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Artificial Intelligence in Migration: From Forecasting Displacements to Automating Asylum Adjudication

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ABSTRACT

The application of Artificial Intelligence (AI) in migration and asylum processes is revolutionizing how governments and humanitarian organizations address the challenges of displacement and asylum. The objective of this systematic literature review is to explore the existing and emerging uses of AI technologies in predicting migration flows and asylum adjudication. Our review also examines the benefits and risks of AI integration, highlighting the importance of ethical considerations and regulatory frameworks to ensure positive outcomes for displaced individuals.

Keywords

Artificial Intelligence, Migration, Asylum Adjudication, Machine Learning, Predictive Analytics, AI ethics, Regulatory Frameworks, Systems Literature Review (SLR)

1. INTRODUCTION

The use of Artificial Intelligence (AI) in migration and asylum processes is increasing across Europe, employing technologies such as machine learning, deep learning, and neural networks. These systems improve decision-making speed, efficiency, and reliability by automating tasks. AI can assist or replace human judgment, particularly in data gathering, analysis, and decision-making in asylum processing [17]. Our primary focus is to review current AI applications, specifically forecasting refugee migration trends and automated decision-making systems for asylum adjudication. These represent two key applications of AI across different stages of the broader migration process. By examining them, we highlight how various AI models support decision-making at multiple points along the migration journey. The systematic literature review also emphasizes their limitations, real-world application contexts, and provides comparative insights. The remainder of the paper is structured as follows. Section II reviews various AI models (state-of-the-art) for forecasting migration trends, outcome prediction, and asylum adjudication. Section III critically evaluates the range of predictive models applied at different stages of the asylum process. Section IV discusses the key challenges associated with AI models. The conclusion of the paper is presented in Section V.

2. STATE-OF-THE-ART MODELS

Artificial intelligence (AI) models are increasingly employed to forecast asylum and migration flows [4], offering critical insights to inform policy development and humanitarian planning. Through the analysis of large-scale and complex datasets, AI facilitates the prediction of displacement patterns, thereby enhancing preparedness and optimizing the allocation of resources. Various methodological approaches have been developed, including Bayesian hierarchical models, adaptive machine learning algorithms, time series models, agent-based models, econometric models, gravity and radiation models, integrated multi-regional frameworks, and scenario-based simulations. These various models represent a significant advancement in the field, contributing to improved efficiency, predictive accuracy, and potentially greater equity in managing migration and asylum systems. This section outlines the principal AI methodologies applied in forecasting asylum-related movements.

2.1 Forecasting and Predicting Models for Migration Flows

2.1.1 Time Series Models. Time series models analyze data sequentially to identify underlying temporal patterns such as trends and seasonality. These models employ statistical techniques to detect correlations over time, enabling forecasts based on historical dynamics. In the context of migration studies, time series models play a pivotal role in predicting refugee movements, particularly in response to political, social, and economic factors.

One notable application involves the integration of Google Trends (GT) data into migration forecasting. GT captures internet search behavior, offering insights into asylum seekers' potential destination preferences. This approach is grounded in the premise that increased search frequency for a country may reflect heightened interest in migrating there. Google Trends, as an openly accessible platform, aggregates search data across various languages and topics [14], providing a real-time proxy for migration intentions. Studies have demonstrated that GT data enhances the predictive performance of simple gravity models [22], especially when using pooled regressions. However, its utility diminishes in more complex models incorporating autoregressive (AR) or fixed-effects (FE) adjustments. Despite these limitations, GT data can significantly enrich migration forecasts in regions with high internet penetration by linking digital behavior to physical movement patterns [14].

