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# Human Rights Risks of Migration Flow Predictions and Policy Implications Within the EU

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ABSTRACT:

The call for reliable, timely, statistical migration flow data by governments, the humanitarian sector, and policy makers has become significantly amplified within the European Union. While migration flow predictions could potentially be beneficial to migrants in terms of the allocation of recourses for humanitarian purposes and the burden-sharing amongst EU member state, such predictions risk jeopardizing migrants and refugees' fundamental rights. Based on the policy findings made for the EU-funded ITFLOWS project, this article sheds light on the challenges migration flow prediction technology can pose for migrants' human and fundamental rights and makes policy recommendations on how to addresses them.

## 1) Introduction

The call for reliable, timely, statistical migration flow data by governments, the humanitarian sector, and policy makers has become significantly amplified over the last few years with the increase of migrants, including refugees, entering the European Union. As according to the European Commission's statistics on migration, in 2022, 2.26 million people immigrated into the EU out of which close to a million constitute asylum claimants from over 140 countries all over the world.[1] In mid 2023, the UNHCR estimates that worldwide, there were 36.2 million refugees

[1] European Commission. Statistics on Migration to Europe. Available at: https://commission.europa.eu/strategy-and-policy/priorities-2019-2024/promoting-our-european-way-life/statistics-migration-europe_en (last visited May 26, 2023)

and 62.2 million internally displaced people.[2] The well-documented logistical and humanitarian challenges relating to the inflows of migrants[3], including refugees, into the EU, especially since 2015, have highlighted the need for reliable and timely statistical data.

Reliable migration flow predictions based on data generated by technological tools could potentially improve (a) the allocation of necessary resources for humanitarian purposes; (b) the up-to-date information sharing among civil society and EU member states; (c) the transparency over the arrival of migrants, including refugees; (d) the avoidance of excessive burden for Member States at the frontline; (e) the relocation and fair distribution of refugees at national and European levels; and (f) the boosting of the social integration of migrants, including refugees. So, while such migration flow predictions could, in theory, benefit migrants in terms of the allocation of recourses for humanitarian purposes, social integration and the burden-sharing amongst EU member states, the prediction of migration movements and border crossing, however, also risk jeopardising migrants and refugees' guarantees to access their fundamental rights as stipulated under the Charter of Fundamental Rights of the European Union. This includes their right to free movement, non-discrimination, protection of private life and personal data, international protection, good administration, and the right to seek and enjoy asylum from persecution. This is particularly the case in a context where migration prediction technology and the digitalization of borders

[2] UNHCR, https://www.unhcr.org/mid-year-trends#:~:text=The%20global%20refugee%20population%20reached,like%20situations%20under%20UNHCR's%20mandate, (last visited Nov. 17, 2023).

[3] This article adopts a wide approach to the definition of migrants that is favoured by the IOM. The IOM defines migrants as 'persons who move away from their place of usual residence, whether within the country or across an international border, temporarily or permanently, for a variety of reasons'. Although in our study migrants are individuals who have passed international borders, we include all individuals who have passed such borders. Therefore, by migrants, this article also includes refugees, recognised and non-recognised. In line with the ECtHR case-law, individual who are formally granted refugee status fall into the category of "recognised refugees." Any person who meets the eligibility criteria of a refugee but has not applied or applied and has not yet been granted asylum by a state fall into the category of "non-recognised refugee".

increasingly serves political agendas and policies geared towards strengthening border control, securitization, and surveillance - generally summarized under the term of migration governance.

Most recently, European law and policy makers responded to the challenges such digital technologies could pose for the fundamental rights of migrants and particularly of refugees by classifying artificial intelligence technologies in migration management as “high risk” in the proposed European Union Artificial Intelligence Act. While this indicates an important step into the right direction towards the protection of the fundamental rights of migrants, and particularly refugees, the lack of control over how these technologies are monitored still allows for the potential violation of migrants’ fundamental rights. This article seeks to contribute to these important policy conversations at the intersection of fundamental rights, and migration flow prediction technology.

Based on the policy findings made for the ITFLOWS project on the topic of prediction of migration flows and human rights, this article sheds light on the challenges migration flow prediction technology can pose for migrants’ fundamental rights and makes specific recommendations on how to addresses them. In so doing, the analysis distinguishes between self-learning AI prediction technology and non-self-learning prediction tools, as each category poses different sets of challenges and requires distinct policy recommendations. The article first, briefly introduces the ITFLOWS project, which initiated the current study before it discusses the interrelationship between human rights, migration flow predictions and the current development around the New Pact on Migration and Asylum and the proposed EU AI Act and within the larger context of imperial Global North-South power structures. Against this background, the article sheds light on the human rights risks regarding bias, inaccuracy, transparency, data protection and definitions as

inherent in self-learning AI and non-self-learning migration flow prediction technology before raising some important questions around liability. Finally, the article offers specific recommendations on how to best ensure human rights guarantees to migrants, including refugees.

## *2)* Methodology: ITFLOWS and the EUMigra Tool

This article is based on the findings of the 3-year EU funded ITFLOWS project (2020-2023), which set to generate novel insights on the intersection between migration, technology, and human rights. The ITFLOWS project was developed in the aftermath of the so-called 'refugee crisis' in Europe in 2015, which revealed the need for better migration flow predictions to improve the allocation of humanitarian resources and support to migrants, and particularly refugees. At that time, the majority of data-driven approaches to migration flow predictions were only specific to one single country of origin or destination. Within the EU, some countries such as Sweden developed their own migration flow prediction technologies, each using different data sources and timeframes, leading to different predictions. The result is a lack of a coherent data set for the prediction of migration flows into the EU and of policy designs in the area of asylum, migration, and integration that are based on solid prediction models.

In order to fill this gap, the ITFLOWS partners composed of computer and social scientists and human rights and ethics experts developed the EUMigraTool (EMT).[4] The EMT is a decision support system that particularly makes predictions on unrecognised refugees, including asylum

[4] ITFLOWS, https://www.itflows.eu/eumigratool/ (last visited Nov. 15, 2023).

claimants, based on historical data and big data drawn from Twitter and Google Trends. The EUMigraTool consists of a small-scale and large-scale model. The Small-Scale Model offers simulations of the distribution of incoming asylum seekers/unrecognised refugees arriving to neighbouring countries when leaving conflict at countries of origin. The Small-Scale Model further offers a generalised and automated simulation development approach with a Flee agent-based simulation code. Flee (a code) is an agent-based model that grasps the individual with attributes (age, gender, language) and no personal data is used to generate these agents. Flee can estimate the impact of border closures and how people are moving. For instance, it can investigate different locations for refugee camps and how long it would take for them to travel and when they would arrive. This could help humanitarian aid efforts. Therefore, the Small-Scale Model that uses Flee does not classify as AI because it is not self-learning, and its learning is overseen by humans.

In contrast, the second model that ITFLOWS used, the Large-Scale Model, is based on AI technology and produces monthly forecasts of asylum applications by using data from Eurostat. The Large-Scale Model is therefore an agent-based model (ABM) that combines a set of different inputs and methods for its predictions, including; Topic Modelling by monitoring national press; asylum seeker data from Eurostat (the official EU statistics office); and output files of asylum application forecasts of the Google Trends Analytics model. So, the data discussed in this article derives from the monitoring and policy activities as carried out by the human rights team within ITFLOWS as well as a throughout literature review of the interdisciplinary scholarship on artificial intelligence, migration flow prediction technologies, and human rights.

