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Artificial Intelligence in International Immigration Management: A Comparative Legal Analysis of the United States, Canada, and the European Union

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Abstract: Artificial intelligence (AI) is a strategic technology that leads the future, and major developed countries worldwide regard its development as a significant strategy to enhance national competitiveness and maintain national security. Currently, the United States, Canada, and the European Union are actively exploring the application of AI in the field of immigration, gaining valuable experience. However, they also face risks and hidden dangers such as data security and technological dependency. This article conducts a comparative analysis of the practical cases and legal frameworks of AI application in international immigration management among the United States, Canada, and the EU. It delves into how these jurisdictions balance technological innovation with the protection of citizens' rights through their legal and regulatory mechanisms. The research focuses on specific instances of AI adoption in immigration services, analyzing the strengths and weaknesses of their legal frameworks, and assessing their impact on the efficiency and security of immigration management.

Keywords: Immigration Management; Artificial Intelligence; Comparative Law

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1.Introduction

Amid global digital transformation, AI has been deeply integrated into immigration services, significantly impacting immigration management globally [1]. When it comes to specific AI - related practices in the United States, Canada, and the EU. The US DHS actively incorporates AI into its sub - agencies, with USCIS emphasizing AI in immigration application processing. Canada focuses on automated decision - support for immigration applications to boost efficiency and accuracy. The EU uses AI to strengthen border security and tackle cross - border threats. Regarding legal frameworks, the US lacks a specific statute for AI in immigration but has relevant regulations and executive orders. Canada has the Directive on Automated Decision - Making, and the EU has a series of regulations, with the Artificial Intelligence Act being highly influential. Comparing the legal frameworks of the three countries, the US adopts a context - specific approach, Canada uses a relatively lenient horizontal framework, and the EU's is a global benchmark. After comparing the practice of using AI and legal framework, it is obvious that each countries' regulation should fit national conditions, adhere to a people - oriented principle, and strengthen international cooperation to build a sound global AI ecosystem for sustainable development in immigration services.

2.The Application of Artificial Intelligence in Immigration: Examining Implementation and Oversight in the U.S., Canada, and Europe

2.1 United States

When it comes to leveraging artificial intelligence (AI) in the federal government realm, there is scarcely any other department that is vying to adopt AI with as much alacrity as the Department of Homeland Security (DHS) who has been actively and aggressively integrating artificial intelligence into its various sub-agencies, with a notable emphasis on the United States Citizenship and Immigration Services (USCIS) which oversees lawful immigration to the United States [2]. USCIS has deployed AI technologies to streamline and automate the decision-making process for immigration relief and benefits applications [3]. As of 2025, USCIS has prepared and deployed a list of multiple AI pilot cases.

Case ID	Use Case Name	Deployment Status
Pre-deployment		
DHS-17	Case Processing Improvements in FDNS-DS NexGen	Pre-deployment (Initiation)
DHS-372	User Entity and Behavior Analytics (UEBA) for Security Operations (SecOps) Anomaly Identification	Pre-deployment (Acquisition and/or Development)
DHS-414	I-765 - USCIS Face Capture Mobile App	Pre-deployment (Acquisition and/or Development)
DHS-2305	USCIS Translation Service	Pre-deployment (Initiation)
DHS-2384	Verification Match Model	Pre-deployment (Initiation)
DHS-2386	Sentiment Analysis - FOD Field Offices Complaints and Reviews	Pre-deployment (Initiation)
Deployed		
DHS-14	Biometrics Enrollment Tool (BET) Fingerprint Maximization	Deployed (Operation and Maintenance)
DHS-16	ELIS Evidence Classifier Machine Learning (ML) Tagging Solution (formerly Evidence Classifier)	Deployed (Operation and Maintenance)
DHS-55	Person-Centric Identity Services Deduplication Model	Deployed (Operation and Maintenance)
DHS-56	Person-Centric Identity Services A-Number Management Model	Deployed (Operation and Maintenance)
DHS-57	Identity Match Option (IMO) Tool for Record Compilation (formerly Identity Match Option (IMO) Process with DBIS Data Marts)	Deployed (Operation and Maintenance)
DHS-130	Text Analytics Data Science Sentence Similarity Model	Deployed (Operation and Maintenance)
DHS-180	Automated Name and Date of Birth (DOB) Harvesting from Existing Records	Deployed (Operation and Maintenance)
DHS-181	Automated Real time Global Organization Specialist (ARGOS) for Company Registration Submissions to E-Verify	Deployed (Operation and Maintenance)
DHS-189	ELIS Card Photo Validation via myUSCIS	Deployed (Operation and Maintenance)
DHS-366	Large Language Models for an Officer Training Tool	Deployed (Implementation and Assessment)
DHS-413	I-765 - USCIS Facial Recognition through IDENT (1:1 Face Recognition/Validation)	Deployed (Operation and Maintenance)
DHS-2385	Intelligent Document Processing (IDP) for I-539 Form Digitization	Deployed (Implementation and Assessment)
Inactive		
DHS-13	Asylum Text Analytics	Inactive (no longer used)