The Autoregressive Integrated Moving Average (ARIMA) model is another widely used time series method for forecasting asylum-related migration [15]. These models use past values and lagged error terms to predict future trends. ARIMA is especially effective for modeling linear, non-stationary time series data and is commonly used in early warning systems. However, data irregularities or abrupt shocks [15], such as sudden conflicts or policy changes, can compromise its predictive accuracy. It is a notable limitation, given that forced migration is inherently susceptible to external disruptions. To address these challenges, exponential smoothing techniques are often employed as an alternative.
These models assign decreasing weights to older observations, allowing greater responsiveness to recent changes. The feature is particularly advantageous in contexts where migration dynamics are rapidly evolving. ARIMA and exponential smoothing methods remain essential for data-driven forecasting frameworks to improve anticipatory responses to migration and asylum trends. GT and ARIMA models have become foundational components in migration early warning systems.

2.1.2 Adaptive Machine Learning Algorithms. Adaptive or deep learning models are increasingly surpassing traditional machine learning techniques, especially in complex classification tasks characterized by dynamic data environments. These models effectively generate real-time insights from large volumes of unstructured data. Central to adaptive approaches is the use of artificial neural networks, which mimic the architecture of the human brain by organizing computational nodes ("neurons") into multiple interconnected layers. Each layer processes inputs and passes them forward, progressively enhancing the model's capacity to recognize intricate patterns and adapt to evolving data landscapes.
A prominent application of such methods is national press monitoring using Natural Language Processing (NLP) as an early warning tool for forecasting asylum application flows. Neural network-based models like the Press Monitoring Multilayer Perceptron (PM-MLP) are trained on large datasets sourced from EUROSTAT (asylum applications), GDELT (global news data), and ALLNEWS (press articles and essays). The PM-MLP integrates a Latent Dirichlet Allocation (LDA) model trained on textual data to classify themes within media content. This pipeline functions within a sliding window framework using one input layer, three hidden layers, and one output layer, and incorporates Principal Component Analysis (PCA) to reduce dimensionality in high-volume datasets. The model is trained using data from the six months preceding each forecast [11].
While the PM-MLP offers substantial predictive capabilities, particularly in identifying trends derived from national media narratives, its scope is limited to bilateral asylum application cases, reducing generalizability. Comparative assessments show that the Dynamic Elastic Net (DynENet) model outperforms PM-MLP in 29 out of 33 prediction cases (refer to Figure 1) due to its broader adaptability [11].
The DynENet model represents a significant advance in migration forecasting. The model developed by the European Union Agency for Asylum (EUAA), the European Commission's Joint Research Centre, and the University of Catania, DynENet fuses traditional migration statistics with data on conflict events and internet search behavior to generate short-term forecasts of asylum flows in the EU [6]. This integrative model addresses limitations in existing data collection systems, such as coverage, timeliness, and accuracy, by leveraging digital data sources including mobile phone records, online activity, and social networks [23]. By incorporating conflict triggers and real-time digital behavior from countries

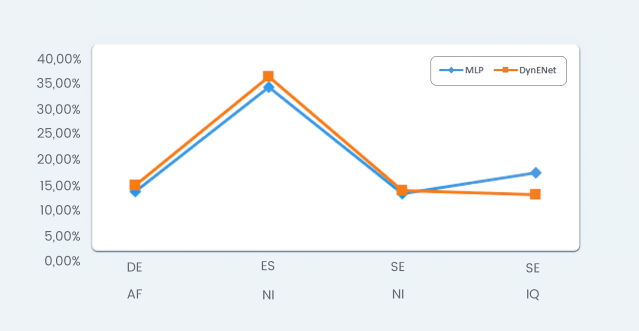

Fig. 1. Comparison of predicted outputs generated by PM-MLP and the DynENet model [11].

of origin, DynENet can forecast migration surges up to four weeks in advance [10].
A comparative assessment of key forecasting models reveals important distinctions in methodology and application. Google Trends provides immediate insights into migration intentions by analyzing internet search behavior, though it offers limited forecasting depth. ARIMA models utilize historical time-series data for trend analysis but lack robustness in the face of sudden shocks and require data stationarity. The PM-MLP model excels in identifying migration trends through textual data and NLP but is constrained by media bias and limited scalability. DynENet, in contrast, achieves superior predictive performance by integrating heterogeneous datasets and adapting to evolving patterns, making it especially suitable for short and medium-term migration forecasting. However, the complexity of DynENet, along with its reliance on high-quality, multi-dimensional data inputs, presents challenges in implementation and scalability, distinguishing it from more accessible models such as Google Trends or ARIMA.