### 3) Migration flow predictions in the EU: Between securitization, surveillance, and human rights

Policy and academic discussions on human rights considerations in the context of migration prediction and forecasting via artificial intelligence (AI) and non-self-learning tools such as the above-mentioned agent-based modelling (ABM) have mushroomed over the last five years. These debates take place within the contentious fields of border control/surveillance, counterterrorism, immigration, and migrants' fundamental human rights, indicative of the infamous crimmigration trend.[5] Unfortunately, the current EU securitization policy prescribes that artificial intelligence and digitalization are necessary to support the EU and the EU member states to effectively manage migration flows at its internal and external borders while at the same time guaranteeing border securitization and control. This is in line with the EU counterterrorism strategy and EU Security Union Strategy 2020-2025.[6] Since 2007, the EU invested close to three billion Euros into security research that drive knowledge and technology in support of security support systems.[7] Hand in hand with the EU investment in security research and investment goes the strengthening of the

[5] See Nina Amelung, *"'Crimmigration Control' across Borders: The Convergence of Migration and Crime Control through Transnational Biometric Databases."* Historical Social Research / Historische Sozialforschung, vol. 46, no. 3, 2021, pp. 151–77 (arguing that cross-border regimes including biometrics and data basing in the EU contribute to the crimmigration in the area of migration and asylum by conflating migration, asylum seeking and criminality), see also Petra Molnar, "Surveillance sovereignty: Migration management technologies and the politics of privatization." *Migration, security, and resistance: global and local perspectives. Routledge, 77* (2021) (arguing that the usage of military, or quasi-military, autonomous technology bolsters the nexus between immigration, national security, and the increasing push toward the criminalization of migration).

[6] See European Commission. Counter terrorism and radicalization. https://home-affairs.ec.europa.eu/counter-terrorism-and-radicalisation_en#:~:text=The%20EU%20Counter%2DTerrorism%20Strategy,of%20freedom%2C%20security%20and%20justice (last visited Nov. 15, 2023). See also Shepherd, Alistair JK. "EU counterterrorism, collective securitization, and the internal-external security nexus." *Collective Securitization and Crisification of EU Policy Change*. Routledge, 2022. 117-133 (arguing that the EU's politics and policies of securitization in response to a transnational threat of terrorism raises concerns in terms of the opaqueness of the EU's security policy and questions around accountability and liability).

[7] Press Release, European Commission, EU SECURITY UNION STRATEGY: CONNECTING THE DOTS IN A NEW SECURITY ECOSYSTEM, (July 24, 2020), https://ec.europa.eu/commission/presscorner/detail/en/IP_20_1379.

efficient management of internal and external borders by FRONTEX (European Boarder and Coast Agency), governed by a Regulation of the European Parliament and of the Council on surveillance rules on the external sea borders[8], and a strong push towards the interoperability between EU data information stems via EUROSUR (European Border Surveillance System).[9] EUROSUR is a system that assists, in EU language, "in countering cross-border crime, preventing unauthorized border crossings and diminishing the tragic death tolls of migrants at sea".[10]

In the context of this EU securitization policy landscape, the use of digitalization and artificial intelligence have emerged as important pillars for migration management, dangerously conflating migration and security policy interests. As the 2022 European Migration Network report on "The Use of Digitalization and Artificial Intelligence for Migration Management"[11] demonstrates, digital technology such as biometrics-based AI systems, drones, and lie detectors are widely in use in the area of migration and asylum.[12] The Covid 19-pandemic has further spurred the emphasis for technological advancement focused on contactless migration management and control at the EU borders in an ever-evolving landscape.[13] The 2022 European Migration Network report states

[8] EU/656/2014. (May 15, 2014).
[9] See European Commission*, supra note* 6.
[10] European Commission, *Migration and Home Affairs*. https://home-affairs.ec.europa.eu/policies/schengen-borders-and-visa/border-crossing_en (last visited May 11, 2023)
[11] European Commission, *The use of digitalisation and artificial intelligence in migration managemen*t (February 2022), https://www.oecd.org/migration/mig/EMN-OECD-INFORM-FEB-2022-The-use-of-Digitalisation-and-AI-in-Migration-Management.pdf (last visited May 11, 2023).
[12] See also Karolina, La Fors & Fran Meissner, "Contesting border artificial intelligence: Applying the guidance-ethics approach as a responsible design lens." *Data & Policy* 4 (2022): e36. (arguing that digital tools are used by the EU as a form of border securitization in that they classify some migrants as posing a risk like identity fraud, other forms of criminality or terrorism). See further Augustin Nguh, "THE USE OF ARTIFICIAL INTELLIGENCE IN MIGRATION MANAGEMENT..." *6 th INTERNATIONAL SCIENTIFIC CONFERENCE FOR DOCTORAL STUDENTS AND EARLY-STAGE RESEARCHERS* 95-116 (2020) (stating that EUs use of AI in migration management has not achieved its goal to stop irregular migration but, instead, jeopardizes the human rights of migrants).

[13]Report, European Migration Network, THE USE OF DIGITALISATION AND ARTIFICIAL INTELLIGENCE IN MIGRATION MANAGEMENT: JOINT EMN-OECD INFORM 3 (November 2022),

that to date most EU member states make use of online applications for residence permits and citizenship and six EU Member States are using AI technologies for the purpose of migration management through language identification, detecting identity document fraud, case management, and tracing document fraud.[14]

Let us consider a few examples. In the Netherlands, the Immigration and Naturalisation Service (IND) seeks to detect document fraud via algorithms and Germany, Australia, Canada, and the US use AI to confirm identity based on biometrical data. Hungary and Lithuania currently use facial recognition for the establishment of the identity of nationals and to prevent fraud. Moreover, in August 2021, Lithuania's State Border Guard run a test where 3D facial and iris recognition technology were used for border checks.[15] Also, Greece, Hungary and Latvia are currently testing an AI-powered module where an avatar asks passengers a series of questions at the moment of border crossing. This avatar has been developed by the EU-funded project "iBorderCrtl' (Intelligent Portable Control System). Finally, in Germany, the Federal Office for Migration and Refugees in Germany (BAMF) uses an AI tool in the asylum assessment procedure to detect Arabic dialects to receive indication of the country of origin in case where identification is missing.[16] Also, in Germany, a project is currently under way where AI instruments are used for migration forecasting to support decision making and assist with the assessment of irregular migrations flows into Germany and to predict the number of internally displaced people globally.[17] On the EU level,

https://www.oecd.org/migration/mig/EMN-OECD-INFORM-FEB-2022-The-use-of-Digitalisation-and-AI-in-Migration-Management.pdf (last visited Nov. 16, 2023).

[14] European Migration Network, *supra* note 13, at 3.
[15] European Migration Network, *supra* note 13, at 10.
[16] European Migration Network, *supra* note 13, at 9.
[17] European Migration Network, *supra* note 13, at 10-11.

DG commissioned a study that should assess the ability of AI technology to develop an early warning system that can evaluate the intensity and timeframe of migration flows to and from the EU in line with the EU's Ethics Guideline in Trustworthy AI.[18]

But although the benefits, mainly on processing and security, have been celebrated, the impact on human rights of migrants have not been discussed neither by the states nor by the European Union. Yet, scholars working on migration, asylum and AI have repeatedly warned that these technological advances in the area of migration and asylum raise serious questions about migrants' human rights. This includes their right to non-discrimination, right to liberty and security, right to asylum and the principle of non-refoulment, amongst others. Quantitative social scientist Tuba Bircan and political scientist Emre Eren Korkmaz argue that the development and testing of these tools are often carried out with the idea of the migrant as a threat – pushing forward the criminalization of migrants – rather than a right-bearing individual.[19] To this effect, the anthropologist and asylum lawyer Petra Molnar argues that in a context where powerful nations in the Global North collect data on vulnerable populations without regulated methods of oversight and accountability being in place, the use of technology for migration prediction and management is highly political.[20]

Yet, technology has been hailed, for instance, as the solution for humanitarian aid. Indeed, humanitarianism is an area where technology has become increasingly popular for the purpose of

[18] European Commission. ETHICS GUIDELINE IN TRUSTWORTHY AI (April 8, 2019), https://digital-strategy.ec.europa.eu/en/library/ethics-guidelines-trustworthy-ai (last visited Nov. 15, 2023).
[19] Tuba Bircan and Emre Eren Korkmaz. "Big data for whose sake? Governing migration through artificial intelligence." *Humanities and Social Sciences Communications,* 8.1 3-4 (2021).
[20] Molnar, Petra. "New technologies in migration: human rights impacts." *Forced Migration Review* 61, 7 (2019)..

developing early warning systems and securing adequate resources and reception conditions in transit and receiving countries. The availability of Big Data, often extracted from Google Trends and social media outlets such as Twitter and Facebook to predict the movement of people is said to make the coordination and delivery of humanitarian aid more efficient.[21] This research shows that while migration prediction technology can be beneficial for humanitarianism actors to respond to a conflict crisis or disaster and find swift and adequate solutions, scholars and activists have increasingly voiced concerns about the human rights and ethics risks posed by such technological approach to humanitarianism. For instance, what has been termed as 'surveillance humanitarianism" or "techno-solutionism" can potentially expose already vulnerable groups of migrants who are already affected by conflict and/or a natural disaster – particularly refugees – to further human rights risks. Former UN Special Rapporteur on contemporary forms of racism, racial discrimination, xenophobia, and related intolerance, Ms. Tendayi Achiume, criticizes such 'surveillance humanitarianism' where a huge amount of data is collected for purposedly humanitarian purposes and bureaucracy (i.e. digitising and storing refugees' iris images, personal data) as a tool to sustain the marginalisation of already vulnerable groups and contribute to the perpetuation of geopolitical power dynamics.

