Migrant Integration in the Mid-21st Century: Bridging Divides

Barriers and Bridges: Technology, Hiring, and Health for Newcomers

Spring Retreat 2026

Research Exhibit - Book of Abstracts

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55 Dundas Street West, 7th floor

Toronto, ON M5G 2C3

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Research Exhibit - Posters and Demonstration Session

Foreword

The inspiration for this session, *Digital Frontiers: Security, Artificial Intelligence, and Equity in a Connected Society*, reflects the growing influence of advanced digital technologies in an age increasingly shaped by artificial intelligence. As these technologies rapidly evolve, so too do the societal challenges and opportunities they introduce. The importance of keeping pace with these transformations cannot be overstated. The rapid emergence of generative AI, in particular, has accelerated the need to critically examine its implications across social, economic, and institutional domains. As digital systems become deeply embedded in everyday life, they are not only reshaping how services are delivered and decisions are made, but also redefining the conditions under which equity, access, and trust are established. These systems carry the dual potential to reduce barriers while simultaneously reinforcing existing inequalities. At the same time, they introduce new pressures on security infrastructures, which are shifting from static models of data protection toward dynamic, autonomous systems capable of independent decision-making and action.

This *Book of Abstracts* represents the culmination of recent research conducted across the core themes of the *Bridging Divides* program: Immigrant Health and Well-Being; Employment and Lifelong Learning; Places and Infrastructure; and Citizenship and Participation. It brings together a diverse group of researchers and practitioners from participating institutions, offering a rich collection of presentations, posters, and demonstrations that reflect both depth and breadth across these domains.

The contributions in this collection underscore a central insight: technology is not neutral, but rather a socio-technical force that shapes access, opportunity, and lived experience. Research on digital hiring platforms, credentialing systems, and workplace AI highlights how labour market integration is increasingly mediated by algorithmic systems that can both enable and constrain opportunity. Similarly, work on telehealth, patient-centred information systems, and decentralized health records reveals the promise of digital innovation alongside persistent structural, cultural, and accessibility challenges.

Methodological innovation is another defining feature of this collection. From machine learning models that forecast migration patterns to immersive and mixed-reality platforms that enable new forms of data exploration, these studies expand the boundaries of how complex migration

dynamics can be analyzed and understood. At the same time, several contributions foreground issues of equity and inclusion, examining how technological systems may obscure, reproduce, or transform existing forms of inequality—particularly for immigrant and refugee populations.

The submissions featured in this session emphasize the intersection of advanced digital technologies and migration studies, offering a snapshot of current progress, early-stage inquiry, and innovative research approaches. Taken together, the work presented in this volume embodies the spirit of "bridging divides." It challenges assumptions, surfaces critical tensions, and offers pathways toward more inclusive, transparent, and effective systems.

Atefeh Mashatan, Cybersecurity Research Lab, Toronto Metropolitan University
Generative AI in Computational Social Science: Opportunities and Challenges Ahead

Anatoliy Gruzd, Social Media Lab, Toronto Metropolitan University

Generative AI is rapidly reshaping the social data ecosystem on which computational social science (CSS) depends. Online platforms now algorithmically remix news, memes, and synthetic media at scale, blurring the boundary between human and machine-generated behaviour and weakening long-standing credibility signals such as source reputation, visual evidence, and apparent consensus. For CSS, this shift complicates how social data are produced, interpreted, and trusted. This keynote examines how the very affordances that make generative AI attractive to users and researchers also introduce new methodological and ethical challenges. These include polluted data streams, synthetic social signals, automation bias, and the strategic use of AI-generated content to manipulate public discourse. At the same time, the talk highlights emerging opportunities, including new methods for large-scale simulation, theory testing, and mixed human-AI data analysis.

Cite: Gruzd, A., (2026, March) *Generative AI in Computational Social Science: Opportunities and Challenges Ahead* [Presentation]. Barriers and Bridges: Technology, Hiring, and Health for Newcomers, Bridging Divides Spring 2026 Research Retreat, Toronto Metropolitan University, Toronto, ON, Canada.

Access to Telehealth Modalities of Care Among Immigrant and Refugees in Ontario, Canada: A Population-health Study

Vess Stamenova, Ted Rogers School of Management, Toronto Metropolitan University

This presentation examines ambulatory and virtual care utilization among immigrants in Ontario using linked population-level administrative data from 2020-2025. Contrary to the established "underutilization" narrative, our findings reveal that recent immigrants—particularly refugees and family class—demonstrate increasing rates of ambulatory care use, now surpassing non-immigrants. Despite being healthier by chronic disease measures, recent immigrants show elevated mental health conditions, suggesting a more complex health profile than previously understood. Following December 2022 telehealth policy changes, virtual care use declined across all groups; however, recent family class immigrants maintained higher rates, demonstrating resilience to policy-driven reductions. Notably, telephone use remains high across all immigrant groups, while video use is limited among refugees, but higher among family and economic class immigrants . These findings challenge assumptions underlying current telehealth policy and highlight the critical role of telephone as an equity-preserving modality for vulnerable populations, especially refugees.