2.2 AI models for Asylum Adjudication

The degree of digitalization in migration and asylum systems varies significantly across countries. While some states have embraced technological advancements in migration management, there remains a general reluctance, particularly in Europe, to automate asylum determinations [20]. Even in technologically advanced countries such as the United Kingdom and Norway, asylum decision-making processes are not subject to automation. For instance, the UK Home Office previously employed an AI-driven tool to triage visa applicants but later discontinued it due to concerns about algorithmic bias. Despite this cautious stance, the UK's mounting asylum backlog, exceeding 215,000 cases in 2023, has prompted renewed interest in AI-based solutions [16]. It was notably demonstrated during a government-supported hackathon in May 2023 that explored the potential of AI in alleviating administrative bottlenecks.
In contrast, the United States has made more explicit strides in using AI for adjudicatory purposes. Another study analyzed nearly 500,000 asylum cases and achieved 82% predictive accuracy using random forest models [5]. This finding underscores the potential utility of AI in identifying patterns within asylum decision-making, although such models also raise ethical and legal concerns regarding fairness, transparency, and accountability.
Current research and development in AI for asylum adjudication can be broadly categorized into two main technological approaches: Deep Neural Networks (DNNs) and Natural Language Processing (NLP) tools. Within this ecosystem, several specific

models and systems have been proposed and, in some cases, piloted. These include Explainable AI frameworks such as XAIfair, Case-Based Reasoning (CBR) models, machine learning classifiers, predictive analytics systems, biometric matching tools, and automated fraud detection mechanisms. NLP applications are being developed to analyze textual evidence, interview transcripts, and legal documents to assess asylum claims. While these approaches can enhance efficiency, consistency, and transparency in asylum adjudication, their deployment must be approached cautiously to ensure alignment with legal safeguards and human rights principles.

(1) The Data Analysis for Asylum Legal Landscaping (DATA4ALL) initiative [12] represents a significant advancement in the application of data science to enhance fairness in asylum adjudication [2]. Focusing primarily on the Nordic countries, the project analyzed approximately 8,000 asylum case summaries from Denmark (2003–2020) to identify systemic patterns and potential biases in decision-making. Key applicant characteristics—such as nationality, religion, ethnicity, and political or military affiliations—were extracted using Natural Language Processing (NLP) and machine learning (ML) techniques. Classification models included Decision Trees, Random Forests, and Neural Networks. The Random Forest model achieved an 82% prediction accuracy, with country of origin and religion emerging as the most influential features. To ensure fairness and reliability, the dataset was balanced to mitigate class imbalance and improve predictive performance [2].

A related study analyzed over 17,300 cases from the Danish Refugee Appeals Board (1995–2021), highlighting the significance of credibility assessments and country of origin in determining asylum outcomes [21]. Multiple ML classifiers—such as Decision Trees, Logistic Regression, Naive Bayes, Support Vector Machines (SVM), and Random Forest—were trained using balanced data and extensive preprocessing. It included Optical Character Recognition (OCR) to convert scanned documents and Non-negative Matrix Factorization (NMF) to identify 16 relevant topics, including geographic origin and asylum motives such as persecution or religious conversion. These studies demonstrate the utility of ML in revealing patterns and biases in asylum decision-making. However, their generalizability is constrained by the specificity of the datasets and legal contexts in which they are applied.

(2) The Deep Neural Networks and Natural Language Processing (DNN-NLP) model combines deep neural networks (DNN) and natural language processing (NLP) to predict asylum decision outcomes in Denmark [18]. Utilizing a dataset of 15,515 cases from the Danish Refugee Appeals Board (1995–2021), the model incorporated variables such as country of origin, gender, religion, political involvement, and previous asylum applications. The objective was to enhance the accuracy and consistency of asylum adjudication by framing the task as a multi-class classification problem—grant, rejection, or return for further review. The dataset exhibited considerable class imbalance (83% rejected, 15% granted, and 0.004% returned), addressed through class weighting, over-sampling, and under-sampling techniques. The model architecture centered on a Convolutional Neural Network (CNN) with five processing layers, including embedding and fully connected dense layers. Trained on 80% of the data, the model achieved an F1-score of 0.83184, outperforming baseline models [18]. These findings underscore the need for larger, multilingual datasets and the integration of explainable AI frameworks to enhance model interpretability in legal contexts.

