Visa Laws, Policies and Practices: Recommendations for Accelerating the Mobility of Global AI/ML Talent

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PARTNERSHIP ON AI

Visa Laws, Policies, and Practices: Recommendations for Accelerating the Mobility of Global AI/ML Talent

Executive Summary

Immigration laws, policies, and practices are challenging the ability of many communities, including the artificial intelligence and machine learning (AI/ML) community, to incorporate diverse voices in their work. As a global, multi-stakeholder non-profit consisting of over 90 organizations spanning 12 countries and four continents, the Partnership on AI (PAI) is uniquely positioned to address the impacts of visa laws, policies, and practices on the AI/ML community.

PAI believes that bringing together experts from countries around the world that represent different cultures, socio-economic experiences, backgrounds, and perspectives is essential for AI/ML to flourish and help create the future we desire. In order to benefit from diverse voices, host conferences of international caliber, and fulfill their talent goals, countries around the world will need to devise laws, policies, and practices that enable people around the world to contribute to these conversations.

Based on input from PAI Partners, other AI/ML practitioners, and PAI's own research, this paper offers recommendations to address these specific challenges. It highlights the importance of conferences and convenings for a variety of disciplines that are making important contributions to AI/ML, and makes recommendations for participants and organizers in order to facilitate government review of visa applications so participants can travel to these events. It also presents recommendations for policy makers to improve the accessibility, evaluation and processing of visas for all types of potential visitors, including students, interns, and accompanying families. Appendices to this paper respond to potential questions, and provide an overview of the global demand for AI talent, as well as additional details on technical or expert visas, residence and work permit laws, policies, and practices.

PAI's recommendations are based on our area of expertise, and have been developed to help advance the mobility of innovative global AI/ML talent from a variety of disciplines. Many countries have already created visa classifications for other specialized occupations, including medical professionals, professional athletes, entertainers, religious workers, and entrepreneurs. At the same time, PAI acknowledges the complex immigration debates taking place in countries around the world, and the challenges posed by global migration and the quest for basic human rights and dignity. These recommendations are in no way intended to minimize or replace opportunities for those affected by the ongoing immigration discussions and government actions. We hope policymakers can create a path towards permanent residency or citizenship for these groups. In fact, while our recommendations target our field of expertise, we hope this document can serve as a useful resource for the broader community, in support of balancing government public safety responsibilities with the benefits of immigration, freedom of movement, and collaboration.

Though this document incorporated suggestions from many of PAI's partner organizations, it should not under any circumstances be read as representing the views of any specific member of the Partnership. Instead, it is an attempt to report the views of the artificial intelligence community as a whole.

Recommendations:

Based on our investigations, PAI has developed the recommendations below for the global AI/ML community and policymakers around the world. Additional details on each of these recommendations are provided in the full text of the report.

I. Recommendations for Global AI/ML Community:

1. **Use Plain Language Where Possible**
   Consular and immigration officials may not be trained or familiar with the language used in the AI/ML community. PAI recommends that visa applicants explain technical terms using as much plain language as possible to describe the purpose of their visit and areas of expertise to facilitate the review of application documents and forms.

2. **Share Relevant Information with Host Countries in Advance**
   Many governments evaluate visa applications on the basis of the applicant's nationality and other factors, rather than the skills they will bring to the convening. Conference organizers will have to take extraordinary steps to facilitate the entry of their invited participants until laws, policies, and practices change in countries around the world. Conference organizers should contact host country government officials far in advance of the conference to share relevant information and facilitate government review of visa applications. Useful information includes a description of the conference, number of invited participants, and copies of invitation letter templates and other necessary paperwork.

II. Recommendations for Policymakers:

1. **Accelerate Reviews of Visa Applications**
   Pass and implement laws, policies, and practices that accelerate review and favorably consider applications for visas, permits, and permanent legal status from highly skilled individuals. Visas should not be numerically limited or "capped."

2. **Create AI/ML Visa Classifications within Existing Groups**
   Members of existing intergovernmental groups, such as the Organization for Economic Cooperation and Development (OECD), should create visa classifications that enable AI/ML multidisciplinary experts to meet, convene, study, and work across member countries. Visa classifications for other specialized occupations, such as medical professionals, professional athletes, entertainers, religious workers, and entrepreneurs, already exist. The terms of the visa should be reciprocal across all countries.