Stamenova, V., (2026, March) *Access to Telehealth Modalities of Care Among Immigrant and Refugees in Ontario, Canada: A Population-health Study* [Presentation]. Barriers and Bridges: Technology, Hiring, and Health for Newcomers, Bridging Divides Spring 2026 Research Retreat, Toronto Metropolitan University, Toronto, ON, Canada.

Searching in the Black Box: How Advanced Digital Technology-Driven Hiring Platforms Shaping Immigrants' Experiences in the Canadian Labour Market

Rupa Banerjee, Human Resource Management/Organizational Behaviour, Toronto Metropolitan University

This paper examines how advanced digital hiring technologies reshape immigrant labour market integration in Canada. Drawing on 40 semi-structured interviews with immigrant job seekers, recruiters, hiring managers and employment service providers across diverse sectors, it conceptualizes these technologies not as neutral tools but as socio-technical systems of algorithmic governance that structure access, evaluation, and exclusion.

The paper distinguishes between earlier forms of digital mediation and advanced systems that automate screening, ranking, and rejection, shifting decision-making away from human actors. Integrating critical theory of technology, algorithmic governance, and critical race theory, it theorizes these systems as racialized infrastructures that embed dominant labour market norms, such as “Canadian experience,” credential equivalency, and standardized career trajectories, into ostensibly objective criteria.

Empirically, findings show that algorithmic systems function as primary gatekeepers, often filtering candidates before any human interaction occurs. Immigrants experience exclusion through opacity, non-response, and automated rejection, transforming discrimination from overt interpersonal bias into diffuse and difficult-to-contest forms of algorithmic exclusion. While participants develop adaptive strategies, such as résumé optimization and reliance on networks, these forms of agency are reactive, unevenly distributed, and frequently reinforce dominant norms.

The paper further demonstrates that algorithmic governance extends beyond hiring to shape temporal experiences of inclusion, producing delayed recognition and prolonged precarity. Overall, it argues that advanced digital hiring technologies reconfigure rather than reduce inequality, intensifying racialized labour market stratification while obscuring its mechanisms.

Cite: Banerjee, R., (2026, March) *Searching in the Black Box: How Advanced Digital Technology-Driven Hiring Platforms Shaping Immigrants' Experiences in the Canadian Labour Market* [Presentation]. Barriers and Bridges: Technology, Hiring, and Health for Newcomers, Bridging Divides Spring 2026 Research Retreat, Toronto Metropolitan University, Toronto, ON, Canada.

Vocational Credentials and Hiring Intentions for Foreign-Trained IT Professionals

Pedro Seguel, Ted Rogers School of Information Technology Management, Toronto Metropolitan University

This study examines how Canadian employers evaluate skill-based certifications for internationally trained IT professionals. While vocational training programs and professional certifications are often promoted as fast and effective pathways to labor market integration, little is known about how employers interpret different certification pathways and training contexts. Using a factorial survey experiment with hiring decision-makers, we test how certification pathway, training duration, and training location influence evaluations. Results show that training functions as a threshold signal of legitimacy, with limited differentiation across training duration. However, credentials obtained in Canada are valued more than equivalent training completed abroad, highlighting the role of institutional familiarity. Persistent differences by country of origin further suggest that employers rely on coarse, context-dependent signals, leading to unequal returns to training. These findings contribute to research on signaling, skill-based hiring, and immigrant labor market integration by demonstrating how institutional context shapes the interpretation and value of emerging vocational and professional credentials.

Cite: Seguel, P., (2026, March) *Vocational Credentials and Hiring Intentions for Foreign-Trained IT Professionals* [Presentation]. Barriers and Bridges: Technology, Hiring, and Health for Newcomers, Bridging Divides Spring 2026 Research Retreat, Toronto Metropolitan University, Toronto, ON, Canada.

Using Machine Learning to Predict Cross-Border Migration from Least Developed Countries

Vaidehi Atodaria and Yousef Khalifa Aleghfeli (TMU)

Abstract: Cross-border migration has emerged as a defining global phenomenon, yet traditional management approaches rely primarily on retrospective administrative data analysis. This study developed and evaluated a machine learning model to forecast cross-border migration flows from Least Developed Countries at one-, three-, and six-month prediction horizons. Using a multi-source data architecture, the model integrated Meta's Data for Good (D4G) mobility indicators as outcome variables with events-based push factors from the Global Database of Events, Language, and Tone (GDELT) geopolitical database and Global Disaster Alert and Coordination System (GDACS) environmental database, alongside structural indicators from the Climate Conflict Vulnerability Index (CCVI). A gradient boosting decision tree classifier implemented in LightGBM categorized future flows into four prediction classes: Spike, High, Normal, and Below. Results demonstrated that the model can reliably distinguish spike events from other migration patterns, with AUC values exceeding 0.985 across all prediction horizons. Calibration analysis revealed predicted probabilities generally aligned with observed frequencies. Prediction accuracy gradually decreases as we look further into the future but remains stable and useful for humanitarian decision-making. The model performs at 1-month predictions (48.9% precision, 45.8% recall) with strong accuracy ideal for short term emergency response and contingency planning, while 3-month predictions (47.4% precision, 20.2% recall) and 6-month predictions (35.1% precision, 6.6% recall) are ideal for more long term strategic planning and resource allocation.