[21] See Petra Molnar, *supra* note 20. See also Ana, Beduschi, "Harnessing the potential of artificial intelligence for humanitarian action: Opportunities and risks." *International Review of the Red Cross* 104.91, 1149-1169 (2022) and Cristina Blasi Casagran, Colleen Boland, Elena Sánchez-Montijano, and Eva Vilà Sanchez, "The role of emerging predictive IT tools in effective migration governance." *Politics and Governance* 9.4 (2021): 133-145 (arguing that computational techniques to predict migration flows could lead to policymakers and appropriate stakeholders to make prudent and robust decisions regarding the management of migration*).*

## 4) Migration flow predictions and the proposed EU AI Act

The topic of human rights migration management via technological tools is currently at the forefront in law and policymaking at the level of the EU. The European Parliament, the Council of the European Union and the European Commission are currently in the midst of intense discussions regarding AI and migration. The proposed EU AI Act and the proposal on the New Pact on Migration and Asylum are highly entangled and mutually contribute to the EU's goal to restrict access to its territory to all migrants, including refugees. The New Pact on Migration and Asylum, a political agreement reached by the EU states only in June 2023,[22] aims to streamline the procedural management of asylum across the EU and to fast-track the asylum process. This includes a pre-screening at the EU's external borders (asylum claimants that are subject to this border procedure are not allowed to enter EU territory) with the intention to send people back whose asylum claims are deemed of having a slim chance for being accepted or deemed unfound or inadmissible. Rejected asylum applicants would then be sent to several countries outside the EU but not necessarily the country of origin. Those asylum claimants who have been accepted at the EU border, on the other hand, might then be distributed across the different EU member states with the goal to alleviate the burden on the receiving countries such as Greece, Italy, and Spain.[23]

[22] The European Parliament and the Council of the European Union adopted negotiating positions on two key instruments in April and June 2023. These are the Asylum Procedures Regulation (APR) that reforms rules on asylum determination and related rights, and the Asylum and Migration Management Regulation (AMMR) reforming the EU's system on allocating responsibility for processing asylum claims and establishing a solidarity mechanism.

[23] Press Release, European Council/Council of the European Union, Migration Policy: Council reaches agreement on key asylum and migration laws (June 8, 2023), https://www.consilium.europa.eu/en/press/press-releases/2023/06/08/migration-policy-council-reaches-agreement-on-key-asylum-and-migration-laws/ (last visited July 3, 2023).

In order to achieve the goal of the New Pact on Asylum to speed up migration and asylum process, the EU is currently heavily investing in the development of prediction tools that can forecast irregular migration flows into the EU for the purpose of border monitoring and detection of security threats already before people move into the EU. The proposed AI Act is situated at the crossroad between ensuring people's privacy and fundamental rights – including equal access to opportunities, democracy, rule of law, or the environment –, and the EU's aspiration to strengthen their immigration and security systems while at the same time keeping up with China and the United States in the global AI race. In this sense, the current EU AI Act signifies a balance act between adopting a human and in its extension a human rights centred Act while at the same time not losing sight of the larger political power dynamics at play regarding the fast developing and burgeoning AI sector.

Title III (39) and Annex III (Article 7 (b))[24] of the Proposal for the EU AI Act[25] classifies technology aimed at the monitoring and surveillance of migrants, or technology aimed to forecast or predict trends related to migration movements and border crossings as 'high-risk'. Title III (39) explicitly stipulates that the use of AI systems in migration, asylum and border control must not infringe on the rights set forth in the Geneva Convention 1951 and thus on the principle of non-refoulment or deny safe and effective legal avenues to international protection. In this sense, the EU AI Act is the first legislation globally that governs the risk management, monitoring, and use of AI technology and the first legislation that bans certain high-risk AI (Article 9, 2(a)) where the

[24] Annexes to the Proposal for a Regulation of the European Parliament and of the Council Laying Down Harmonised Rules on Artificial Intelligence (Artificial Intelligence Act) and Amending Certain Union Legislative Acts, COM(2021) 206 final.

[25] Proposal for a Regulation of the European Parliament and of the Council Laying Down Harmonised Rules on Artificial Intelligence (Artificial Intelligence Act) and Amending Certain Union Legislative Acts, COM(2021) 206 final.

risks outweigh the benefit of the purpose (Article 2, 5). Any risk management conducted for 'high-risk' AI technology must include an assessment as of how particular vulnerable groups of people or children might be affected (Article 2, 7). In Title III (28), the EU AI states that:[26]

> *The extent of the adverse impact caused by the AI system on the fundamental rights protected by the Charter is of particular relevance when classifying an AI system as high-risk. Those rights include the right to human dignity, respect for private and family life, protection of personal data, freedom of expression and information, freedom of assembly and of association, and non-discrimination, right to education consumer protection, workers' rights, rights of persons with disabilities, gender equality, intellectual property rights, right to an effective remedy and to a fair trial, right of defence and the presumption of innocence, right to good administration.*

According to Annex III of the proposed EU AI Act, all AI technologies that are classified as 'high-risk' must submit a written note to the Commission specifying the intended purpose and why it would not constitute a significant risk to the health, safety, fundamental rights, or the environment (Title III (32a). In the area of migration and asylum, for instance, the proposed AI Act in Title III (39) cautions that AI systems used for border management and control have a great potential to discriminate against already vulnerable people. As of June 14, 2023, the amended AI Act[27] prohibits "real time" biometric identification systems, emotion recognition systems also in the context of border management, and biometric categorization systems using sensitive

[26] European Parliament and the Council of European Union, *supra* note 25, at 24.
[27] Artificial Intelligence Act Amendments adopted by the European Parliament on 14 June 2023 on the Proposal for a Regulation of the European Parliament and of the Council on Laying down Harmonized Rules on Artificial Intelligence (Artificial Intelligence Act) and Amending Certain Union Legislative Acts (COM(2021)0206 – C9-0146/2021 – 2021/0106(COD)).

categorisations (i.e. race, gender, ethnicity, migration and citizenship status, sexual orientation and gender identity, religion, disability status), amongst others.[28] At the time of writing this article, the EU AI Act is scheduled for trilogue, a tripartite meeting between the Council of the European Union, the European Parliament, and the European Commission.

Yet, notwithstanding the important provisions in the Proposal of the AI Act, the possibilities for misuse, bias, and inaccuracy continue to exist, which could have serious fundamental rights implications for particularly refugees. The 'high risk' label assigned to migration prediction tools in the context of border management does not automatically prohibit those prediction tools and scenarios that could substantially infringe on the human and fundamental rights of migrants, including refugees, coming to the EU, as also pointed out by civil society organisations such as European Digital Rights (EDRi)[29] or Fair Trials[30].