3. **Publish Accessible Visa Application Information**
   Visa application rules, processes & timelines should be clear, easily understood and accessible - published in plain language, in the applicants' native languages on websites and in other publicly available locations. These processes should be fair, transparent, and clearly demonstrate that determinations for sponsor visas are based on skills.

4. **Establish Just Standards for Evaluating Visa Applications**
   Eliminate nationality-based barriers in evaluating visa and permanent residence applications from highly skilled individuals. Security-based denials of applications should not be nationality based, but rather should be founded on specific and credible security and public safety threats, evidence of visa fraud, or indications of human trafficking.

5. **Train Officials in the Language of Emerging Technologies**
Train consular and immigration officials in the language of emerging technologies so they can quickly recognize and adjudicate applications from highly skilled experts.

6. **Assist Visa Applicants**
Empower select officials to assist applicants in correctly filling out visa paperwork, as well as clarifying and resolving any questions or discrepancies that may otherwise lead to a denial or delay in approval. Beneficiaries would include startups, small- and medium-sized enterprises, smaller colleges and universities, less affluent applicants, and students and interns.

7. **Students and Interns are the Future**
Pass laws that establish special categories of visas or permits for AI/ML students and interns. These laws should clearly identify a path for graduates to obtain a work permit (as necessary), or to obtain permanent legal status or citizenship.

8. **Redefine "Families"**
Adopt visa permissions that reflect a comprehensive definition of "family," modeled on the Finnish Aliens Act and similar definitions in other European nations. Family visas should not be numerically limited. Legal spouses, partners, and those with family ties should also be permitted to work or study in the host country. Long-term caregivers should be permitted to accompany and remain with the main visa applicant and their family while employed in that capacity.

9. **Rely on Effective Policies and Systems to Protect Information**
Immigration restrictions do not adequately protect information and intellectual property rights. For example, trade negotiations can strengthen intellectual property laws and establish courts to protect and enforce intellectual property rights owned by rights holders, whereas implementing immigration policies and practices that broadly apply to all applicants from a particular country do not.

Visa Laws, Policies, and Practices: Recommendations for Accelerating the Mobility of Global AI/ML Talent

I. Introduction

Governments around the world have recognized the potential for AI/ML technologies to transform societies. Over 20 countries have developed and published national AI strategies that emphasize the importance of attracting and retaining AI talent. (See Appendix A for examples). Similarly, global gatherings of AI/ML researchers and practitioners around the world illustrate the power of collaboration and cross-pollination of ideas. In 2018, for example, over half of the participants at the World Artificial Intelligence Conference in China were from other countries. Deep Learning Indaba convenes researchers from across the African continent, Artificial Intelligence Week in the Middle East gathers cross-sector AI experts from the region, and KHIPU assembles global AI experts in South America. Scientists, technologists and ethicists around the world are also working towards creating an AI future that reflects society's values.[1] In Asia, Beneficial AI Japan brings together global thought leaders to discuss how to make AI beneficial for people and society, and Europe's High Level Expert Group on Artificial Intelligence has published Ethical Guidelines for Trustworthy AI as well as Policy and Investment Recommendations for Trustworthy AI.

At the same time, visa laws, policies, and practices are challenging the ability of many communities, including the artificial intelligence and machine learning (AI/ML) community, to incorporate diverse voices in their work. The many disciplines involved in the development and operations of AI/ML systems include not only in technical fields such as mathematics, statistics, computer science, data science, neuroscience, and biology, but also social sciences such as economics, sociology, philosophy, ethics, linguistics, and communications, as well as "experiential expertise" offered by those working in labor and workers' rights.[2] This paper posits that multi-disciplinary AI/ML experts must be able to travel, attend conferences and meetings, study, and work together to develop the technological advancements and socio-technical analyses of AI/ML technologies that have the power to transform societies.

PAI is a global nonprofit organization committed to the creation and dissemination of best practices in artificial intelligence through the diversity of its Partners. Fostering, cultivating, and preserving a culture of diversity and belonging in our work and in the people and organizations who contribute to our work is essential to our mission, and embedded in our Tenets. These include: committing to open research and dialogue on the ethical, social, economic, and legal implications of AI, ensuring that AI technologies benefit and empower as many people as possible, and striving to create a culture of cooperation, trust, and openness among AI scientists and engineers to help better achieve these goals.