DHS-20	Time Series Analysis and Forecasting	Inactive (no longer used)
DHS-58	Sentiment Analysis - Employee Satisfaction Surveys	Inactive (no longer used)
DHS-59	Sentiment Analysis–ELIS Case Notes	Inactive (no longer used)
DHS-60	Predicted to Naturalize	Inactive (no longer used)
DHS-61	I-485 Family Matching	Inactive (no longer used)
DHS-63	Topic Modeling on Request For Evidence (RFE) Data Sets	Inactive (no longer used)
DHS-64	I-539 approval prediction	Inactive (no longer used)
DHS-182	Biometrics Enrollment Tool (BET) Fingerprint Quality Score	Inactive (no longer used)
DHS-231	Testing Performance of ML Model using H2O	Inactive (no longer used)

Even though there are no systematic Acts or polices to specifically regulate the use of AI in immigration, the U.S. has already established some standards or limitations to regulate the use of AI for agencies of government [4]. These legal regulations would absolutely apply to the field of immigration. As early as September 2020, the U.S. enacted the AI in Government Act of 2020 to promote the adoption of AI in the federal government. Later, on December 2020, President Trump issued Executive Order 13960 which mainly proposes to encourage agencies to use AI and build 9 principles to regulate thereof [5].

After a series of layout, AI for Agency Impact Act and Advancing American AI Act was enacted in 2021. This Act clearly confirms that the federal agencies should take steps to promote AI while aligning with U.S. values. Particularly, within 180 days after this Act takes effect, the Secretary of Homeland Security must issue policies and procedures for the Department regarding:(a) The acquisition and use of artificial intelligence; (b) Risk and impact considerations for AI-enabled systems (including machine - learning system data), ensuring full consideration of: The impacts of AI - enabled systems on privacy, civil rights, and civil liberties; Security against misuse, degradation, or inoperability of AI - enabled systems.

Subsequently, DHS issued a memorandum addressing the acquisition and utilization of artificial intelligence, in compliance with the provisions outlined in the Advancing American AI Act. The memo explicit some principles for using AI, including obeying all applicable related law and policies, using data more regulated, ensuring non-discriminatory, establishing risk management, and meeting security requirements. The above principles can be applied in immigration management. Furthermore, the Biden Administration issued Executive Order 14110 in 2023, which emphasized the urgency of governing the use of AI safely and responsibly. After that, the Trump Administration issued Executive Order 14179, and two memorandums, which are M-25-21 and M-25-22. Compared to the Biden Administration, the Trump Administration focuses on innovation, governance, and public trust but does not prioritize risk management [6]. In the same year, DHS released Playbook for Public Sector Generative Artificial Intelligence Deployment and guided the subdivision, which is USCIS, to efficiently deploy AI and manage the risks.

2.2 Canada

The deployment of AI in Canada's immigration sector focuses on automated decision support, optimizing visa application allocation, and enhancing data processing efficiency. For example, Immigration, Refugees and Citizenship Canada (IRCC) has, in recent years, quietly piloted a proprietary AI system to triage immigration applications from China, India, and the Philippines. The agency has since expanded its AI-driven application triage to additional countries, citing the need to modernize, optimize, and accelerate immigration processes [7]. The Traveller Modernization program will introduce advanced digital tools and technologies over the next few years to enhance the efficiency of immigration entry and exit processes across Canada, streamlining passenger processing without prioritizing enhanced border security; travelers will be able to verify their identity and complete on-screen customs declarations at major Canadian airports through primary inspection kiosks and eGates, while NEXUS cardholders can access touchless, expedited border services at designated U.S. land crossings through automated self-service options that eliminate physical contact and reduce wait times without compromising existing security measures.