## 5) Migration flow predictions: a new form of colonialism?

In light of the increasing global interest and use of AI for the purpose of border control, former UN Special Rapporteur (2021-2022) on contemporary forms of racism, racial discrimination, xenophobia, and related intolerance Ms. Tendayi Achiume has warned that against the background of political contexts where ethnonationalist and conservative governments are on the rise,

[28] Press Release, European Parliament, MEPs ready to negotiate first ever safe rule for safe and transparent AI (June 14, 2023), https://www.europarl.europa.eu/news/en/press-room/20230609IPR96212/meps-ready-to-negotiate-first-ever-rules-for-safe-and-transparent-ai (last visited June 16, 2023).
[29] EDRi, EU Parliament sends a global message to protect human rights from AI (May 11, 2023), https://edri.org/our-work/eu-parliament-committee-vote-strong-message-protecting-fundamental-rights-from-ai-systems/ (last visited June 2, 2023).
[30] Fair Trials, EU Parliament votes for landmark ban on "discriminatory and unjust" predictive policing and criminal prediction systems (May 11, 2023), https://www.fairtrials.org/articles/news/eu-parliament-votes-for-landmark-ban/ (last visited June 2, 2023).

migration prediction and immigration technologies can have "serious xenophobic and racially discriminatory consequences for refugees, migrants, including stateless persons.[31] The former UN Special Rapporteur points to the racialized and gendered dimension of border and migration prediction technologies that have the potential to seriously violate the human rights of migrants, including refugees, reproducing colonial geopolitical power structures. Much of these severe human rights violations are, according to Tendayi Achiume, justified by citing bureaucratic and humanitarian intentions. In her 2020 report she writes: [32]

> […] governments and non-State actors are developing and deploying emerging digital technologies in ways that are uniquely experimental, dangerous and discriminatory in the border and immigration enforcement context. By so doing, they are subjecting refugees, migrants, stateless persons and others to human rights violations, and extracting large quantities of data from them on exploitative terms that strip these groups of fundamental human agency and dignity.

Migration flows prediction and forecasting as well as the digitisation of border control thus risks feeding into the colonial narrative where migrants – and particularly asylum claimants and refugees racialized as non-white – tend to be seen as the "barbaric" and "uncivilized" Other that needs to be controlled via transnational systems of data sharing and border surveillance.[33] Javier

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[31] Report, E. Tendayi, Achiume, CONTEMPORARY FORMS OF RACISM, RACIAL DISCRIMINATION, XENOPHOBIA AND RELATED INTOLERANCE: NOTE / BY THE SECRETARY-GENERAL 1-25 (at 4) (Nov. 10, 2020), https://digitallibrary.un.org/record/3893019 (last visited Oct. 6 2023).

[32] E. Tendayi Achiume, *supra* note 31, at 6.

[33] Mengia Tschalaer, "Queering migration temporalities: LGBTQI+ experiences with waiting within Germany's asylum system." *Ethnic and Racial Studies* 46.9 (2023): 1833-1853 (arguing that 'waiting' in the asylum context in Germany constitutes a form of control of and state violence towards people on the move), see also Miriam Ticktin, *Casualties of care: Immigration and the politics of humanitarianism in France*. Univ of California Press, 2011 (arguing that the 'regimes of care' established in the humanitarian context best apply to those who conform to Westernized idealizations around vulnerability and victimhood. In this context, 'regimes of care' control who has access to resources and support and who does not along lines of race, ethnicity, religion and gender).

Sánchez-Monedero and Lina Dencik, whose work focus on data justice, use the example of the EU-funded project iBorderCtrl which developed an AI technology that monitors behavioural patterns at border crossing in real time to detect fraudulent attempts in crossings, amongst others, to argue that these technologies are not merely developed for simplifying border control and crossing but they also function as a mode of governance that increasingly shapes life opportunities and impinges on the fundamental rights of migrants, including refugees.[34] For instance, they point to the way these 'smart border' technology relies on categorizing people on the move into groups *of bona fide* and *non bona fide* travellers.[35] These distinctions, which are made based on an AI "risk assessment" and "deception detection", tap into what migration scholars have termed as "domopolitics"[36] – that is the spatial governmentality of bodies at the cusp of legality and illegality and a form of liminality that produces legal precarities.[37] This can lead to the creation of hostile environments, which, in turn, can lead to: 1) the increase of surveillance of migrants, including, refugees and increased immigration detention; 2) the increase of the risk of abuse of power by policy, border protection, and immigration officials through pushbacks at the borders and/or the externalization of borders and the rejection of jurisdiction for consequential abuse;3) the promotion of stereotypes and hate speech in the media and politics regarding gender, sexuality, race, ethnicity, age, class, and education; 4) the increase of stereotypes of vulnerable and marginalized members in migrants causing the increase of violence against women and LGBTQI+

[34] Javier Sánchez-Monedero, Javier & Lina Dencik. "The politics of deceptive borders: 'biomarkers of deceit' and the case of iBorderCtrl." *Information, Communication & Society* 25.3 (2022): 413-430.
[35] Javier Sánchez-Monedero and Lena Dencik, *supra* note 34, at 414-416.
[36] Jonathan Darling, "Domopolitics, governmentality and the regulation of asylum accommodation." *Political Geography*30.5 (2011): 263-271 (theorizing dompolitics as a form of governance that is aimed to discipline asylum claimants through modes of accommodation).
[37] Nicholas De Genova, Nicholas, "Citizenship's shadow: Obscene inclusion, abject belonging, or the regularities of migrant 'irregularity'." *Within and Beyond Citizenship*. Routledge, 2017. 17-35 (arguing that a migrant's identity is triggered by the act of border crossing where they are henceforth subject to processes or irregularization or illegalization).

persons and minors; 5) the restriction or even cutting off funding in health, education, or housing for mixed migrant groups; and an increased risk for the creation and maintenance of immigrant ghettos that lack adequate health, accommodation, and education services, contributing to segregation.

Against this background, scholars focusing on data, migration and governance have likened these technological migration management methods as a form of "data colonialism" or "techno-colonialism" to capture the geopolitical power dynamics inherent in migration management policy and practice.[38] As a part of the current border digitization, the amounts of personal data that are being collected raises questions around data protection, confidentiality, legal requirement, and rules of engagement.[39] Migrants often being portrayed as a security threat in political and policy discourse, critical scholars of data, migration and governance, ask for caution in a context where there is a high risk that the data collected for border control could also be used to support national security agendas which push towards the criminalization of migrants.[40] To this effect, these

[38] See Tuba Bircan & Emre Eren Kormaz, *supra* note 18 (they argue that the vulnerability of migrants is even more amplified through the development of border management technology that is often based on the assumption that migrants are a threat and in a context where there exists serious ethical concerns in regards to confidentiality, privacy and accountability), see also Ana, Beduschi, "Harnessing the potential of artificial intelligence for humanitarian action: Opportunities and risks." *International Review of the Red Cross* 104.91, 1149-1169 (2022) (criticizing the use of AI in humanitarianism that risks resulting in "surveillance humanitarianism" or "techno-solutionism" and thereby perpetuating historical inequalities, biases and unfairness), see further Petra Molnar, *supra* note 20 (stating that data collection was not an apolitical exercise, particularly not when powerful Global North actors collect data on and information on vulnerable populations with no regulated oversight and accountability structure, at 310). See further Sánchez-Monedero, Javier, and Lina Dencik. "The politics of deceptive borders: 'biomarkers of deceit' and the case of iBorderCtrl." *Information, Communication & Society* 25.3 (2022): 413-430 (stating that the development of border control technology has a highly political function and a mode of governance geared toward shaping the life opportunities and fundamental rights of people on the move). Lastly see Madianou, Mirca. "Technocolonialism: Digital innovation and data practices in the humanitarian response to refugee crises." *Routledge handbook of humanitarian communication*. Routledge, 2021. 185-202 (arguing that the increasing importance of digital innovation and data practices in humanitarianism results in the convergence of digital development with humanitarian structures and, in so doing, solidifies colonial structures in the form of a techno-colonialism)

[39] See Tuba Bircan & Emre Eren Kormaz, *supra* note 38, at 304,

[40] See Tuba Bircan & Emre Eren Kormaz, *supra* note 38, see Petra Molnar, *supra* note 5&20, see Ana Beduschi, *supra* note 21, see also Tina Krügel, RA Benjamin Schütze, and Jonathan Stoklas. "Legal, ethical and social impact

scholars criticize the increasing collaboration between national government and private tech corporations for the development of border management technology, data gathering, and analysis. This is particularly the case within a global context where migrants, including non-recognised refugees, are systematically turned away at the border, and being deported as is currently the case in the US, the UK, and the Mediterranean.[41]