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1   *For example, see:* Dand, M. "100 Brilliant Women in AI Ethics You Should Follow in 2019 and Beyond" Lighthouse 3. Accessed August, 2019.

2   *See discussion of "experiential expertise" in:* Young, M., Magassa, L., & Friedman, B. (2019). Toward inclusive tech policy design: a method for underrepresented voices to strengthen tech policy documents. Ethics and Information Technology, 21(2), 89-103.

By gathering the leading companies, organizations, and people differently affected by artificial intelligence, PAI establishes a common ground between entities which otherwise may not have cause to work together – and in so doing – serves as a uniting force for good in the AI ecosystem. We understand that diversity promotes the inclusion of different perspectives and ideas, mitigates against groupthink, and ensures that organizations have the opportunity to benefit from all available talent. Today, PAI convenes more than 90 partner organizations in 12 countries, spanning four continents, to realize the promise of artificial intelligence – and to mitigate potential harms caused by its development and deployment. Our diverse Partners empower PAI to develop best practices in AI/ML technologies and actualize their potential to benefit people and society.

PAI and our global Partners are uniquely qualified to describe the impacts of immigration laws, policies, and practices on the AI/ML community. The impetus for this document came from many of PAI's Partners and other AI/ML practitioners, who have shared how certain visa laws, policies, and practices negatively affect their organizations' abilities to incorporate global representatives and perspectives in their work. [3]PAI built upon this foundation to examine visa laws, policies, and practices from countries around the world, and develop the policy recommendations outlined below to help countries and organizations attract, retain, and benefit from global AI/ML talent.

This paper begins by highlighting the importance of conferences and convenings for a variety of disciplines, and making recommendations for participants and organizers to facilitate government review of visa applications. We also present recommendations developed for governments to improve the accessibility, evaluation, and processing of visas for all types of potential visitors, including students, interns and accompanying families. Appendices to this document espond to potential questions, and provide an overview of the global demand for AI talent, as well as additional reference information on technical visa, residence and work permit laws, policies and practices.

Though this document incorporated suggestions from many of PAI's partner organizations, it should not under any circumstances be read as representing the views of any specific member of the Partnership. Instead, it is an attempt to report the views of the artificial intelligence community as a whole.

Our recommendations are based on our area of expertise, and have been developed to help advance the mobility of innovative global AI/ML talent. At the same time, we acknowledge the complex immigration debates taking place in countries around the world, and the challenges posed by global migration and the quest for basic human rights and dignity. These recommendations are in no way intended to minimize or replace opportunities for those affected by the ongoing immigration discussions and government actions. We hope policymakers can create a path towards permanent residency or citizenship for these individuals and families. In fact, while our recommendations target our field of expertise, we hope this document can serve as a useful resource for the broader community, in support of balancing government public safety responsibilities with the benefits of immigration, freedom of movement, and collaboration.

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3   *For example, see February, 2019 opinion piece in Wired Magazine by Oren Etzioni, CEO of PAI Partner organization, Allen Institute for Artificial Intelligence and professor in the Allen School of Computer Science at the University of Washington.* Etzioni, O. (2019, February) What Trumps executive order on AI is missing. Wired. Accessed August, 2019.

II. The Importance of AI/ML Conferences, Meetings & Convenings

"It is tremendously important to have international scholars be able to meet in person to discuss issues in technology ethics, especially in AI, which is transforming the world so rapidly. Visas have supported these meetings."

Dr. Brian Green, Markkula Center for Applied Ethics, Santa Clara University, PAI Partner Organization

Academic and industry conferences are essential to advancing research and the state of the art in any field, including in AI and ML. In 2019 and beyond, AI/ML and conferences for multidisciplinary AI/ML experts are being held around the world, including in Austria, Canada, China, the Czech Republic, Finland, France, Germany, Hungary, India, Israel, Italy, Japan, Kenya, Mexico, the Netherlands, Portugal, Peru, Singapore, South Africa, South Korea, the United Kingdom, the United States, and Uruguay. Often, visas are required for foreign guests to attend these conferences. Experts and other highly skilled individuals must receive their visas promptly in order to be able to contribute their diverse voices to the important international conversations, both organized and informal, that occur at these events.