In Canada, the regulatory landscape governing government use of AI varies between federal, provincial, and local jurisdictions. Federally, the Directive on Automated Decision-Making (DADM) serves as the cornerstone of the government's

AI regulation strategy, supported by the Algorithmic Impact Assessment Tool (AIA) to operationalize its principles. As Canada's first national policy addressing algorithmic and automated decision-making in public administration, the DADM applies to any system, tool, or statistical model used to recommend or render administrative decisions affecting individuals. Meanwhile, provincial governments are also advancing regulatory frameworks: Ontario's Digital and Data Strategy outlines governance for AI and algorithms in public decision-making, while Quebec's Law 25—"An Act to Modernize Legislative Provisions Respecting the Protection of Personal Information"—explicitly addresses the use of automated systems in processing personal data. These parallel developments underscore Canada's multifaceted approach to AI oversight.

In Canada's immigration sector, the government has implemented a comprehensive regulatory framework to govern AI deployment in the public sector, particularly through the Directive on Automated Decision-Making (DADM) [8]. Developed collaboratively with academic, civil society, and government experts between October 2016 and March 2019, the DADM—Canada's first binding policy on automated decision-making—underwent significant refinement following a workshop with over 100 stakeholders in January 2018 and its official launch on March 4, 2019. The directive was subsequently updated on April 25, 2023, introducing expanded scope, bias testing protocols, data governance standards, gender-based analysis plus (GBA+), and peer review mechanisms. Complementing this framework, the government issued Guidance on the Use of Generative AI on September 6, 2023, outlining responsible use principles, limitations, and best practices for federal agencies, followed by an update on February 20, 2024. Additional guidance released on June 27, 2024 clarified the scope of the DADM to assist departments in determining system compliance, while the Guidance on Peer Review of Automated Decision-Making Systems which was released on January 7, 2025 further supports adherence to the directive's requirements.

2.3 European Union

The EU and its Member States are increasingly relying on artificial intelligence technologies to bolster border security and address cross - border threats like terrorism and serious crime, which is a fresh sign of a broader movement towards making EU borders "smarter." This trend not only focuses on enhancing the existing security measures but also involves the development and integration of large - scale centralized information systems and the implementation of decentralized information exchange mechanisms for border and security management [9].

This digital transformation in border management is mainly demonstrated through four key technological aspects. First, there are biometric identification systems that utilize automated fingerprint and facial recognition technologies. Second, affective computing technologies with the ability to recognize emotions are being employed. Third, algorithm - driven predictive risk modeling is used to anticipate potential security risks. Fourth, AI - powered migration analytics infrastructure is in place, enabling real - time monitoring, in - depth pattern analysis, and accurate scenario forecasting. In the Netherlands, the Immigration and Naturalisation Service (IND) is currently making use of algorithms to identify possible fraud in identity documents as well as related certificates, including residence permits, birth, marriage, and death certificates. This use of AI - based algorithms helps the service to enhance the accuracy and efficiency of its fraud detection processes, thereby contributing to the overall security of the Netherlands' border management system.

Germany was the first and remains the only country in Europe to implement a dialect identification assistance system (DIAS) as part of its asylum application process. In 2017, Germany's Federal Office for Migration and Refugees (BAMF) began piloting a dialect recognition tool in Bamberg before rolling it out nationwide starting September of that year. Similarly, Latvia incorporated automated speech recognition into its citizenship application procedures in July 2021 through an interactive self-assessment system. This tool evaluates applicants' language proficiency and familiarity with the Latvian national anthem, which has become a statutory requirement for naturalization in the country [10].