BD Theme: TRS 4 Citizenship and Participation

Cite: Atodaria, V., Khalifa, Y., (2026, March) *Using Machine Learning to Predict Cross-Border Migration from Least Developed Countries* [Poster Presentation]. Barriers and Bridges: Technology, Hiring, and Health for Newcomers, Bridging Divides Spring 2026 Research Retreat, Toronto Metropolitan University, Toronto, ON, Canada.

Unveiling the Experiences of Racialized Immigrant Women in Cybersecurity - An Intersectional Qualitative Inquiry

Sepideh Borzoo, Rupa Banerjee, and Atty Mashatan (TMU)

Abstract: Skilled immigrant women's integration in science, technology, engineering, and mathematics professions is influenced by the prevalent racial and gendered conditions present in these fields. This study employs qualitative interviews to investigate barriers to equity, diversity, and inclusion faced by immigrant women professionals in the cybersecurity sector in Canada. Using an intersectional approach, this paper unveils how racial and gender discourses affect immigrant women's experiences of exclusion in the workplace. Findings suggest that immigrant women face multiple barriers at the intersection of gender, race, and immigration status to enter the sector and advance in their careers. Drawing on the interview data, this paper demonstrates how workplaces reproduce multiple forms of inequality for racialized immigrant women. These inequalities arise through the division of positions, the perpetuation of stereotypes that hinder upward mobility, work schedules designed for the ideal men employees, and the penalties associated with cultural differences that specifically disadvantage immigrants.

BD Theme: TRS 2 Employment and Lifelong Learning

Cite: Borzoo, S., Banerjee, R., Mashatan, A., (2026, March) *Unveiling the Experiences of Racialized Immigrant Women in Cybersecurity - An Intersectional Qualitative Inquiry* [Poster Presentation]. Barriers and Bridges: Technology, Hiring, and Health for Newcomers, Bridging Divides Spring 2026 Research Retreat, Toronto Metropolitan University, Toronto, ON, Canada.

AI Use and Immigrants in Workplaces

Wendy Cukier, Kevin Wu, and Guang Ying Mo (TMU)

Abstract: Artificial intelligence (AI) transforms workplaces and the processes that shape how organizations operate. For immigrant workers, these changes may create new opportunities, but their effects will depend on how widely and equitably AI is adopted across Canadian workplaces. Recent national survey data indicates that AI adoption among immigrants is rising; In 2025, 41% of immigrants reported using AI programs to support tasks at work, up from 34% in 2024. 1 Adoption was also higher among immigrants than among non-immigrants in 2025 (41% versus 33%). At an organizational level, a separate study showed that 30% of Canadians said their firms were already using AI in some capacity, while 20% reported that their firms planned to begin or expand AI use.

Despite rising AI adoption, training has not kept pace. Only 30% of immigrants who use AI at work received employer-provided training on how to use these tools, compared to 38% of non-immigrants. This mismatch between growing access and insufficient training may introduce workplace risks. Because AI systems generate probabilistic predictions from data, their outputs may appear plausible while being incorrect. Without adequate training, workers may be less equipped to recognize inaccuracies or identify biases, including those embedded in training data. These risks are particularly pronounced for immigrants, where immigrant status often intersects with racialized or gender identities.

Moving forward, organizations should prioritize AI training across all levels of competency, using Diversity Institute's AI Competency Framework to guide workforce development. Foundational skills can build basic AI literacy, including core concepts, generative AI, exposure to ethical issues such as bias and privacy. Mid-level skills can strengthen workers' ability to apply AI tools across tasks, while deep AI skills can support deeper expertise in AI development, machine learning, and ethical AI governance.

When paired with relevant training and adequate safeguards, these skills can help immigrant workers use AI more effectively and responsibly. Despite the risks, immigrants are reporting material benefits stemming from AI use, with 81% reporting productivity gains and 66% reporting increased creativity. Taken together, AI should be understood not only as a workplace accelerator, but also as a broader support tool for immigrant integration. From language training to career support and settlement services, AI may offer meaningful benefits, provided that adoption is accompanied by equitable access and adequate training to protect against bias and harm.

BD Theme: TRS 2 Employment and Lifelong Learning

Cite: Cukier, W., Wu, K., Mo, G.Y. (2026, March) *AI Use and Immigrants in Workplaces* [Poster Presentation]. Barriers and Bridges: Technology, Hiring, and Health for Newcomers, Bridging Divides Spring 2026 Research Retreat, Toronto Metropolitan University, Toronto, ON, Canada.