Openness of information and the free-flow and exchange of ideas are fundamental tenets of academic exchange and intellectual progress. While conference submissions, especially accepted papers and presentations, are made publically available online or in published form, presenting a paper at a conference is a uniquely prestigious and valuable experience for experts.[4] It enhances their professional reputations, enables feedback from other experts, and creates opportunities for future collaboration. Technological solutions, including video systems, which, if they are available, are often unpredictable and unreliable, are substitute for in-person interaction and networking.

Conferences also highlight and promote the work of diverse participants, with an eye towards equity in representation and closing digital divides. A range of working groups and workshops ensure that conference conversations benefit from diverse ethnic, gender, religious, sexual orientation, and ability perspectives.[5] It is essential that these voices have a safe and inclusive environment in which to speak and are welcomed into the country where the conferences are taking place.

"Multiple members from our organisation, myself included, have not been able to attend conferences in the USA because visa applications take so long."

Mr. Tom Reid, Director of AI, Zarmada, Member of PAI Partner Organization

Recently, attendees of AI/ML-related conferences and meetings have experienced challenges obtaining the visas necessary to participate in these important discussions. For example, many Asian, Eastern European, and African invitees to the Black in AI Workshop at the 2018 NeurIPS Conference in Montreal, Canada were unable to attend due to denied or delayed visa approvals. Invitees from Africa in particular, were delayed or denied at over 50%. The most common reasons government officials offered for denying a visa was that the applicant might not return home after the event, or that they had determined (without

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4   *For examples see*: Open Review Process of the International Conference on Learning Representations 2020 Call for Papers and Proceedings from the Neural Information Processing Systems 2018 Conference.

5   *For examples see:* Women in Machine Learning and Data Science, Women in AI, Jews in ML, Queers in AI, Latinx in AI, Black in AI {Dis}Abilities in AI,

checking with the conference organizer/sponsor) that their letters of recommendation were fraudulent.[6] Other conference organizers responded by moving the 2020 International Conference on Learning Representations to Ethiopia so that African researchers could be sure to be able to attend.[7] One Partner expressed concern that researchers from the Middle East may have been declining to participate in U.S.-based AI/ML conferences in advance, anticipating the high likelihood of visa denial. In order to advance scientific understanding and create opportunities for global cooperation, multidisciplinary experts from around the world must be able to obtain visas, and in a timely manner, to participate in important global conferences and convenings.

Recommendations for Conference Organizers and Participants:

1. **Use Plain Language Where Possible**
   Consular and immigration officials may not be trained or familiar with the language used in the AI/ML community. PAI recommends that visa applicants explain technical terms using as much plain language as possible to describe the purpose of their visit and areas of expertise to facilitate the review of application documents and forms.

2. **Share Relevant Information with Host Countries in Advance**
   Many governments evaluate visa applications on the basis of the applicant's nationality and other factors, rather than the skills they will bring to the convening. Conference organizers will have to take extraordinary steps to facilitate the entry of their invited participants until laws, policies, and practices change in countries around the world. Conference organizers should contact host country government officials far in advance of the conference to share relevant information and facilitate government review of visa applications. Useful information includes a description of the conference, number of invited participants, and copies of invitation letter templates and other necessary paperwork.

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6   Hutson, M. (2018, December). Canada denied visas to dozens of Africans for big artificial intelligence conference. *Science Magazine.* Accessed August, 2019.

7   Kazeem, Y. (2018, November). A global AI conference is moving to Addis Ababa in 2020 after visa difficulties for African scientists *Quartz.* Accessed August, 2019.
    Johnson, K. (2018, November) Major AI conference is moving to Africa in 2020 due to visa issues. *Venture Beat.* Accessed Aug. 2019.

III. PAI Recommendations for Policymakers

PAI and its Partner organizations are committed to incorporating diverse and inclusive voices in the work and conversations we host. Expanding opportunities for global cooperation and representation in AI/ML development and operations enhances outcomes for populations impacted by technology, enables critical insight that may not otherwise be expressed, and generates safer, more effective, and socially responsible products.

Representatives from countries around the world must be welcomed and included in our work to achieve these goals. Members of the global AI/ML global community need to be able to discuss, live, work, learn, and solve AI/ML's greatest challenges, in order to realize its potential for citizens around the world.