Moreover, the lack of an intersectional approach when using technological tools in the area of migration can result in already marginalized groups to be further rendered invisible. For example, the neglect of intersectionality of gender, sexuality, age, race, ethnicity, class etc. in the process of data gathering reproduces dynamics of in- and exclusion and oppression and domination. In the literature on intersectionality and AI, bias in the datasets and algorithms both are identified as a threat to the human rights of underrepresented groups such as women and people racialized as non-white.[42] For instance, AI systems trained by data often risk making decisions that are biased in terms of race or gender and disadvantage already vulnerable groups.[43] An intersectional

on the use of computational intelligence-based systems for land border crossings." *2018 International Joint Conference on Neural Networks (IJCNN)*. IEEE, 2018 (stating that the use of computational intelligence technologies in the decision-making at the border not only degrade travellers into objects bat they can be erroneous and, as a consequence, risk challenging fundamental legal and ethical principles by criminalizing them). See further, Btihaj, Ajana, "Augmented borders: Big Data and the ethics of immigration control." *Journal of information, Communication and Ethics in Society* 13.1 (2015): 58-78 (arguing that the use of 'Big Data' for immigration management leads to classifying people into law and high-risk travellers).

[41]See Madeleine Forster, *supra* note 48 (arguing that AI systems used for migration management can lead (or contribute) to asylum seekers being sent back to their country of origin or an unsafe country where they may be subjected to persecution resulting in human rights abuses – a practice known as 'refoulement').

[42] María López Belloso, "Women's Rights Under AI Regulation: Fighting AI Gender Bias Through a Feminist and Intersectional Approach." *Law and Artificial Intelligence*. TMC Asser Press, The Hague, 2022. 87-107 (at 90) (arguing, from feminist point of view, that AI has the potential to amplify and perpetuate biases that can lead to invisibilities and, in so doing, exacerbating existing vulnerabilities). See also Pin Lean Lau. Reflections on Intersectionality: Artificial Intelligence in Women's Healthcare – Betwixt Privilege and Oppression 1-25 (at 2) (unpublished manuscript) (on file with author) (the feminist, digitalization and bio law expert Pin Lean Lau cites the existing gender gap and bias in the fields of AI and data science as a substantial contributor to women's negative experience with healthcare, treatment protocols and their rights in health).

[43] María López Belloso, *supra* note 27, at 91.

approach to AI that recognises and challenges such biases is thus necessary for guaranteeing human rights equally to everyone subjected to AI.

## 6. Human rights risks regarding data inaccuracy and bias inherent in migration flow predictions

The human rights assessment and monitoring of the EUMigraTool as developed by ITFLOWS from 2020-2023 showed that these above-mentioned human rights challenges, that have the potential to directly feed into larger geopolitical power dynamics, are, on a technical level, often a result of data inaccuracy and bias. The prediction of mixed migration flows as based on predictions generated by either self-learning (AI) and non-self-learning-based prediction tools. These tools generate different kinds of data and pose different human rights risks regarding bias, inaccuracy, transparency, data protection, and liability structures. The specific elements of each model (whether it uses open data or not; and whether such data is gathered through machine-based learning or human-based learning) are important as they pose different levels of human rights risks for migrants including refugees (recognised and not). For instance, our human rights assessment showed for ITFLOWS showed, that, generally, non-self-learning migration modelling such as agent-based models (ABM) tends to carry fewer risks of bias than AI-based modelling because.

The reason for this is that, for example, agent-based modelling technology allows users to manually define assumptions on the individual level as well as the environment, and which uses these assumptions to generate predictions. A manually developed ABM does not classify as AI because it is not self-learning, and its learning is overseen by humans. In contrary to AI technology,

an ABM relies on humans to seek out data and develop rule sets based on which predictions are made. As ABM rules are explicitly defined, they allow for tracing the specific assumptions based on which the models have been constructed and the potential bias on the predictions based on these assumptions. Moreover, in the case of ABM, the implementation relies on datasets that are publicly available and has a public source code that allows for its (explicitly defined) rules and algorithms are assessed regularly by humans.[44] *AI-based modelling* is a machine-based self-learning system that allows for making large-scale simulations of migration flows. Drawing on historical data, machine learning algorithms can build mathematical models to make predictions about migration without having been explicitly programmed to perform this task.

Nevertheless, it is important to note that like AI, ABM can also be biased and inaccurate, resulting in human rights risks. The human rights assessment at ITFLOWS established that depending on the availability and access, data sets generated by agent-based and AI prediction technology might be biased in terms of gender, sexuality, race, ethnicity, language, education, and age, this bias, in turn, reinforces gender stereotyping and/or contributing to unreliable predictions of the arrival of vulnerable groups such as women, girls and LGBTQI+ persons. In line with the proposed EU AI Act, the ITFLOWS findings show that AI-based migration flows modelling is more likely to be assessed as high-risk because it is prone to: 1) algorithmic bias and stereotyping in terms of gender, sexuality, race, ethnicity etc. that is difficult to detect and mitigate and that poses human rights risks to migrants, including refugees (recognised and not); the violation of data protection and confidentiality, for example, in cases where Twitter and Facebook data are used to trace people

[44] ABM allows for the simulation of peoples' decisions and how these decisions impact migration flows. These models allow for the consideration of each user as an individual or agent and of each agent's characteristics, goals and other factors that influence their mobility behaviour. ABMs of migration flows are particularly useful when covering very specific and smaller geographical areas.

and/or extract their attitudes, potentially jeopardising the principles of lawfulness, fairness, and transparency as set by the GDPR.[45] In what follows, we will untangle in more detail the human rights risks of AI and agent-based prediction technology.

The reports commissioned by the European Commission in preparation for the EU AI Act[46] state that to adequately grasp migration flows using migration prediction technologies is difficult as migration is an uncertain process with forced or asylum-related migration featuring the highest uncertainty (European Commission. Then migration drivers are diverse and multidimensional and migratory journeys fragmented.[47] Moreover, data on migration contain uncertainty, which makes accurate predictions difficult – particularly in the subfield of asylum.[48] Over the last few years, the European Union and European governments have considerable invested in the improvement of migration prediction accuracy (i.e. Eurostat, the European Asylum Support Office (EASO, the European Union Agency for Asylum), the European Border and Coast Guard Agency (Frontex), the European Commission's Knowledge Centre on Migration and Demography) but, as Marcello

[45] Regulation (EU) 2016/679 of the European Parliament and of the Council of 27 April 2016 on the protection of natural persons with regard to the processing of personal data and on the free movement of such data, and repealing Directive 95/46/EC (General Data Protection Regulation), L 119/1 O.J. (2016).

[46] Ecorys, Feasibility study on a forecasting and early warning tool for migration based on artificial intelligence technology (November 2020) https://op.europa.eu/lv/publication-detail/-/publication/946b0bc7-7006-11eb-9ac9-01aa75ed71a1/language-lv/format-PDF/source-search (last visited July 4, 2023). Final Report, Frontex, Artificial Intelligence-Based Capabilities for the European Border and Coast Guard. (March 17, 2021), https://frontex.europa.eu/assets/Publications/Research/Frontex_AI_Research_Study_2020_final_report.pdf (last visited July 4, 2023)

[47] See Marcello Carammia, Stefano Maria Iacus, and Teddy Wilkin. "Forecasting asylum-related migration flows with machine learning and data at scale." *Scientific Reports* 12.1 (2022): 1457. See also Policy Brief, ITFLOWS, MULTIDIMENSIONAL DRIVERS AND FRAGMENTED JOURNEYS: THE CHALLENGE FOR THE EU OF EXTERNAL PARTNERSHIPS ON MIGRATION (Oct. 2, 2023), https://www.itflows.eu/documents/policy-brief-1/ (last visited Oct. 11, 2023)

[48] See Marcello Carammia, Stefano Maria Iacus, and Teddy Wilki, supra note 47. See further Madeleine Forster, "Refugee protection in the artificial intelligence era." *A test case for rights'(Chatham House, September, 2022), https://www. chathamhouse. org/sites/default/files/2022-09/2022-09-07-refugee-protection-artificial-intelligence-era-forster. Pdf)* (last visited Nov. 16, 2023). See also Diana Suleimenova and Derek Groen. "How policy decisions affect refugee journeys in South Sudan: a study using automated ensemble simulations." (2020), https://bura.brunel.ac.uk/bitstream/2438/19675/4/FullText.pdf (last visited Nov. 17, 2023).