In recent years, the EU has implemented a comprehensive legislative framework governing artificial intelligence and related technologies in migration and security contexts. Key measures include Regulation (EU) 2019/818, which establishes interoperability standards for information systems and data sharing among EU member states in areas including police and judicial cooperation, asylum processing, and migration management. Building on this foundation, the Artificial Intelligence Act (AIA) introduces targeted regulations for AI deployment in critical domains such as immigration procedures, asylum applications, and border security operations. This legislative framework seeks to harmonize technological innovation with

essential safeguards for fundamental rights in sensitive public policy sectors.

As a landmark piece of legislation, the EU Artificial Intelligence Act establishes a global benchmark for AI regulation through its broad applicability across industries. The regulation's tiered approach to compliance - based on system risk levels - enables proportionate oversight that prevents harmful applications while permitting unrestricted use of low-risk systems. High-risk AI systems face stringent but innovation-friendly requirements designed to balance security needs with technological advancement. Notably, Annex III of the Act identifies eight high-risk application areas, including (a) Biometric identification systems: Technologies used for biometric recognition and personal characteristic analysis (including emotion recognition systems); (b) Immigration, asylum, and border control systems: AI deployments in migration management operations conducted by competent public authorities. This risk-based classification system ensures rigorous oversight for sensitive applications while maintaining appropriate flexibility for less critical AI implementations. By establishing clear standards for high-risk applications while fostering innovation in lower-risk areas, the AIA creates a balanced regulatory environment that addresses both security imperatives and fundamental rights protections [11].

3.Legal Frameworks for AI in Immigration: Assessing Strengths and Gaps in the U.S., Canada, and Europe

Currently, horizontal and context-specific approaches characterize the global divide concerning AI regulation. The EU The AI Act is a horizontal framework [12]. Canada is embracing AI within its Digital Charter by adopting a more lenient horizontal framework as compared to the EU AI Act [13]. Conversely, context-specific approaches tailor AI governance to particular use cases and their impacts on individuals within specific operational environments. Countries leading in AI research and development, such as the United States, generally favor a context-specific regulatory approach. This framework views AI-induced societal risks as extensions of existing challenges within domains where AI complements or replaces traditional methods. Rather than creating blanket AI regulations, it advocates for tailored rules that address emerging harms in specific contexts. By aligning legal frameworks with the unique societal impacts of AI in different sectors, this approach prioritizes targeted interventions over generalized policy measures.

3.1 United States

In recent years, the regulatory landscape governing AI applications in U.S. immigration has shifted significantly depending on the policy priorities of successive presidential administrations. Under the Biden administration, the regulatory approach for AI in immigration emphasizes oversight, with a particular focus on AI safety and privacy protection.

For example, U.S. policymakers introduced the AI Leadership Training Act, which aims to improve AI literacy among federal leaders in response to the technology's growing adoption across government agencies. This legislation requires the Director of the Office of Personnel Management (OPM) to develop and periodically update an AI training program, promoting responsible and ethical AI use within the federal government. Building on earlier laws, the initiative extends AI training requirements to federal employees involved in procuring AI technologies for government use.

Additionally, the National AI Commission Act proposes establishing a National AI Commission tasked with developing a comprehensive regulatory framework for AI. At the same time, President Biden issued an Executive Order on Safe, Secure, and Trustworthy AI, which sets new standards for AI safety, security, and privacy protection for Americans. The order also prioritizes advancing equity and civil rights, fostering competition and innovation, and ensuring responsible AI deployment. It mandates the creation of a national security memorandum to guide the ethical application of AI in military and intelligence operations, safeguarding Americans' privacy while promoting an open, competitive AI market that emphasizes U.S. innovation.

During his second term, the Trump administration pursued a policy of regulatory rollback in artificial intelligence. In January 2025, President Trump signed Executive Order 14179: Removing Barriers to American Leadership in Artificial Intelligence, which dismantled the Biden-era AI regulatory framework by eliminating mandatory safety testing and reporting requirements for AI systems. This shift emphasizes industry self-regulation to reduce compliance costs but has drawn widespread criticism from opponents and sparked concerns among immigrant communities. These developments underscore how partisan politics in the U.S. have fueled significant unpredictability in AI governance, particularly regarding its application in immigration and

other critical sectors.