Based on our investigations, PAI has developed the nine policy recommendations below. Additional details on each of these recommendations are provided in the next section of this report.

While developed with a focus on AI/ML technical talent, these recommendations are broadly applicable, and if implemented by governments, can help others navigate complicated and often frustrating visa laws, policies, and practices. Some countries are already taking steps to modernize their systems. We hope that policymakers consider implementing these recommendations and learn from other governments how to improve travel and mobility processes for people around the world.

Nine PAI Recommendations for Policymakers - Summary

1. **Accelerate Reviews of Visa Applications**
    Pass and implement laws, policies, and practices that accelerate reviews and favorably consider applications for visas, permits, and permanent legal status from highly skilled individuals. Visas should not be numerically limited or "capped." See Appendix C for examples of current technical and expert visas or permits.

2. **Create an AI/ML Visa Classification within Existing Groups**
    Members of existing intergovernmental groups, such as the Organization for Economic Cooperation and Development (OECD), should create visa classifications that enable multidisciplinary AI/ML experts to meet, convene, study, and work across member countries. Visa classifications for other specialized occupations, such as medical professionals, professional athletes, entertainers, religious workers, and entrepreneurs, already exist. The terms of the visa should be reciprocal across all countries.

3. **Publish Accessible Visa Application Information**
    Visa application rules, processes and timelines should be clear, easily understood and accessible - published in plain language, in the applicants' native languages on websites and in other publicly available locations. These processes should be fair, transparent, and clearly demonstrate that determinations for sponsor visas are based on skills.

4. **Establish Just Standards for Evaluating Visa Applications**
    Eliminate nationality-based barriers in evaluating visa and permanent residence applications from highly skilled individuals. Security-based denials of applications should not be nationality based, but rather should be founded on specific and credible security and public safety threats, evidence of visa fraud, or indications of human trafficking.

5. **Train Officials in the Language of Emerging Technologies**
Train consular and immigration officials in the language of emerging technologies so they can quickly recognize and adjudicate applications from highly skilled experts.

6. **Assist Visa Applicants**
Empower select officials to assist applicants in correctly filling out visa paperwork, as well as clarifying and resolving any questions or discrepancies that may otherwise lead to a denial or delay in approval. Beneficiaries would include startups, small- and medium-sized enterprises, smaller colleges and universities, less affluent applicants, and students and interns.

7. **Students and Interns are the Future**
Pass laws that establish special categories of visas or permits for interns and AI/ML students. These laws should clearly identify a path for graduates to obtain a work permit (as necessary), or to obtain permanent legal status or citizenship.

8. **Redefine "Families"**
Adopt visa permissions that reflect a comprehensive definition of "family," modeled on the Finnish Aliens Act and similar definitions in other European nations. Family visas should not be numerically limited. Legal spouses, partners, and those with family ties should also be permitted to work or study in the host country. Long-term caregivers should be permitted to accompany and remain with the visa applicant and their family while employed in that capacity.

9. **Rely on Effective Policies and Systems to Protect Information**
Immigration restrictions do not adequately protect information and intellectual property rights. For example, trade negotiations can strengthen intellectual property laws and establish courts to protect and enforce intellectual property rights owned by rights holders, whereas implementing immigration policies and practices that broadly apply to all applicants from a particular country do not.

Detailed Discussion of PAI Recommendations for Policymakers

1. **Accelerate Reviews of Visa Applications**
Pass and implement laws, policies, and practices that accelerate the review and favorably consider applications for visas, permits and permanent residency from highly skilled individuals. Visas should not be numerically limited or "capped."

Achievements in AI and ML are coming from all corners of the globe, and from all continents. A skills-based evaluation of individual applicants is an appropriate way to evaluate their potential to contribute to a country's AI/ML ecosystem. Visa classifications for specialized occupations are not uncommon. Social scientists and policy experts in AI/ML are limited in numbers, and it is for this reason that PAI recommends they be included in these special considerations.

Several countries have created visas to facilitate short- and long-term work opportunities, and these examples can serve as models for countries contemplating new laws and practices. Singapore's Business Visa is known for its accelerated processing time, even for applicants who are from countries identified as Level 1 or Level 2 countries.[8] Applicants from other countries do not need to obtain a visa to enter Singapore for business purposes as long as the visit does not exceed 90 days.[9]

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8   Visa Information. *Singapore Ministry of Foreign Affairs.* Accessed August, 2019.