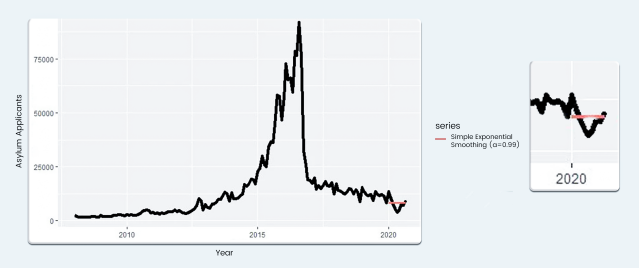

Fig. 2. Monthly asylum applications from 2008 to 2020 in Germany, [15].

While the DNN-NLP model prioritizes predictive performance and automation, the DATA4ALL initiative [18] adopts a broader legal-institutional perspective. Focused on analyzing asylum adjudication in the Nordic region, DATA4ALL organizes structured legal data, such as asylum seekers' origin countries, legal precedents, and policy environments, to identify systemic patterns. Unlike predictive models, DATA4ALL does not aim to forecast outcomes but to increase transparency and support stakeholders, including legal practitioners and policymakers, by mapping the legal frameworks governing asylum decisions. Its goal is to establish an open-source, accessible platform to enhance understanding of institutional and legal dynamics.

DATA4ALL and DNN-NLP represent complementary approaches; one is data-driven and predictive, and the other is structurally legal and exploratory, both aimed at improving the fairness and transparency of asylum adjudication systems.

3. RESULTS AND DISCUSSION

This section critically evaluates the range of predictive models applied at different stages of the asylum process, highlighting their methodological diversity and unique contributions. These models span statistical forecasting, machine learning, unconventional data-driven approaches, natural language processing (NLP), and legal analysis. Classifying these models by analytical framework and application context elucidates their strengths and offers a foundation for evidence-informed policymaking and operational improvements in asylum and migration management.

(1) Statistical Forecasting Models employ classical time-series techniques to identify trends and periodicities in migration data. ARMA, ARIMA, and LSTM models have been assessed for their ability to manage migration flows' inherent volatility and non-linearity [4]. These models demonstrate strong performance in detecting cyclical and seasonal trends and are particularly valuable for long-term strategic planning and short-term crisis response. This is because they explicitly characterize the temporal relationships and recurring patterns throughout time, enabling the capturing of both trends and seasonality over lengthy periods. For example, the black line in Figure 2 traces a sharp rise culminating in a pronounced peak around the 2015–2016 refugee crisis in Germany.

(2) Machine Learning-Enhanced Forecasting Models, such as DynENet, leverage adaptive neural networks capable of updating parameters in response to new data. Integrating diverse inputs—economic indicators, conflict data, and historical appli-