Moreover, in the legal governance of AI deployment in immigration, a persistent gap remains between regulatory rhetoric and practical enforcement. For instance, in March 2024, the Office of Management and Budget (OMB) issued a binding memorandum to all federal agencies mandating "advancements in AI governance, innovation, and risk management," including requirements such as conducting risk self-assessments, compiling hazard inventories, monitoring AI tools for bias and discrimination, and publicly disclosing technical specifications on official websites. However, by late 2024, the Department of Homeland Security (DHS) had failed to fully implement these directives, highlighting systemic challenges in translating policy mandates into operational practice.

3.2 Canada

Canada became the first national government to regulate automated decision-making, laying the groundwork for future AI policies. As Ashley Casovan, former Director of Data Architecture and Innovation at the Treasury Board of Canada Secretariat, explains, this early initiative has enabled Canada to develop a forward-thinking legal framework for AI in immigration management. The country's proactive integration of policies and robust technological infrastructure give its framework distinct advantages in this field. Canada has since systematically built a comprehensive legal structure governing AI applications in immigration and related sectors. This evolution is marked by key milestones in regulatory development:(a) The Directive on Automated Decision-Making which was introduced on March 4, 2019; (b) Updates to the Guide on the Use of Generative Artificial Intelligence which was revised on February 20, 2024; (c) The recent release of the Guide to Peer Review of Automated Decision Systems on January 7, 2025. These policy instruments reflect Canada's commitment to establishing a coherent and evidence-based approach to AI governance.

Although the EU's AI Act—enacted in 2024—classifies AI systems used in immigration as high-risk, Canada's current policies (such as the Directive on Automated Decision-Making) remain non-binding administrative guidelines. Notably, Canada's legal and regulatory framework for AI in immigration enforcement may face practical limitations. For instance, the existing Directive on Automated Decision-Making requires that "meaningful explanations" be provided but fails to define their required depth or establish standardized disclosure formats.

3.3 European Union

The European Union (EU) has established itself as a global pioneer in artificial intelligence (AI) regulation. The EU AI Act extends its reach beyond the EU's borders – many of its provisions apply regardless of whether the provider is based within the EU or in a third country. By adopting a horizontal regulatory approach, the EU ensures consistent standards across all sectors while allowing for necessary sector-specific adaptations, particularly in sensitive areas like migration and law enforcement.

A risk-proportionate governance framework is critical in avoiding the pitfalls of one-size-fits-all regulation. This approach helps prevent oversight mechanisms from becoming either excessively lenient or unduly stringent. The AI Act applies to any provider or entity deploying an AI system where "the output produced by the system is intended to be used" within the EU. Foreign suppliers must appoint an authorized representative in the EU to ensure compliance. However, certain entities are exempt: public authorities of third countries, international organizations under police/judicial cooperation agreements, and AI systems intended for military defense or national security purposes. This broad scope demonstrates the regulation's comprehensive intent to govern AI systems and their applications effectively.

In practice, while the EU ensures equal fundamental rights protections for both EU and non-EU citizens on a technological level, it permits EU institutions and member states to deploy high-risk AI systems – such as emotion recognition technologies –for public security purposes. Simultaneously, the Act reduces transparency obligations for law enforcement authorities, creating significant leeway for member states to adopt advanced AI technologies with potentially invasive capabilities.

4.Critical Analysis and Policy Implications

The development and deployment of artificial intelligence algorithms inherently involve technological choices that significantly impact fundamental rights. When AI is deliberately integrated, it offers potential benefits such as enhanced fraud

detection capabilities and improved, timely access to information essential for decision-making. Importantly, when designing AI governance frameworks for immigration systems, the most effective regulatory approaches are those that are meticulously tailored to a nation's unique socio-economic context and administrative capabilities. Moreover, it is imperative to govern AI adoption with a human-centric approach, ensuring ethical and responsible use to protect vulnerable populations and uphold democratic values. Furthermore, adopting AI also should be governed for humanity. In the context of globalization, efforts can be made to facilitate the exchange among countries regarding management strategies for the application of artificial intelligence in the field of immigration. For instance, standardizing AI training data sources and usage practices for achieving transparent and rights-based accountability across jurisdictions, and promoting cooperation, thereby jointly facilitating a favorable environment for the global AI application ecosystem.

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