9   Visa and Entry Requirements. *Singapore Ministry of Foreign Affairs.* Accessed August, 2019.

Canada's "Express Entry" system, which is a key element of its "Federal Skilled Worker" economic immigration program, offers a model for other countries to implement as they consider applications for permanent legal status from the global AI/ML community.[10] The Express Entry system is used to evaluate potential applicants to determine if they will be invited to apply for permanent legal status. Candidates must first meet the minimum requirements, including skilled work experience, education, and language abilities. After meeting those requirements, the Express Entry program evaluates their application on several selection factors. Those who score highest are more likely to get an invitation to apply for permanent residence.

Japan's visa system was also noted in conversations with PAI Partner organizations as a model system. Visas are not required for travelersa from 68 countries who are visiting for tourism, attending business meetings and conferences, or visiting family members. These visitors can stay from 15 - 90 days (depending on the country) without obtaining a visa.[11] A renewable work visa can be issued in approximately five days. Approval of the work visa application is accelerated if a Certificate of Eligibility (COE) is included in the package. The COE is provided by a sponsor in Japan or through the Immigration Bureau, and indicates that the sponsor or government sponsor believes the applicant is going to do just what they say they are planning to do upon arrival in Japan.[12] Like Canada, Japan also incorporates a point-based system for highly skilled individuals, defined as academic researchers, those with expertise in natural sciences or the humanities, and managers of a private or public Japanese organization. These individuals can also be fast-tracked for permanent residency.[13]

2.   Create AI/ML Visa Classification within Existing Groups
     Members of existing intergovernmental groups, such as the Organization for Economic Cooperation and Development (OECD), should create visa classifications that enable AI/ML multidisciplinary experts to meet, convene, study, and work across member countries. Visa classifications for other specialized occupations, such as medical professionals, professional athletes, entertainers, religious workers, and entrepreneurs, already exist. The terms of the visa should be reciprocal across all member countries.

Members of intergovernmental organizations can create visa classifications that enable the free movement of AI/ML multidisciplinary experts and their family members across participating countries. This concept is embedded in existing arrangements among certain countries but can be improved upon. For instance, the United States created a visa for professionals from Canada or Mexico who are working for U.S. or foreign companies on North American Free Trade Agreement (NAFTA) related business.[14] Another model for policymakers to consider is the Schengen Agreement and its implementing Convention, which abolished borders and internal controls among signatories. The signatories to the Schengen Agreement have established policies that permit members, as well as citizens from specifically named countries, to visit or conduct business for a limited period of time without obtaining a visa. More than 20 countries have joined the Agreement, creating an unprecedented freedom of movement for people from those countries.[15]

10   Eligibility to Apply as a Federal Skilled Worker (Express Entry). *Government of Canada.* Accessed August, 2019.
11   Exemption of Visa (Short Term Stay). *Ministry of Foreign Affairs of Japan.* Accessed August, 2019.
12   Entry Procedures, Visa, Certificate of Eligibility. *Immigrations Services Agency of Japan.* Accessed August, 2019.
13   Points-based Preferential Immigration Treatment for Highly Skilled Foreign Professionals. *Immigration Bureau of Japan.* Accessed August, 2019.
14   Visas for Canadian and Mexican NAFTA Professional Workers. *Bureau of Consular Affairs, US Department of State.* Accessed August, 2019.
15   Schengen Visa Information. *Schengen Visa Information.* Accessed August, 2019.

The OECD member countries have a unique opportunity to serve as a fruitful testing ground for this approach. In 2019, forty-two countries signed on to AI Principles developed by the OECD, including countries not currently members.[16] It is notable that this was the first time governments adopted AI principles. The European Commission and the G-20 also endorsed the OECD AI Principles. Diverse viewpoints expressed by representatives from countries around the world will be necessary to achieve these principles, including what the OECD calls "AI that is innovative and trustworthy and that respects human rights and values."[17]

Policymakers have an important role to play in creating environments where these aspirations can become a reality through the adoption of laws, policies and practices. One of the OECD AI Principles and policy recommendations for governments, "Co-operate across borders and sectors to progress on responsible stewardship of trustworthy AI," indicates a desire for global collaboration.[18] But governments cannot achieve trustworthy AI without the support of global academics and researchers, civil society, and industry representatives. And these constituents need to be able to convene, meet, study, and work together to realize the OECD AI Principles.