IMRAG: A Retrieval-Augmented Generation System for Canadian Immigration Knowledge

Augustine Farinola (U of A)

Abstract: Canadian immigration policy is vast, fragmented, and consequential—spanning tens of thousands of government documents, legal decisions, academic papers, think tank reports, and settlement sector resources scattered across hundreds of sources. Researchers, lawyers, policymakers, and newcomers alike face the same bottleneck: finding the right information quickly and reliably. This demo presents ImmigRAG [imrag.ca], a domain-specific Retrieval-Augmented Generation (RAG) system targeting 800,000 Canadian immigration documents and designed to make Canadian immigration policy documents searchable and conversable . Unlike general-purpose AI chatbots that generate responses from opaque training data, our system retrieves verified passages from a curated corpus—academic articles, CanLII case law, IRCC bulletins, parliamentary records, NGO publications, and more—and synthesizes grounded, citation-backed answers in English or French. Our system ingests hundreds of policy documents into a vector store (IONOS AI Model Hub), retrieves relevant passages using semantic similarity, and generates grounded answers via a Llama 3.3 70B language model — with explicit source citations and guardrails against providing legal advice. The service exposes a REST API (POST /api/chat/) that powers the front-end. Our demo will showcase the chat interface, the document ingestion workflow, and how retrieved sources are surfaced alongside AI-generated answers to support transparency and verifiability in immigration research.

BD Theme: TRS 4 Citizenship and Participation

Cite: *Farinola, A., (2026, March) IMRAG: A Retrieval-Augmented Generation System for Canadian Immigration Knowledge* [Poster Presentation]. Barriers and Bridges: Technology, Hiring, and Health for Newcomers, Bridging Divides Spring 2026 Research Retreat, Toronto Metropolitan University, Toronto, ON, Canada.

Patient-centred Health Information Systems: Expert Perceptions of Migrant Population Challenges and Opportunities

Holly Gardner and Atty Mashatan (TMU)

Abstract: Conventional health information systems are institutionally-held in centralized server or cloud
environments, creating systemic vulnerabilities related to privacy, security, and completeness. For migrant populations, these provider-centric architectures amplify existing structural barriers, including limited access to primary-language information and the "triple adaptation" challenge of navigating new healthcare, cultural, and digital systems simultaneously. This study evaluates the socio-technical factors impacting migrant health data management and identifies requirements for a decentralized alternative. We conducted semi-structured expert interviews with healthcare professionals and settlement workers who predominately serve migrant populations. Thematic analysis focused on the current state, entry points and data access, digital health literacy as determinant of care, and perceptions of emerging technologies. Early findings indicate that centralized custody hinders longitudinal care continuity and trust, with experiences varying significantly based on a patient's digital and health literacy. Stakeholders identified that successful technology introduction requires community-based educational programs and robust frameworks for user-controlled consent and auditability. These outcomes will inform the refinement of a proof of concept for a patient-held, blockchain-based personal health dossier. By utilizing Self-Sovereign Identity (SSI), the system aims to restore data completeness, reliability and ensure portable, immutable medical histories for migrant and broader populations.

BD Theme: TRS 1 Immigrant Health and Wellbeing

Cite: Gardner, H., Mashatan, A., *(2026, March) Patient-centred Health Information Systems: Expert Perceptions of Migrant Population Challenges and Opportunities* [Poster Presentation]. Barriers and Bridges: Technology, Hiring, and Health for Newcomers, Bridging Divides Spring 2026 Research Retreat, Toronto Metropolitan University, Toronto, ON, Canada.

Introducing the Migration Ad Observatory: Tracking Influence, Power, and Narratives in Migration Ads

Anatoliy Gruzd, Philip Mai, and Ricky Yu (TMU)

Abstract: The Social Media Lab's Migration Ad Observatory is an app that tracks migration-related ads on Facebook and Instagram, making it easier to see how online ads shape conversations about immigrants and immigration. Using open data from the Meta Ad Library, the app relies on AI models to categorize ads into narrative frames such as economic impact, humanitarian concerns, and security threats. These frames, based on the lab's research, show how information is used to influence public opinion. By showing which narratives are most common in migration ads and how they change over time and between advertisers, the Observatory offers useful insights for researchers, journalists, policymakers, and civil society groups interested in migration and digital influence.

BD Theme: TRS 4 Citizenship and Participation

Cite: Gruzd, A., Mai, P., Yu, R., (2026, March) *Introducing the Migration Ad Observatory: Tracking Influence, Power, and Narratives in Migration Ads* [Demonstration]. Barriers and Bridges: Technology, Hiring, and Health for Newcomers, Bridging Divides Spring 2026 Research Retreat, Toronto Metropolitan University, Toronto, ON, Canada.

Embodied Migration Analytics: A Mixed-Reality Platform for Exploring Urban Migration Dynamics

Roozbeh Manshaei, Jordan Hoss, and Ali Mazalek (TMU)

Abstract: Understanding migration patterns often requires navigating complex, multi-layered datasets spanning demographics, mobility, settlement outcomes, and regional socio-economic indicators. While traditional visualizations such as dashboards and static maps support analytical insight, they rarely capture the spatial and experiential dimensions of migration processes.
This pilot project explores how immersive technologies can transform migration data into interactive, embodied experiences. We present a mixed-reality prototype that enables users to explore urban migration dynamics through spatial interaction with regional data layers. Using a Meta Quest–based environment integrated with tangible interaction elements, users can manipulate migration flows, demographic patterns, and neighborhood-level indicators directly within a three-dimensional map interface.