Carammia, Stefano Iacus and Teddy Wilki caution, data collection remains limited in terms of frequency, definitions, coverage, accuracy, timeliness, and quality insurance.[49] For instance, the different terminology that various international bodies (e.g. UNHCR and Eurostat) use for migrants, including refugees and the confusion on whether non-recognised refugees and/or undocumented migrants fall within the category of migrants in data as well as the lack of a uniform understanding of the definitions, in particular recent interpretations by international bodies (e.g. ECtHR in Hirsi Jamaa case), can lead to inaccurate and unreliable data.[50] This is further exacerbated by the fragmentation that often exists between computing experts working on creating such technological tools and social scientists working on the definitional differences.

Consequently, migration flow predictions are currently based on imperfect and inaccurate data. For instance, the absence of historical data and accurate and infrequently updated national datasets for mixed migration in combination with the many unpredictable drivers of migration (e.g. Ukraine) renders an accurate prediction difficult.[51] Moreover, missing data on a particular group of marginalised people (e.g. children or LGBTQI+ people) can result in distorted migration flow predictions and bias. For instance, the lack of accurate prediction data regarding gender and sexuality bears the risk that it reinforces gender stereotyping and/or contributes to unreliable predictions of the arrival of vulnerable groups such as women, girls and LGBTQI+ persons. For instance, asylum data that show the number of claims granted/dismissed on grounds of gender-

[49] See Marcello Carammia, Stefano Maria Iacus, and Teddy Wilki, supra note 47, at 2.
[50] See Jørgen Carling, "The phrase 'refugees and migrants' undermines analysis, policy and protection." *Int Migr* 61.3 (2023): 399-403.
[51] See also Report, ITFLOWS, "Analysis on migration drivers and trajectories along the Eastern Mediterranean Route (SouthCentral Asia & Middle East); Central and Western Mediterranean Routes and the Western Africa Route (North, West, and the Horn of Africa), and the Atlantic Route (South-Central America)" (Nov. 30, 2021), https://www.itflows.eu/wp-content/uploads/2022/06/20.-D3.2-ITFLOWS.pdf (last visited Nov. 16, 2023).

based persecution are by and large absent. Consequently, women tend to be inaccurately reflected in data predicting movements, creating a gender bias in policy decisions and outcomes across a whole spectrum of civil, social, and economic rights. This could further result in inadequate emergency preparedness for all forcefully displaced people but particularly for already vulnerable groups such as women, LGBTQI+ persons and minors.

Data inaccuracy can also be a result of ethnic, racial, and gender bias. Migration flows prediction technology often relies on pre-established patterns of past and present behavior created by Big Data that was exerted from social media such as Twitter and Facebook and/or Google trends. This technology has the potential to perpetuate or even exacerbate forms of structural discrimination because the data often reflects a 'racial' and 'ethnic' bias or contribute to stereotyping.[52] For instance, a report by the Office of the UN High Commissioner for Human Rights[53] notes that AI surveillance operations tend to disproportionally monitor minority and marginalized communities, that can fuel racial and ethnic stereotypes. Particularly, predictive technologies used for policing and the administration of justice have shown to adapt strategies of racial profiling. As the former UN Special Rapporteur Tendayi Achiume points out in her 2020 report entitled "Racial discrimination and emerging digital technologies: a human rights analysis", any technology must be considered within the political, economic, and social context within which it was developed and the kind of data that have been used.[54] Consequently, technology as such is never neutral nor

[52] Madeleine Forster, *supra* note 48.

[53] Report, Office of the UN High Commissioner for Human Rights, A/HRC/48/31: The right to privacy in the digital age: Report of the United Nations High Commissioner for Human Rights (Sept. 15, 2021), (https://www.ohchr.org/en/documents/thematic-reports/ahrc4831-right-privacy-digital-age-report-united-nations-high (last visited Nov. 17, 2023)

[54] Report, E. Tendayi Achiume, RACIAL DISCRIMINATION AND EMERGING DIGITAL TECHNOLOGIES: A HUMAN RIGHTS ANALYSIS REPORT OF THE SPECIAL RAPPORTEUR ON CONTEMPORARY FORMS OF RACISM, RACIAL DISCRIMINATION, XENOPHOBIA AND RELATED INTOLERANCE (June 18, 2020),

objective, but reflects the values and interests of those who design and use it.[55] Racial, ethnic and gender biases in automated decision-making in the immigration context by means of facial recognition or language detectors, for instance, is widely known. In this sense, the use of both, AI and ABM technology, can severely jeopardize people's rights to equality and non-discrimination.

## 7. Migration Flows Predictions and the Question of Liability

The use of AI technology and migration prediction tools that have predefined assumptions, such as agent-based models, for the prediction of migration, also raises questions around liability. The possibility for individuals to seek redress for damages is 'a key element of the rule of law' safeguarding the protection of fundamental rights. In addition to being a key principle of constitutional law, the principle of liability is a fundamental principle of international law.[56] In particular, AI systems should neither cause nor exacerbate harm or otherwise adversely affect human beings.[57] It is recognised that ‘’mechanisms [must] be put in place to ensure responsibility

https://promiseinstitute.law.ucla.edu/wp-content/uploads/2022/04/A_HRC_44_57-Racial-Discrimination-and-Emerging-Digital-Technologies.pdf (last visited Sept. 8, 2023)

[55] See Cathy O'Neil, *Weapons of Math Destruction: How Big Data Increases Inequality and Threatens Democracy.* Penguin: New York, (2016) (arguing that algorithms can be weapons of mass destruction because of opacity, scale and damage). See also Safiya Noble, *Algorithms of Oppression: How Search Engines Reinforce Racism*. New York: New York University Press (2018) (arguing that algorithms are never neutral, but they can reinforce, due to their bias, racist and sexist beliefs that contributes to ongoing processes of marginalization and differentiation). See also Ruha Benjamin, *Race After Technology*. Polity Press: Cambridge, United Kingdom, (2019) (arguing that algorithms that get normalized in society and considered neutral and fair are steeped with systemic biases that produce inequalities).

[56] Andrea Biondi, The Right to Damages in European Law, Wolters Kluwer, 2009; J. Wakefield, Judicial Protection Through the Use of Article 288(2) EC (The Hague 2002), p. 2.

[57] European Commission, High-Level Expert Group on Artificial Intelligence of the European Union, "Ethics Guidelines for Trustworthy AI" (April 8, 2019), https://ec.europa.eu/digital-single-market/en/news/ethics-guidelines-trustworthy-ai (last visited No. 16, 2023) and European Commission "Assessment List for Trustworthy Artificial Intelligence (ALTAI for self-assessment" (July 17, 2020), https://digital-strategy.ec.europa.eu/en/library/assessment-list-trustworthy-artificial-intelligence-altai-self-assessment (last visited Nov. 16, 2023).

and accountability for AI systems and their outcomes, both before and after their development, deployment and use."[58] Such discussions should also take place through an intersectionality prism as women, girls and LGBTQI+ people tend to find themselves in a position where it is difficult for them to report incidences of human rights abuse that are the result of migration flow predictions (e.g. sex trafficking and gender-based and sexual violence). Besides, private entities are often entrusted to design and develop the technology that is subsequently used by a different actor, further perplexing the mosaic of liability.