Table 1. Comparison of GT, ARIMA, PM-MLP and DyENet Models

Models for Predicting and Forecasting Migration Flows		Time Series Model		Adaptive Machine Learning Algorithms	
		Google Trends (GT)	**Autoregressive Integrated Moving Multilayer Average (ARIMA)**	**Press Monitoring Multilayer Perceptron (PM-MLP)**	**Dynamic Elastic Net (DynENet)**
	Objective	Forecast migration flows by leveraging real-time search terms that reflect population behavior before actual migration occurs from Google Trends.	Evaluate and model past migration flow data to generate forecasts underlying patterns over time (a classical statistical time series model).	As an early warning system, use NLP techniques in national press articles to predict upcoming trends in asylum application flows.	Predict asylum-related migration flows using a scalable machine-learning approach that balances feature selection and model complexity.
	Data Sources	(1) Google Trends search volume data (2) Historical records of refugee border crossings (3) Socio-political event data	(1) Historical migration flow records (2) Economic indicators (3) Political instability indices	(1) Online national newspapers and media outlets (2) Historical asylum application data (3) Social media feeds (optional)	(1) Large-scale socio-economic datasets (2) Political stability indicators (3) Environmental factors (e.g., climate data)
	Features	(1) Search keywords related to migration and conflict (2) Temporal patterns in search behaviour (3) Geographic origin of searches	(1) Past migration counts (2) Seasonality pattern (3) Economic and political indicators over time	(1) Frequency of migration-related keywords (2) Sentiment scores of relevant articles (3) Topic modelling results	(1) GDP per capita (2) Unemployment rates (3) Conflict intensity measures (4) Climate anomalies
	Methodology	(1) Time series analysis using machine learning models like ARIMA and LSTM (2) Correlation analysis between search trends and border crossing statistics	(1) Comparison among ARIMA, Prophet, VAR, and LSTM models (2) Cross-validation over multiple time frames	(1) Text extraction and preprocessing. Sentiment analysis using tools like Valence Aware Dictionary And sEntiment Reasoner (VADER) or TextBlob. Topic modelling using LDA (2) Regression analysis linking textual features to asylum applications	(1) Dynamic Elastic Net regression combining L1 and L2 regularization (2) Handles time-varying coefficients (3) Incorporates real-time data feeds
	Evaluation Metrics	(1) Mean Absolute Error (MAE) (2) Root Mean Squared Error (RMSE) (3) R-squared (R^2)	(1) Mean Absolute Percentage Error (MAPE) (2) Mean Squared Error (MSE) (3) Akaike Information Criterion (AIC)	(1) F1-Score for classification tasks (2) Area Under the Curve (AUC) (3) Prediction accuracy	(1) R-squared (R^2) (2) Mean Absolute Error (MAE) (3) Predictive R^2 for out-of-sample validation
	Performance	Achieved a significant correlation between search trends and actual border crossings with RMSE reduction compared to baseline models.	LSTM models outperformed traditional statistical models in capturing non-linear patterns, especially during sudden migration surges.	Demonstrated early detection capabilities with high accuracy, predicting increases in asylum applications weeks in advance.	Achieved superior predictive performance compared to standard regression models, effectively handling multicollinearity and overfitting.
	Advantages	(1) Provides real-time predictive capabilities (2) Utilizes readily available data sources (3) Can adapt quickly to emerging trends	(1) Comprehensive assessment across multiple models (2) Identifies the best-suited model for specific contexts (3) Incorporates both linear and non-linear dynamics	(1) Provides proactive insights for policymakers (2) Leverages publicly available data (3) Can adapt to various languages and regions	(1) Efficient with large and complex datasets (2) Automatically selects relevant features (3) Adaptable to changing patterns over time
	Limitations	(1) Subject to noise and volatility in search data (2) It may not capture all factors influencing migration decisions (3) Dependence on Internet access in source countries	(1) Requires extensive historical data for training (2) Complex models may be computationally intensive (3) Potential overfitting in some scenarios	(1) Media bias may affect the results (2) Language nuances and sarcasm can pose challenges (3) Requires continuous data scraping and updating.	(1) Requires careful tuning of regularization parameters (2) Interpretation of results can be complex (3) Dependent on data quality and availability

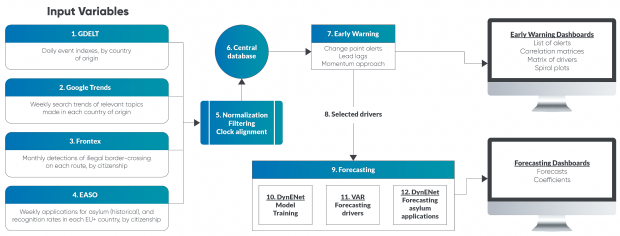

Fig. 3. DynENet early-warning and forecasting pipeline [4].

cation rates—these models excel in environments with rapidly shifting migration dynamics. Such ML models with several adjustable parameters effectively manage fast changing dynamics due to their capacity for adaptive learning, enabling them to re-weight features and identify new nonlinear patterns as the underlying data distribution evolves. Their capacity to detect non-linear relationships and self-improve with additional data makes them robust tools for dynamic policy environments. Figure 3 presents an end-to-end pipeline that uses multiple external data sources to generate early-warning indicators and forecast asylum applications via dashboard outputs, forming the training and forecasting workflow for the DynENet model.