The current prototype focuses on the Vancouver metropolitan region as a case study. Users can explore how migration patterns vary across municipalities and observe how changes in demographic and mobility variables influence regional settlement dynamics. Tangible “driver” objects allow participants to adjust parameters such as migration inflow, time windows, and regional mobility patterns, instantly updating visualized outcomes in mixed reality.
This work investigates how immersive analytics can support more intuitive exploration of migration data for researchers, policymakers, and community stakeholders. By combining spatial visualization, tangible interaction, and narrative exploration, the system aims to bridge quantitative migration data with experiential understanding.

BD Theme: TRL 3 Places and Infrastructure

Cite: *Manshaei, R., Hoss, J., Mazalek, A., (2026, March) Embodied Migration Analytics: A Mixed-Reality Platform for Exploring Urban Migration Dynamics* [Demonstration]. Barriers and Bridges: Technology, Hiring, and Health for Newcomers, Bridging Divides Spring 2026 Research Retreat, Toronto Metropolitan University, Toronto, ON, Canada.

The Personal Health Dossier: A Proposed Decentralized Personal Health Record System using Verifiable Credentials

David McKay, Holly Gardner, and Atty Mashatan (TMU)

Abstract: Health information systems are continuously evolving to meet the changing business models, regulatory environment and needs of users. Today, these systems are changing to realize a patient-centric approach to improve health outcomes and establish greater access and autonomy over health information. Verifiable credential technology will become an essential part of the move to private and secure patient-centric interoperable health information systems. The widespread adoption of mobile devices has opened up the ability to store a patient's personal health record at the edge of the system. In this type of decentralized architecture, the patient is the locus of their health data and they gain agency over who they grant access to their data. The data that the patient holds is a key to meaningful interoperability between siloed systems. The authors present a novel architecture based on a secure, patient-centric, interoperable design using verifiable credentials to realize these objectives.

BD Theme: TRS 1 Immigrant Health and Wellbeing

Cite: *McKay, D., Gardner, H., Mashatan, A. (2026, March) The Personal Health Dossier: A Proposed Decentralized Personal Health Record System using Verifiable Credentials* [Poster Presentation]. Barriers and Bridges: Technology, Hiring, and Health for Newcomers, Bridging Divides Spring 2026 Research Retreat, Toronto Metropolitan University, Toronto, ON, Canada.

Hybrid Quantum-Efficient Solutions for Last-Mile On-Demand Delivery Problem

Farzan Moosavi and Bilal Farooq (TMU)

Abstract: Quantum computation has emerged as a promising paradigm for addressing combinatorial optimization problems that are otherwise intractable for classical methods. Among these, routing problems such as the Travelling Salesperson Problem (TSP) have been used as benchmarks to assess the potential of quantum algorithms. Yet, real-world variants of these problems, such as last-mile on-demand delivery, are far more complex. They must account for additional constraints, including time windows, order precedence, and vehicle capacity, turning the task into a highly dynamic and sequential decision-making problem. This work introduces a novel quantum–classical hybrid framework designed to tackle this class of realistic logistics challenges, thereby demonstrating both technical innovation and significant contribution to the field of quantum computing.

At the core of this research is a problem-specific quantum circuit with entangling and variational layers that enable reinforcement learning (RL)-based decision-making. The algorithm explicitly incorporates real-world delivery constraints into the quantum representation of the optimization task. Therefore, we introduce a Parametrized Quantum Circuit (PQC) and benchmark it against a design leveraging Quantum Singular Value Transformation (QSVT). Through extensive numerical experiments, we demonstrate that the proposed PQC-RL method outperforms baseline approaches in terms of training complexity, accounting for solution scalability. The significance of this development lies in opening a new avenue for demonstrating quantum advantage in logistics and supply chain optimization, an area of both theoretical and practical importance. While quantum algorithms for TSP and related optimization problems have been widely studied, few works bridge the gap to real-world variants with dynamic constraints. By addressing this gap, our approach not only solves an outstanding applied problem but also highlights how quantum algorithms can serve as a foundation for emerging industrial applications.

The broad impact of this work extends into operational aspects of computation. For instance, this study shows that the PQC algorithm can provide efficient training with fewer parameters, leading to simpler resource utilization and suggesting the efficiency of such approaches over learning-based methods. Finally, this research underscores the importance of advancing hybrid strategies as a bridge toward demonstrating scalable quantum advantage. The results highlight the promise of quantum optimization under noise-free conditions and offer a clear roadmap for adapting hybrid quantum-classical approaches to noisy intermediate-scale quantum (NISQ) devices in the near future. In doing so, this project provides both a technically rigorous solution to a real-world optimization problem and a foundational contribution to the future direction of quantum algorithms research.

BD Theme: TRS 3 Places and Infrastructure

Cite: Moosavi, F., Farooq, B., (2026, March) *Hybrid Quantum-Efficient Solutions for Last-Mile On-Demand Delivery Problem* [Poster Presentation]. Barriers and Bridges: Technology, Hiring, and Health for Newcomers, Bridging Divides Spring 2026 Research Retreat, Toronto Metropolitan University, Toronto, ON, Canada.

