava, "Artificial Intelligence at EU Borders: Overview of Applications and Key Issues," European Parliament.
 https://www.europarl.europa.eu/RegData/etudes/IDAN/2021/690706/EPRS_IDA(2021)690706_EN.pdf

Embracing ethical and responsible AI

The speed and security AI provides brings efficiency to border zones, which can benefit both travelers and government agencies. However, ethical questions naturally emerge due to privacy and technology creep: How can government agencies assure the public that data collection is limited to the context of border control? Who has access to this data? Is information being saved for use later?

This lack of clarity is a genuine concern globally, as innovation and adoption continue to outpace regulation. There are no universal standards for testing and validating AI and no established framework for ethically collecting data from these systems. Additionally, bias and discrimination are ongoing issues with AI/ML model deployment, which creates a particular risk in high-stakes border applications. For instance, a biased model might routinely identify a threat where none exists.

Studies have shown that face recognition applications have been consistently shown to be less accurate for certain people, such as women and people with darker skin tones."[6] Such issues erode trust in the technologies at a fundamental level and contribute to general uncertainty, or uneasiness, about the widespread deployment of such systems in well-traveled public places.

Ibid.

The EU has stated its intention to become "the global hub for trustworthy AI," in part by crafting a framework for deploying AI in border security operations,[7] and acknowledged it will require buy-in from the entire AI ecosystem. In particular, stakeholders need confidence that these AI systems will perform effectively and ethically in the field, which is difficult to do without a repeatable process for testing and validating AI/ML models.

Despite the issues and challenges, AI is and will continue to be a key part of global border-control strategy. While discussions continue to focus on the worst-case scenarios, it is critical that AI systems be developed with broader ethics in mind and highlight instead the ability to identify issues prior to deployment. This is why a standardized framework for developing, testing, and validating AI is so critical, and why it must be defined and implemented as soon as possible. As technology rapidly outpaces current frameworks and regulations, these pain points will only become more prominent and more persistent.

7 Linda Slapakova, "How the EU Can Overcome Barriers to Using Artifical Intelligence in Border Security and Beyond," Rand Corporation. https://www.rand.org/blog/2021/05/how-the-eu-can-overcome-barriers-to-using-artificial.html

About CalypsoAI

CalypsoAI's mission is to accelerate trust in AI through independent testing and validation. Our solutions are built to solve the biggest challenges facing AI today by enabling the deployment of robust machine-learning models into the real-world production environment with confidence, security, and speed. CalypsoAI's automated testing and validation solution provides decision-makers with the tools to support continued trust in system performance. This ensures the success of AI strategy while significantly reducing the risk, time, and money spent to test and validate models manually. CalypsoAI was founded in Silicon Valley by DARPA, NASA, and DoD veterans.

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