If the wrongdoing that causes harm is attributable to a state actor, then we may explore liability and avenues of redress based on EU public law. The European Court of Justice (ECJ) has developed a general principle of state responsibility for non-compliance with EU law.[59] State liability derives from the fact that EU Member States are responsible for the creation and above all for the implementation and enforcement of EU law. The enforcement of state liability is carried out by the national courts of the Member States. This avenue of redress would, for example, be pertinent, if a state misuses predictive analytics in a way that leads to harm. This could happen where a state relies on personal data of people on the move to block specific migratory flows by means of unlawful pushbacks and arbitrary detention at the borders, leading to harm, such as a discriminatory treatment or the penalization of (unrecognized) refugees. As predictive algorithm could also use non-personal data, liability is not attached to data protection law, as long as there is any other legal regime under which a harm could be assessed (for instance arbitrary detention).

[58] European Commission (2019), *supra* note 51; and European Commission (2020), *supra* note 51.
[59] Commentaire de CJCE, 19 novembre 1991, Andrea Francovich et Danila Bonifaci e.a. c/ Italie, aff. jtes C-6 et 9/90, comm. n° 39, conjoint avec commentaire de CJCE, 5 mars 1996, Brasserie du Pêcheur (c/ Allemagne et The Queen c/ Secretary of State for Transport, ex parte Factortame e.a.), aff. jtes C-46 et 48/93, comm. n° 50, et avec commentaire de CJCE, 30 septembre 2003, Köbler c/ Autriche, aff. C-224/01, comm n° 69, p. 202-211 in Michaël Karpenschif et Cyril Nourissat (dir.).

Where the wrongdoing is attributable to EU agencies or institutions, an individual could find redress by bringing an action for damages.[60] In formal terms, the action for damages must be brought either against the EU as a whole (represented by one or more of the institutions) and all EU bodies and agencies (e.g. Frontex). There is an option for joint liability of the EU and its Member States. This option would be pertinent where an EU agency misuses predictive analytics in a way that causes harm to (unrecognised) refugees, such as by aiding state border authorities to block specific flows by means of unlawful pushbacks or disproportionate detention. EU public liability could be an avenue for redress if predictive analytics are misused by an EU agency (e.g. Frontex) in a manner leading to a breach of EU law, if the act classifies as a breach of law and all eligibility requirements are met.[61]

So, the broad scope of this tool in theory offers a potential for redress. However, when looking at the eligibility rules, finding redress through this avenue is not straightforward neither reliable. The accountability of the EU (and its bodies) before courts is a difficult topic. These rules are infamously unclear. Their interpretation is even more complicated, inconsistent and often political. As a result, the bar for success is set extremely high with very few applicants being granted compensation. EU liability in the current format of action for damages and under its current strict procedural conditions, does not provide a suitable tool to remedy breaches of fundamental human

[60] According to Article 340 TFEU, 'in the case of non-contractual liability, the Union shall, in accordance with the general principles common to the laws of the Member States, make good any damage caused by its institutions or by its servants in the performance of their duties.' This provision should be read in light of Article 41(3) of the Charter of Fundamental Rights, 'Every person has the right to have the Union make good any damage caused by its institutions or by its servants in the performance of their duties, in accordance with the general principles common to the laws of the Member States.'

[61] Melanie Fink, "The action for damages as a fundamental rights remedy: Holding Frontex liable." *German Law Journal* 21.3 (2020): 532-548.

rights at the border (Mitsilegas (2022) ELJ 16). This became all the more clear in the recent dismissed action for damages brought against FRONTEX by a number of refugees regarding unlawful deportations which FRONTEX officials allegedly assisted.[62] The Court of First Instance dismissed the claim for FRONTEX's liability in light of a strict interpretation of causality rules, that was criticised by academic commentary as accountability for wrongdoing appears to be left hanging.[63]

As far as human rights are concerned, liability is connected to human rights violations, as a result of a wrongdoing committed by a state actor or entity controlled by a state, as the actor liable for what 'went wrong'. After exhausting all domestic means of judicial remedy and, as a last resort, bringing a case before the European Court of Human Rights could also be an avenue for redress. This is all the more pertinent and could prove useful in the context of migration technologies as according to Vavoula the ECtHR has developed a powerful framework of protection for the right to privacy.[64] The European Court of Human Rights has recognized that publicly available or perceptible information may well fall within the scope of the right to privacy, in particular when personal data are systematically or permanently recorded.[65] Therefore, this could be a powerful avenue for finding liability, if all conditions are, however, met. The challenge would of course be the fact that predictive tools might not use personal data or not identify persons, in which case Article 8 ECHR cannot be engaged.

[62] Case C  WS and Others v FRONTEX
[63] Melanie Fink and Jorrit J Rijpma, 'Responsibility in Joint Returns after WS and Others v Frontex: Letting the Active By-Stander Off the Hook' (September, 2023), http://eulawanalysis.blogspot.com/2023/09/responsibility-in-joint-returns-after.html (last visited Nov. 1, 2023)
[64] Niovi Vavoula, Immigration and Privacy in the Law of the European Union (BRILL, 2022) ch 1.
[65] European Court of Human Rights, Rotaru v. Romania, para. 43, judgment of 4 May 2000; Peck v. the United Kingdom, judgment of 28 January 2003, para. 59; Perry v. the United Kingdom, judgment of 17 July 2003, para. 38; and Vukota-Bojić v. Switzerland, judgment of 18 January 2017, para. 55.

Although criminal law liability falls beyond the scope of discussion of this paper, it is worth exploring some potential synergies between criminal law and knowledge offered by predictive analytics, especially where there is evidence of their use. Knowledge of imminent arrivals of people, offered by predictions and corroborated by real-time evidence, during conditions that require assistance that was not provided, might be damning when discussing duty to rescue. Predictions coupled with evidence could engage their duty to save lives under the law of the sea.[66] As far as pushbacks are concerned, it has been suggested by Mitsilegas and Guild that an omission to save migrants including refugees while in danger at sea in sovereign waters must be criminalised,[67] as a breach of the duty to assist under article 98 of UNCLOS.

Furthermore, if the wrongdoing that causes harm is attributable to an individual or private entity, then we may explore avenues of redress based on tort law and in particular rules of civil liability. Although, the article does not fall within the scope of private/civil law due to its focus on human rights, a brief consideration of civil (non-contractual) liability is useful to complement the discussion and showcase the intricate landscape of liability. Civil liability is completely different to liability of public administration of the EU or the Member States. These are independently assessed but they might co-exist. Civil liability might arise from wrongs committed by private parties such as manufacturers or providers of AI products. Individuals harmed by AI systems may be able to seek compensation for damages caused by such *private* wrongs, under two new Directives proposed by the European Commission in September 2022, regarding civil liability for

[66] Article 98 of the UN Convention on the Law of the Sea (UNCLOS).
[67] Elsbeth Guild & Valsamis Mitsilegas, The Duty of the EU to Criminalise Failure to Rescue at Sea (Dec. 23, 2022), The Duty of the EU to Criminalise Failure to Rescue at Sea – EU Immigration and Asylum Law and Policy (eumigrationlawblog.eu) (last visited Nov. 16, 2023)

AI related torts or wrongs. In conjunction with the proposed EU AI Act (”EUAIA”), the proposed Directive on adapting non-contractual civil liability rules to artificial intelligence (”AI Liability Directive”) and the proposal for the extension of existing EU product liability rules (”Updated Product Liability Directive”) would form the legal framework for regulating AI in the EU and new questions of liability.[68] The proposed legislation confirm that AI systems and AI-enabled goods and services fall within the definition of products for the purpose of applying this legislation. If defective AI causes damage, compensation is available without the injured person having to prove the manufacturer's fault. Still, the framework is not clear enough about the exact parameters of redress and there is an open debate as to how liability questions in this unchartered territory must be answered.[69]

All in all, the authors of this article, support the statement made by the UN Office of the High Commissioner for Human Rights (OHCHR), saying: if states are going to rely on the private sector to deliver public goods or services, they have to be able to oversee such processes and demand accuracy and transparency around human rights risks. If not satisfied that the risks can be mitigated, states should not use private contractors to deliver public goods or services”. Therefore, the landscape of liability in relation to harm attributed to a wrongdoing appears to be complicated and quite often unchartered.