What Does It Mean for AI to Be Culturally Capable? A Taxonomy Grounded in Intercultural Communication Theory

Isar Nehadgholi (NRC), Masoud Kianpour (TMU), Maryam Molamohammadi (Mila), and Krishnapriya Vishnubhotla (NRC)

Abstract: Tremendous efforts are being put into making AI systems inclusive and effective across cultures.
However, the cultural capability considered in much of the literature remains limited to recalling accurate information about various demographics, regions, and nationalities, and is often referred to using several vaguely defined terms. In this ongoing project, we draw from Intercultural Communication scholarship and propose a three-level taxonomy of AI-relevant cultural capabilities: Cultural Awareness answers “Does the model know?”, Cultural Sensitivity answers “How does it frame its knowledge?”, and Cultural Competence answers “Can it adapt as the interaction evolves?”. This taxonomy enables researchers to evaluate the cultural capabilities of AI systems by determining the required level of capability, designing test procedures that measure that capability, and explicitly identifying the capabilities that may be lacking. We also link failures at each level of cultural capability to distinct sociotechnical harms, to clarify what is at stake when these capabilities are missing in real-world applications.

BD Theme: TRS 4 Citizenship and Participation

Cite: Nehadgholi, I., Kianpour, M., Molamohammadi, M., Vishnubhotla, K., (2026, March) *What Does It Mean for AI to Be Culturally Capable? A Taxonomy Grounded in Intercultural Communication Theory* [Poster Presentation]. Barriers and Bridges: Technology, Hiring, and Health for Newcomers, Bridging Divides Spring 2026 Research Retreat, Toronto Metropolitan University, Toronto, ON, Canada.

Decentralization for True Patient Agency in Personal Health Records: A Cultural Study of Self-determination and Privacy Calculus Perspectives Among Immigrants to Canada

Mohamad Sangari and Atty Mashatan (TMU)

Abstract: The decentralization of personal health records (PHR) using blockchain technology and verifiable credentials enables true patient centricity by transferring the full control and ownership of health records to patients. Relying on the privacy calculus and self-determination theories, this study investigates how cultural differences in immigrants to Canada can contribute to their evaluation of the benefits and privacy risks of using decentralized PHR. The study reveals that individuals' autonomy in managing their health records is the key driver of intention to adopt the technology. On the other hand, the enhanced privacy protection enabled by decentralized PHR alleviates users' privacy concerns, which are widely recognized as a major impediment for personal health records. The findings suggest that immigrants with higher levels of uncertainty avoidance show higher levels of both perceived autonomy and privacy risks with using decentralized PHR. Those with a more collectivist rather than individualistic background perceive more relatedness but less privacy risks. Also, power distance orientation results in lower levels of competence and higher perceptions of privacy risks with using the technology.

BD Theme: TRS 1 Immigrant Health and Wellbeing

Cite: Sangari, M., Mashatan, A. (2026, March) *Decentralization for True Patient Agency in Personal Health Records: A Cultural Study of Self-determination and Privacy Calculus Perspectives Among Immigrants to Canada* [Poster Presentation]. Barriers and Bridges: Technology, Hiring, and Health for Newcomers, Bridging Divides Spring 2026 Research Retreat, Toronto Metropolitan University, Toronto, ON, Canada.

Using Large Language Models to Map Immigrant-Serving Organizations: Design Choices and Implications for Digital Governance Data

Pedro Seguel and Tharindu Yakkala Arachchilage Don (TMU)

Abstract: Governments, researchers, and nonprofit sector analysts increasingly rely on large administrative and open datasets to understand service ecosystems and support evidence-based policymaking. However, many civil society organizations, particularly immigrant-serving nonprofits, remain difficult to identify within these datasets due to inconsistent classification systems and generic organizational names. Recent advances in artificial intelligence, including large language models (LLMs), offer new opportunities to classify organizations using publicly available information automatically. Yet the effectiveness and limitations of these tools for governance-relevant data tasks remain poorly understood. This paper evaluates several computational approaches for identifying immigrant-oriented nonprofit organizations across multiple datasets, including Canada's federal not-for-profit registry and the Immigration, Refugees and Citizenship Canada (IRCC) Settlement Provider Organization list. We compare traditional keyword and machine-learning models with LLM-based methods, including name-based classification and retrieval-augmented workflows that incorporate web-retrieved information. The results show that model performance depends strongly on the informational signals available in the data. Traditional and embedding models perform well when organizational names contain clear ethnic or migration-related cues, whereas retrieval-augmented LLMs substantially improve recall when names are generic. Beyond performance metrics, the findings highlight how design choices in AI classification pipelines influence which organizations become visible in large datasets. These insights provide practical guidance for researchers and public-sector analysts considering the use of AI tools to map organizational ecosystems, while raising broader questions about transparency, bias, and data governance in AI-supported public information systems.

BD Theme: TRS4 Citizenship and Participation

Cite: Seguel, P., Don, T.Y.A. (2026, March) *Using Large Language Models to Map Immigrant-Serving Organizations: Design Choices and Implications for Digital Governance Data* [Poster Presentation]. Barriers and Bridges: Technology, Hiring, and Health for Newcomers, Bridging Divides Spring 2026 Research Retreat, Toronto Metropolitan University, Toronto, ON, Canada.