Becoming a signatory to the AI Principles is not the same as concluding a NAFTA treaty or Schengen Agreement with other countries. Yet, it is a start, and the OECD and its members can learn from and build upon those treaty countries' experiences, including by adopting improved security processes, to create a similar arrangement that enables people and their family members to move freely across OECD member countries.[19]

Creating the visa classifications recommended here is not sufficient to fully realize the inclusion of diverse voices in AI/ML, as the 42 OECD AI Principle signatory countries do not fully represent all globally available talent from multidisciplinary AI/ML experts. Nevertheless, it is an important first step, and can serve as an example for other intergovernmental organizations and alliances.

> *"It was extremely stressful and frustrating.*
> *I have been asked the same kind of information again and again and that has led to a delay in the application process. In addition, I was not able to get information regarding a clarification request that I sent to the embassy on additional documents that I have been asked to provide. It would be better if this kind of events for underrepresented people are organized in other places that are more convenient to get into."*

Anonymous, invited to Participate in NeurIPS 2018 and the co-located Black in AI Workshop, responding to a survey about their experiences applying for a visa.

3.   Publish Accessible Visa Application Information
       Visa application rules, processes and timelines should be clear, easily understood and accessible - published in plain language, in the applicants' native languages on websites and in other publicly available locations. These processes should be fair, transparent, and clearly demonstrate that determinations for visas are based on skills.

16   Forty-two countries adopt new OECD Principles on Artificial Intelligence. (2019, May). *Organization for Economic Development.* Accessed August, 2019.

17   OECD Principles on AI. *Organization for Economic Development.* Accessed August, 2019.

18   OECD Principles on AI. *Organization for Economic Development.* Accessed August, 2019.

19   *See, for example, NAFTA entry requirements for citizens of Canada and Mexico.* Visas for Canadian and Mexican NAFTA Professional Workers. *Bureau of Consular Affairs, US Department of State.* Accessed August, 2019

Applying for a visa can be stressful and confusing. Websites describing the steps to apply for a visa can be legalistic and perplexing, especially when the page is not translated well. Applicants are often unable to discern how long the application process should or will take to complete. They may not be aware that they have not submitted all necessary paperwork, or that government officials have questions about the paperwork submitted, until it is too late to resolve questions and obtain visas in time to travel to conferences, participate in an internship or training program, begin a university education, or start a job. Improving the clarity and ease of the process will benefit both the applicant and their host country.

4. **Establish Just Standards for Evaluating Visa Applications**
   Eliminate nationality-based barriers in evaluating visa and permanent legal status applications from highly skilled individuals. Security-based denials of applications should not be nationality based, but rather should be founded on specific and credible security and public safety threats, evidence of visa fraud, or indications of human trafficking.[20]

An applicant's nationality is a key factor considered by consular and immigration officials when determining whether to issue a visa. The practice of adjudicating a visa on the basis of nationality is exclusionary and negatively impacts the inclusion of diverse voices and perspectives in the global AI/ML community. Highly skilled individuals can come from any country, and their country of origin should not prejudice their application.

Government officials are faced with tremendous responsibilities when adjudicating visa applications. Some are concerned that individuals from certain countries present a greater risk of overstaying their visas, placing an increased burden on taxpayers to support undocumented individuals. Government officials also protect the security and public safety of their country by preventing people who present security risks from entering the country. They maintain the integrity of the visa system by identifying fraud, and protect people by preventing human trafficking. Decisions based on specific and credible threats, incontrovertible evidence of fraud, and indications of trafficking represent thoughtful, responsible decisions. Laws, policies, and practices that require consular and immigration officials to adjudicate applications from specific countries due to a belief that all applicants from that country are greater risks of these and other unspecified practices constitute a biased approach.