## 8. Conclusions and policy recommendations

[68] Proposal for a DIRECTIVE OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL on adapting non-contractual civil liability rules to artificial intelligence (AI Liability Directive) (Sept. 28, 2022), https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52022PC0496&from=EN (last visited Nov. 16, 2023)
[69] See Johanna Chamberlain, "The risk-based approach of the European Union's proposed artificial intelligence regulation: Some comments from a tort law perspective." *European Journal of Risk Regulation* 14.1 (2023): 1-13.

In this article we have discussed the highly contentious political, policy, and legal context within which the development and use of migration flows technology needs to be considered. We argue that migration flows prediction technologies need to be considered against the backdrop of the EU's efforts to externalize borders (New Pact on Migration and Asylum), heighten the securitization and surveillance of EU external borders (Frontex) and the collecting and sharing of migrants' personal data across and within EU Member States (Eurodac) (Vavoula 2023) as well as in consideration of the currently proposed EU AI Act. While the latter classifies technologies that can predict migration movements as high-risk, it does not include the prohibition of technology to survey migrants, including refugees, by border security agencies. This creates a policy gap within which the violation of the human rights guarantees of migrants, including refugees, can take place. In conclusion, we would like to offer some recommendations, which emanate from our discussion above as well as from the human rights and ethical monitoring we conducted for ITFLOWS, on how to establish human rights guarantees for people on the when using migration flow prediction technology.[70]

ACCESS AND MONITORING: Migration flow prediction data generated by agent-based and AI prediction tools are never to be used for purposes of securitisation, externalization of borders, and surveillance of migrant purposes. Migration flows prediction technology should never be used when it threatens to jeopardises migrants, including refugees (particularly non-recognised

[70] A more comprehensive list of policy challenges and findings can be accessed via the ITFLOWS policy brief "Migration Flows Prediction Tools and Asylum Policy Commitments in Alignment with Human Rights" (Oct. 2, 2023), https://www.itflows.eu/wp-content/uploads/2022/06/ITFLOWS-Policy-Brief-5-D8.1.pdf (last visited Oct. 11, October 2023).

refugees) right to not be sent back to a country where their safety is at risk (non-refoulement), when the predictions run the risk to serve conservative migration policies and politics geared towards the criminalisation of all migrants through border monitoring and surveillance, and when the data is at risk for being used to promote hate speech and stereotypes that are detrimental to the safety of migrants, including recognised and unrecognised refugees, and racialised people already living within the EU. Indeed, the authorisation of the use of AI and agent-based prediction tools can only be granted if assurances are offered that there is no substantial risk of misuse, including the facilitation border violence, surveillance, and policies of externalisation. To prevent and monitor misuse, we recommend the following:

1) **Access and monitoring:** An independent monitoring committee shall be put in place and be given access to the migration flows prediction tool and the data for them to decide whether the end user shall be granted permission to use the tool and for how long they can access the data. These data access policies must also follow existing EU-level data protection laws, such as the GDPR and the Data Governance Act. Moreover, the nature, quality and type of data must be monitored by impartial external experts of an inter-disciplinary nature so as not to feed into stereotyping and bias.
2) **The use of prediction tools must be restricted to civil society, where possible:** In view of the high risks of such tools carry for the situation of migrants, including refugees, states and Frontex must not have direct access to the data or the outcomes and predictions of the technological tools.
3) **Proportionality**: End-users' roles and privileges must be clearly defined for authorisation purposes. Applying the principle of proportionality, end-users shall only have access to the

data as far as and to the extent to which the data is necessary for the specific humanitarian purposes.

CONDUCT A HUMAN RIGHTS IMPACT ASSESSMENT: The use of data produced by migration flow prediction tools must never be prioritized over human rights. Human rights risks must be constantly monitored. To do so, we recommend that end-users conduct a thorough migration human rights impact assessment prediction of the migration flows prediction technology from the inception of the activity and during all its phases to identify and address potential security risks and risks for misuse. We further recommend a human rights impact assessment from a gender and child-rights perspective. This is to say that end users should ensure that a human rights impact assessment, with a gender equality and child rights perspective, is conducted before the introduction of artificial intelligence and automated decision-making systems in the field of migration and asylum. We call for a halt of any specific migration flow prediction tool in case of serious unmitigated risks. This is essential in cases where the tool poses serious risks to human and fundamental rights and no measures to mitigate effectively such serious risks can be devised. The effectiveness of any such mitigating measure must be judged externally by independent experts. The migration flows prediction tool shall not be used until adequate safeguards, including legislative protections, are in place. Adequate measures and safeguards must be developed regarding the protection of particularly vulnerable migrant groups. We argue that the prevention of harm to privacy necessitates adequate data governance that covers the quality and integrity of the data used, its relevance considering the domain in which the prediction tool will be deployed, its access protocols, and the capability to process data in a manner that protects privacy.

MINIMIZE BIAS, INACCURACIES AND DISTORTIONS IN MIGRATION FLOWS PREDICTION DATA: The accuracy and quality of the data is important and should comply with the proposed EU AI Act and accuracy thresholds or benchmarks must be determined. We recommend that the data must be drawn from reliable sources and reflect the targeted population in an accurate way. While it is impossible to eliminate uncertainties from the predictions, monitoring and evaluation mechanisms must be established and the algorithms, where possible, must be subject to regular risk assessment, third party audits, and independent oversight. In addition, end-users must be made aware of the bias, limitations, and potential shortcomings of the data sets generated by agent-based and AI migration flow prediction tools as part of an extensive training on the tool. Moreover, end-users should not base their decisions solely on data produced by migration flow prediction tools but should always evaluate the data in close consultation with independent experts. A lot of emphasis must be placed on ensuring that the creators of such predictive tools have a deep understanding of migration issues and are familiar with the different bias and risks. It is thus important to ensure that the agent-based and AI models are fully trained in and based on the specific intersectionality requirements of different refugee/migrant groups to limit as much as possible bias influencing the outcome. We further recommend that definitions of crucial terms used to train the migration flow prediction tool should be streamlined to avoid distortions. EUROSTAT and other data handling staff must be trained urgently to start following the same interpretations of the terms ‘migrant’ and ‘refugee’ in accordance with current law. We suggest that all creators of migration predicting technology must be trained on the current legal interpretations of each category and the definitional gaps. Lastly, we recommend creating an AI regulatory sandbox where end-users can establish a controlled environment for the development, testing, validation, and deployment of innovative AI systems.

On a more general level, we recommend opting for the less risky tools with manually defined rules which allows for better oversight and monitoring than AI. While bias und data inaccuracy also occurs with tools that have manually defined rules (such as ABMs), due to human bias and inaccuracy, machine learning AI tools, with its self-learning capacity and where human oversight is by and large absent, bear an even higher risk of data error and bias and thus human rights violations.

ESTABLISH A COMPLIANCE FRAMEWORK AND LIABILITY STRUCTURES: A human rights compliance framework and a compliance tool shall be designed. Their aim will be to assist providers and end users in complying with the requirements laid down by the human rights impact assessment. To strengthen such compliance framework, monitoring mechanisms, where an independent monitoring committee oversees and records when, where, how, by whom and for what purpose the migration flows prediction data was accessed shall be put into place. In addition, a clear liability structure for the misuse of the migration flow prediction data shall be established. EU public liability could be an avenue for redress if predictive analytics are misused by an EU agency (e.g. Frontex) and if the act classifies as a breach of law. In formal terms, the action for damages could be brought either against the EU as a whole (represented by one or more of the institutions) and all EU bodies and agencies (e.g. Frontex). There is also an option for joint liability of the EU and its Member States. Since most EU law is either implemented through national legislation (and then applied by national administrations) or directly applied by national administrations, the wrongful implementation and application of otherwise legal EU action may be ascribed exclusively to the Member States, making them liable for public torts. However, if

damage is caused jointly by an illegal action of the EU and one or several of its Member States, shared (concurrent) liability of both may be established. At a technical level, liability can be organised to some extent by providing software tools with appropriate distribution licenses. For instance, the BSD 3-clause license explicitly exempts software developers from liability through misuse of their work, placing it on the user or adopter of the tools.