Developing GeoTEAM: A Geospatial Tangible User Interface that Bridges Spatial Knowledge Divides Amongst Migration Researchers

Karen Natalie Penaranda Valdivia (TMU), Nujaimah Ahmed (TMU), Aswah Butt (TMU), Mashrufa Orchi (TMU), Sarah Hoyos-Hoyos (Wilfrid Laurier), Gabby Resch (Ontario Tech), Robert Mcleman (Wilfrid Laurier), Jamy Li (TMU), Roozbeh Manshaei (TMU), and Ali Mazalek (TMU)

Abstract: Migration researchers represent a collaborative, diverse, and interdisciplinary community with varying levels of geospatial visualization and exploration expertise. However, most geographic information systems (GIS) tools are predominantly domain-specific, limiting opportunities for cross-disciplinary collaborative data analysis and discussion. To address this gap, we present GeoTEAM, a geospatial tangible user interface (GTUI) that integrates active tangible dials within a multi-surface environment to support collaborative and interactive exploration of the drivers and individual determinants of migration. Guided by a human-centered design approach, we conducted a gesture elicitation study and tested our prototype with self-declared novices and experts in geospatial modelling. Inspired by manufacturing engineering's predetermined time studies (PTS), we developed gesturePTS, a novel coding framework for analyzing hand-motions generated through tangible interfaces, which enabled us to extract a universal lexicon of hand gestures to standardize GeoTEAM's operations. Results from a task-based study with mixed-expertise researchers show that the system fosters collaboration, supports intuitive sense-making, and enhances user confidence in handling geospatial data through direct physical interaction and real-time embodied feedback from the active tangibles.

BD Theme: TRL 4 Citizenship and Participation

Cite: Valdivia, K.N.P., Ahmed, N., Butt, A., Orchi, M., Hoyos-Hoyos, S., Resch, G., Mcleman, R., Jami L., Manshaei, R., Mazalek, A., (2026, March) *Developing GeoTEAM: A Geospatial Tangible User Interface that Bridges Spatial Knowledge Divides Amongst Migration Researchers* [Poster Presentation]. Barriers and Bridges: Technology, Hiring, and Health for Newcomers, Bridging Divides Spring 2026 Research Retreat, Toronto Metropolitan University, Toronto, ON, Canada.

Optimistic or Uncomfortable? Examining Privacy Perceptions of Immigrants Towards Blockchain-based Personal Health Record Adoption Intentions

Dane Vanderkooi and Atty Mashatan (TMU)

Abstract: Personal medical health records (PHRs) have improved patient access and control over personal health information. However, adoption rates remain low due to barriers, including accessibility
and privacy concerns. These challenges are further amplified among immigrants through digital divides.
Solutions such as blockchain-based PHRs have been touted to alleviate challenges while providing agency to patients. Yet, implementing blockchain elicits novel privacy challenges. As such, this study explores immigrant adoption intentions towards blockchain-based PHR systems from a privacy perspective. An extended privacy calculus model is developed to include technology perceptions, optimism, discomfort, cultural dimensions, uncertainty avoidance and collectivism. The model was tested using cross-sectional survey data, which were analyzed using partial least squares structural equation modelling (PLS-SEM). The results support the majority of the model hypotheses. Technological optimism and uncertainty avoidance enhance perceived adoption benefits while discomfort raises privacy risks. Risks and benefits are then weighed against each other to determine adoption intentions.

BD theme: TRS 1 Immigrant Health and Well Being

Cite: Vanderkooi, D., & Mashatan, A., (2026, March). *Optimistic or Uncomfortable? Examining Privacy Perceptions of Immigrants Towards Blockchain-based Personal Health Record Adoption Intentions* [Poster Presentation]. Barriers and Bridges: Technology, Hiring, and Health for Newcomers, Bridging Divides Spring 2026 Research Retreat, Toronto Metropolitan University, Toronto, ON, Canada.

Outpatient Telehealth Access and Patient Experience Among Immigrants and Refugees: A Scoping Review

Balikca Visvalingam, Mahdiar Khodabakhshi, and Vess Stamenova (TMU)

Abstract: Virtual care expanded rapidly during the COVID-19 pandemic and is now embedded in routine
outpatient delivery, with approximately one in five outpatient visits in Ontario occurring virtually. Telehealth is frequently positioned as an equity-enhancing solution within digital health systems; however, its implications for immigrants and refugees, who often face intersecting structural, linguistic, and socioeconomic barriers, remain under-synthesized. Telehealth feasibility and uptake are also shaped by broader policy and infrastructure factors, including reimbursement structures and primary care attachment requirements. Guided by Levesque's access-to-care framework, this scoping review examines how physician- and nurse practitioner-led video and telephone visits reshape access and patient experience among immigrant and refugee Populations.

