

Abstract

In the past few decades, there has been an embrace of “smart borders” within immigration systems where the development of Artificial Intelligence (AI), machine learning, and other related technologies for use in shaping migration policy and border management can be seen as a socio-technological problem at the intersection of state power, technological affordances, and human rights. Focusing specifically on Automated Decision-Making (ADM) systems in the United States and the European Union, this paper examines three main use cases of ADM within migration policy and border management: early-warning systems for migrating forecasting, border management via pre-screening and border checks, and migrant resettlement services. By laying out a human rights framework for assessing ADM technologies based on privacy, transparency, fairness, and more, this paper draws on case studies of specific software and programs within each distinct use case to argue that ADM is more appropriate in some use cases than in others. Ultimately, this study finds that, overall, ADM used for pre-screening and border management is incredibly controversial as it possesses a tremendous risk of surveillance, profiling, and a large potential for abuse of people and power. In contrast, ADM is much better suited for use in early-warning systems and migrant resettlement software as these technologies are generally used to aid immigrants and humanitarian/ non-profit agencies.

Methodology

Migration Forecasting

Border Management via Pre-screening and Border Checks

Migrant Resettlement Services

Case Study:

For this project, I will be examining 3 main use cases of ADM in migration policy and border management that are shown above. I will conduct case studies of specific technologies within each use case by reviewing a range of literature including academic papers and government/agency reports. For each of the case studies, I will explore the following questions:

- What is the jurisdiction of the technology?
- How does the technology function?
- Who is the developer of the technology?
- Who is this technology used by?
- What data does the technology use?
- Is this technology used in conjunction with other systems?
- What are the outcomes and the risks associated with this technology?

Analysis & Evaluation:

I will identify the common patterns and risks that emerge and evaluate the suitability of the application of ADM in each use case based on the following standards:

Accuracy Transparency Accountability Privacy Fairness

Case Studies

Migration Forecasting:

Name	Tech Function	Developer	User	Data Sources
Early Warning and Preparedness System (EPS)	EASO's EPS uses an adaptive machine learning algorithm that creates a "Push Factor Index" (PFI) based on big data on global media to predict migration movements up to three weeks in advance.	(EASO) researchers	29 EU+ countries and Humanitarian Agencies	- GDELT - Google - Trends - Frontex - EASO
Foresight	The algorithm model, which is based on a theoretical framework focusing on the root causes or predisposing factors of displacement, provides strategic displacement forecasts and scenario analysis to generate accurate forecasts of the total number of forced displacements from a given country 1-3 years into the future.	Danish Refugee Council and IBM Research	Humanitarian Agencies and external partners	All data from open-source data sources including info from World Bank development indicators
PREVIEW Project	The system uses various computer-aided tools including visualizations like infographics and "info maps" Machine learning methods are then further used to identify conflict and crisis patterns in large amounts of data.	The German Federal Foreign Office	The German Federal Foreign Office/ German Ministry of Foreign Affairs	All data from publicly accessible data sources including UNHCR and World Bank

Border Management via Pre-screening and Border Checks:

Name	Tech Function	Developer	User	Data Sources
Automated Targeting System (ATS)	ATS is a United States Department of Homeland Security decision support tool that compares traveler, cargo, and conveyance information against law enforcement, intelligence, and other enforcement data to generate a risk assessment rating.	Operated by the DHS and U.S. CBP	Customs and Border Protection (CBP)	- Government databases and the Passenger Name Record data from airlines. - Social media and phone use data - Personal location information
(ETIAS) European Travel Information and Authorization System	ETIAS is an electronic pre-screening system for passengers from states eligible for visa-free travel to the EU. The prescreening system will identify risks of terrorism or migration-related risks by generating individual rapid risk assessments and categorizing applications.	eu-Lisa Agency	European Border and Coast Guard Agency and eu-LISA	- Biometric and personal data - Background questions relating to previous criminal activity, drug use, etc. - Fingerprint/facial recognition - Other eu-LISA databases
iBorderCtrl	iBorderCtrl was an automated border security system that had 2 main components: pre-travel and border crossing. The system employed automated lie detection and automated risk classification/assessments.	Funded by the EU as part of the Horizon 2020 Project	Border Guards in the EU	- EU law enforcement databases - Social Media information - Facial Recognition - "EU Historical databases" (very vague with no expansion)