(3) Unconventional Data-Driven Predictive Models highlight innovative uses of alternative data sources. The use of Google Trends to forecast refugee movements exemplifies this approach. These models provide early indicators of migration intent by analyzing public search behavior related to asylum and migration. The prediction serves as a preliminary indication for migration forecasting, since search activity mirrors individuals' intents and planning behaviors weeks or months before the actual migration. Their real-time nature allows for timely interventions and resource planning by governments and humanitarian actors.

(4) Natural Language Processing Models analyze vast text corpora to uncover shifts in discourse that signal changing migration patterns [11]. Tools like PM-MLP and DNN-NLP apply techniques such as Latent Dirichlet Allocation (LDA), tokenization, and embedding layers to extract sentiment and topic structures from media and legal texts. This is useful since it transforms extensive amounts of unstructured language into measurable public opinion, tone, and purpose, which affect policy, perception, and consequences. These models offer prediction capabilities and a nuanced understanding of the public and institutional discourse surrounding asylum, supporting timely and context-sensitive policy formulation.

(5) Legal Analysis Models, notably DATA4ALL, focus on structural legal patterns. Text mining and topic modeling extract insights from asylum case law, legal precedents, and sociopolitical contexts. Legal and policy outcomes are influenced by unexpected occurrences and discretionary judgments, which historical text patterns cannot forecast with any degree of reliability, making them less predictive. While less predictive, these models enhance legal transparency and accountability by mapping how legal environments shape outcomes. They support

Table 2. Comparison of DATA4ALL and DNN-NLP Models

Models		Deep Neural N a
		Data Science for Asylum Legal (DATA4ALL)
	Objective	Analyze and predict outcomes o by examining variations in legal c advanced data science techniques
	Data Sources	(1) Asylum case records and ver (2) Legal texts and precedents. (3) Demographic information and adjudicators
	Features	(1) Applicant nationality and de (2) Legal arguments and citation (3) Adjudicator's past decision p
	Methodology	(1) Text mining and NLP on leg (2) Classification models such Forests and SVMs. (3) Feature importance and varia
	Evaluation Metrics	(1) Accuracy. (2) Precision and Recall. (3) Confusion Matrix.
	Performance	Achieved high accuracy in predi comes, identifying key factors i cisions, and highlighting inconsi cases.
	Advantages	(1) Supports transparency in l making. (2) It helps identify potential bia (3) Assists legal professionals in tion.
	Limitations	(1) Ethical concerns regarding p gal outcome. (2) Potential privacy issues with (3) The model may not capture legal reasoning.

legal practitioners by identifying precedents and forecasting potential rulings, offering practical utility in case preparation and policy evaluation.

The comparative evaluation of these six model categories reveals complementary strengths. Statistical models provide foundational forecasts; machine learning models adapt to dynamic inputs; alternative data-driven approaches offer real-time insight; NLP models analyze complex textual narratives; and legal models systematize jurisprudential knowledge. Collectively, these methodologies enrich the technological landscape of asylum governance, allow-

ing stakeholders to engage more effectively with the multifaceted challenges of global migration. The following section discusses the challenges of AI models.

4. CHALLENGES OF AI MODELS

The European Union and its member states have demonstrated consistent interest in integrating advanced technologies, such as artificial intelligence (AI), automated decision-making, and biometrics, into immigration and border control systems [12]. While these innovations present significant opportunities for improving operational efficiency, their deployment in high-stakes contexts such as migration and asylum processing raises complex technical, legal, and ethical challenges.