A concept-based search of MEDLINE, CINAHL, and Embase identified empirical qualitative and quantitative studies examining telehealth access, utilization, and patient experience outcomes. Messaging-only services, remote monitoring, inpatient care, and allied health-only modalities were excluded. Following screening of 1,157 records, 70 articles advanced to full-text review. Seventeen studies have been included for thematic analysis to date, with synthesis ongoing. Preliminary findings suggest that telehealth improves availability and accommodation by reducing travel and time costs, particularly in urban contexts characterized by long wait times and provider shortages. However, inequities persist across other dimensions of access. Reported barriers include limited device and internet access, low digital literacy, language discordance, privacy constraints in crowded housing, and difficulties navigating digital health platforms. English proficiency, socioeconomic status, and patient autonomy consistently influence telehealth readiness and engagement.

Overall, telehealth appears to redistribute rather than eliminate access inequities. Advancing equitable digital health systems will require aligning virtual care policy, digital infrastructure, and culturally responsive supports with the structural realities shaping immigrant access to care.

BD Theme:
TRS 1 Immigrant Health and Wellbeing

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Towards Deep Reinforcement Learning-based Labour Market Dynamics for Integrated Transportation and Land Use Systems

Lina Waqfi, Bilal Farooq, and Zachary Patterson (TMU)

Abstract: Within integrated transportation and land use system microsimulation, understanding the evolving dynamics of labour markets requires models that capture the adaptive behaviours of both workers and employers under uncertainty. This research presents a novel simulation framework that conceptualizes the labour market as a decentralized, partially observable multi-agent system, where heterogeneous agents; workers and firms, make sequential decisions in pursuit of individual goals such as job acquisition, skill investment, and hiring optimization. The framework is implemented using Multi-Agent Proximal Policy Optimization (MAPPO) integrated with a Dual-Transformer (DT) neural architecture. This DT-MAPPO approach leverages two complementary components: a Spatial Transformer that captures inter agent interactions at each time step (e.g., competition among workers, job-matching dynamics), and a Temporal Transformer that models sequential patterns over time, such as skill development and employment transitions. Through stylized simulations of the labour market in the Greater Toronto and Hamilton Area (GTHA), the model demonstrates how complex labour dynamics emerge from this hybrid decision-making process. The framework also enables experimentation with policy scenarios, such as training incentives or wage subsidies, and their impact on employment outcomes and market efficiency. The model not only illustrates emergent labour dynamics but also shows that the DT-MAPPO agents create a more dynamic market, leading to a surge in successful wage negotiations and improved stability.

BD Theme: TRS 3 Places and Infrastructure

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Observatory on Immigration Discourses (IDIO)

Muhammad Rehman Zafar and Naimul Khan (TMU)

Abstract: We will demonstrate the Observatory on Immigration Discourses (IDIO), a data analytics platform that collects, organizes, and analyzes information from sources such as parliamentary debates, government datasets, public documents, and social media. It supports hybrid data scraping, data management, and advanced data analytics including information retrieval, topic modeling, named entity recognition, part of speech tagging, and various other analysis. For researchers, it provides a centralized way to study patterns and changes over time, reducing manual data collection efforts and enabling comparative research through accessible, transparent, and scalable tools. The platform also includes user and contributor management features to ensure secure access and effective collaboration.

Demo Link: https://drive.google.com/file/d/1XC-WXUHz8lzBquKDBmxT0_NYphqcHJU4/view

BD Theme: TRS 4 Citizenship and Participation

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Understanding Migrant Neighbourhood and Commuting preferences using Immersive Virtual Reality

Thomas Zhao, Isabel Kim, and Bilal Farooq (TMU)

Abstract: With a growth of 30% in the past two decades, Canada's population reached 41 million in early 2024. This resulted in increased infrastructure demands and challenges in social and economic integration. Newcomers face barriers such as limited access to affordable housing and insufficient transit options. This study explores how virtual reality (VR) can be used to simulate realistic living scenarios that determine their preferences for neighbourhoods, housing, and transportation. For this purpose, it uses VR scenes, gaze tracking, and immersive environments created with the Unity game engine and accessed via a head-mounted display (HMD), to immerse participants in different virtual neighbourhood scenes. These scenes include a Downtown city scene, a Suburb scene, and a Midtown scene, acting as a mix of the previous two scenes, and are based on real neighbourhoods across the Greater Toronto Area. Participants can explore these neighbourhood scenarios in VR, which are dynamically modified by factors like weather, safety, ethnic components, and each containing unique housing and transportation options. In addition participants will fill out text-based surveys including sociodemographic integration questions and existing neighbourhood and transportation preferences. The initial results of this study showed that neighbourhood preferences shifted from an equal preference for all neighbourhoods before VR, to a higher preference for a Midtown or Downtown environment afterwards. Transportation preferences also shifted as more people considered biking or rideshare, as certain scenarios prompted them to consider them. At the same time, walking, subway, and driving remained the most popular options for each of the scenes, with higher preference for public transport in more urbanized neighbourhoods. The user position and gaze tracking data demonstrated that certain factors like weather and ethnic presence can positively and negatively affect a participant's perception of a neighbourhood. By using VR to simulate realistic neighbourhood, housing, and transportation scenarios, this study provides valuable information on newcomer integration. The methodology enables a nuanced understanding of how environmental and socioeconomic factors influence living preferences.

BD Theme: TRS 3 Place and Infrastructure

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