Migrant Resettlement Services:

Name	Tech Function	Developer	User	Data Sources
GeoMatch	GeoMatch uses a combination of supervised machine learning to match asylum seekers and refugees to host communities where they are most likely to succeed based on the likelihood of finding employment at various locations in the host country.	Immigration Policy Lab (Stanford and Zurich Universities)	Refugee resettlement agencies and nonprofit organizations	- Historical data from resettlement agencies - Data provided by SEM (Swiss State Secretariat for Migration)
Annie MOORE™	Annie MOORE uses advanced predictive analysis, machine learning, and integer optimization methods to recommend optimal placements of arriving refugees across hosting communities around the U.S. based on locations that would maximize employment outcomes.	Collaboration between HIAS, researchers at universities, and the U.S. Department of State.	Refugee resettlement agencies	- Anonymized data of past resettlement refugee/ asylum seeker profiles collected under the Obama administration. - 2010 to 2017 employment outcome data of refugees resettled in the United States 90 days after their arrival.

Analysis & Evaluation

Use Case	Migration Forecasting	Border Management via Pre-Screening and Border Checks	Migrant Resettlement Services
Risks	<p>Risks associated with the application of ADM in this use case include:</p> <p>Inaccuracy: the novelty of the technology, lack of reliable data, and the complexity of migration results in the production of inaccurate predictions.</p> <p>Uncertainty of Policy Response: policy responses to the same warnings could vary from sending emergency aid to closing borders, or both.</p> <p>Misuse of information: mobility patterns of certain groups could also be misused by political opponents or authoritarian regimes.</p>	<p>Risks associated with the application of ADM in this use case include:</p> <p>Profiling: the creation of risk assessments based on known factors like nationality or other secretive factors feeds into profiling that may pose a high risk of coded bias and discrimination.</p> <p>Privacy and Security: There is a major invasion of privacy and major risk of surveillance, as this technology relies on data from private social media, phone use, and location information to track and monitor individuals.</p> <p>There is also a security risk to data integrity because CBP analysts are relying on aggregated information, which may become stale or inaccurate over time.</p> <p>Further, there is a privacy and security risk of over-collection since CBP will collect, retain, and share photographs of individuals across multiple databases.</p> <p>Accountability/ Transparency: Individuals will have no way to access information about their "risk assessment" scores or to correct any false information about them. In addition, the use of vague "black box" algorithms that are kept secret hinders.</p> <p>Some of these technologies do employ a "human-in-the-loop" system, but there is always a risk of automation bias.</p>	<p>Drawbacks and risks associated with the application of ADM in this use case include:</p> <p>Lack of Refugee Preference: Currently, neither of the two case studies within this use case account for the personal preferences of the refugees that are in the process of resettling.</p> <p>Accountability: Both of the case studies within this use case employed a "human-in-the-loop" system, but there is always a risk of automation bias.</p>
Accuracy	MODERATE	MODERATE	MODERATE to HIGH
Transparency	HIGH	LOW	HIGH
Accountability	LOW	LOW	HIGH
Privacy	MODERATE	LOW	HIGH
Fairness	MODERATE	LOW	HIGH

Overall, ADM used for creating early-warning systems and migrant resettlement technologies can be considered safe and less controversial. These are generally motivated by more humanitarian reasons that include wanting to help immigrants/humanitarian agencies. In contrast, ADM used for pre-screening and border security is much riskier and more controversial. The motivation behind these technologies is more centered around identifying and detaining criminals, which leads to problems like surveillance, profiling, and a large potential for abuse of people and power.

Key References

Ziebarth, A., & Bither, J. (2021, November 18). Automating decision-making in migration policy: A Navigation Guide. GMFUS. Retrieved December 21, 2021, from <https://www.gmfus.org/news/automating-decision-making-migration-policy-navigation-guide>

and more...

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