Key among these challenges is data quality. AI systems, particularly those used in migration monitoring and asylum adjudication, require large volumes of structured, labeled data to function effectively. However, these datasets are often derived from legacy government systems that may encode historical biases and discriminatory patterns [16, 24]. It is particularly problematic in asylum contexts, where fairness, due process, and the protection of fundamental rights are critical. Bias in the training data could lead to skewed outputs and unfair outcomes, perpetuating systemic injustices even when bias is not intentionally embedded [24].

Moreover, AI models often struggle to adapt to sudden shifts, such as armed conflict, environmental crises, or abrupt policy changes, which frequently characterize [4, 21, 24]. Because many of these systems are trained on historical data, they may fail to capture forced migration's dynamic and unpredictable nature. This limitation undermines the reliability of AI-driven forecasts and challenges the notion of their applicability in volatile political or humanitarian contexts. Language barriers further complicate the use of AI in asylum procedures. Many asylum seekers speak low-resource or underrepresented languages, which current natural language processing (NLP) tools are ill-equipped to handle effectively [6]. Multilingual datasets are limited; including languages with less digital representation is essential for equitable processing.

Additionally, incorporating informal or slang-heavy content from social media as a data source can introduce discursive bias and misinterpretation, especially in languages unfamiliar to data engineers [24]. Transparency and explainability [7] remain persistent concerns in applying AI to migration management [2, 19, 24]. Many systems—particularly those developed by private vendors—operate with limited transparency regarding the algorithms or decision-making processes employed [21, 24]. This opacity restricts oversight and accountability, especially in decisions affecting vulnerable populations. Complex "black box" models [7], such as those based on deep learning, further exacerbate these challenges. Calls for greater interpretability are central to addressing these issues, enabling stakeholders to understand and challenge AI-generated decisions [7]. Legal and regulatory concerns also persist. Automating decision-making in migration contexts raises questions about the sufficiency of current legal frameworks to ensure accountability and safeguard individual rights [3, 24]. As AI systems increasingly influence asylum determinations, precise mechanisms for accountability and redress are essential. Without them, authority is effectively delegated to opaque models, often trained on inadequately documented datasets [10].

The European Commission has introduced the EU AI Act, which classifies AI systems by risk level and imposes regulatory controls on high-risk applications, including those in migration and border control [8, 9]. This framework, grounded in the OECD's updated definition of AI, aims to foster public trust through greater oversight and legal accountability [13].

5. CONCLUSION

Integrating artificial intelligence (AI) into migration and asylum processes presents considerable potential for enhancing decision-making efficiency and optimizing refugee resettlement strategies. However, these benefits must be balanced against the need for robust regulatory frameworks to prevent the reinforcement of existing biases and critical ethical concerns. AI ethics has emerged as a central field for addressing these risks, acknowledging that while developers may not intend to produce biased systems, unintended consequences can arise from flawed datasets and opaque algorithms. Due to these challenges, the European Commission introduced the EU AI Act in 2021, establishing a risk-based framework to regulate AI systems [8,9]. The Act defines AI as a machine-based system capable of making predictions or decisions that influence physical or virtual environments [1], and it targets explicitly high-risk applications such as those in immigration and border control [13]. It promotes trust in AI technologies by ensuring their deployment meets legal and ethical standards.

This paper has mapped the current landscape of AI applications across European immigration and asylum systems, analyzing four forecasting models and two adjudication models. These were classified according to their methodological approaches, offering a structured understanding of how emerging technologies are adopted at national and EU levels. While AI holds promise for alleviating administrative burdens and supporting complex decision-making, its deployment must prioritize human rights protections. Given the sensitivity of asylum procedures and the scarcity of publicly available data, rigorous, context-specific evaluations are essential. Assessing algorithms individually and collectively can help prevent erroneous outcomes. Emerging principles such as human oversight, transparency, and algorithmic impact assessments are vital to aligning AI implementation with sound governance practices and fundamental rights protections.

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