Bias is a familiar and significant concern in the global AI/ML community, especially given the potential for some AI/ML systems to create or reproduce negative or unfair outcomes. Multiple perspectives, as offered by individuals from around the world, provide the varied viewpoints and insights necessary to identify red flags and potential dangers. It is a priority for organizations like the Partnership on AI -- and its many Partner organizations -- to be able to convene diverse groups to create AI/ML systems, tools, and products that recognize these harms and enable the benefits of AI technologies to be broadly distributed.[21] Voices and contributions from global talent are also essential for reducing the unintended consequences that can arise from AI/ML development and deployment, including those related to safety and security. Due to the emergent and rapidly evolving nature of AI technology, AI in particular engenders high impact AI safety and security risks, which can be mitigated by increasing the diversity of participants.[22] Countries lose out on valuable insights from individuals around the globe when officials are

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20   *See, for example, US Citizenship and Immigration Services Inadmissibility Criteria:* Immigration and Nationality Act, Title 2: Immigration, INA 212, 8 U.S.C.1182, Inadmissible Aliens. or Applicant Service Reference Guide, Inadmissibility and Waivers. Accessed August, 2019.

21   *For example, see* PAI's ABOUT ML project.

22   Han, T. A., Pereira, L. M., Santos, F. C., & Lenaerts, T. (2019). Modelling the Safety and Surveillance of the AI Race. https://arxiv.org/pdf/1907.12393.pdf

required to make decisions based solely on the applicant's nationality and without specific information to justify a denial.

5. **Train Officials in the Language of Emerging Technologies**
   Train consular and immigration officials in the language of emerging technologies so they can quickly recognize and adjudicate applications from highly skilled experts.

The language of AI/ML is complex, and not easily understood for those working outside the community. Key and relevant phrases to illustrate advancements in these technologies are constantly evolving, and are not commonly used outside of the global AI/ML community. Regularly training and familiarizing consular and immigration officials in these keywords may accelerate the adjudication of these applications.

"It was emotionally and financially draining."

Anonymous, invited to Participate in NeurIPS 2018 and the co-located Black in AI Workshop, responding to a survey about their experiences applying for a visa.

6. **Assist Visa Applicants**
   Empower select officials with the authority and expertise to assist applicants in correctly filling out necessary but sometimes complicated visa paperwork, as well as clarifying and resolving any questions or discrepancies that may otherwise lead to a denial or delay in approval. Beneficiaries would include startups, small- and medium-sized enterprises, smaller colleges and universities, less affluent applicants, and students and interns.

The current visa application system has a disproportionate effect on those without the resources to hire experts or employ teams of people to navigate complex global visa processes. This situation effectively creates winners and losers in the visa system, and may serve to enhance inequity already seen across many dimensions of the technology sector and the AI/ML field. Large, multinational companies and prominent, well-funded universities and colleges have the resources to hire experts to ensure their preferred candidates have the greatest chance to obtain visas for internships, to study, or to work in those organizations. Startups, small- and medium-sized enterprises, less affluent applicants, students, and interns often lack those resources, and often cannot successfully compete for visas, including those that are numerically limited.

Some countries have assigned third party officials to submit visa applications on behalf of applicants. The third parties have knowledge and expertise to assist an individual, but for some, such as interns and students, the service fees, which are charged in addition to the visa application fees, are prohibitively high. Similarly, applicants destined to join startups, small- and medium-sized enterprises, smaller colleges and universities, less affluent applicants, students, and interns may not be able to afford to pay for advice from legal or other immigration experts. Without assistance or guidance, these applicants may not receive a visa that enables them to contribute directly or indirectly to the conversations, studies, and work that is designed to ensure AI/ML benefits people and society.

To address any confusion on the part of applicants, and to promptly resolve questions expressed by government officials concerning the intent of these applicants or the authenticity of accompanying letters of invitations or related paperwork, PAI strongly recommends that governments in host countries assign

an official with the necessary authority and expertise to resolve any questions for resource-constrained organizations and individuals and to overturn any inappropriate denials and quickly issue visas. To avoid any conflicts of interest, this official should not be involved in adjudicating visa applications.

7. **Students and Interns are the Future**
Pass laws that establish special categories of visas or permits for AI/ML students and interns. These laws should clearly identify a path for university graduates to obtain a work permit, or to obtain permanent residence or citizenship.

Companies, civil society organizations, and academic and research institutes frequently offer internships to those interested in AI/ML. Internships allow students to gain valuable job experience and professional skills, expose them to their field of choice, and develop professional networks. Organizations hosting interns are able to assess whether they would like to hire the intern full time after completion of their studies and often learn from the interns as well. Interns learn whether they would like to join that organization in the future. International internships expose the student and the organization to new cultural experiences and values, enriching both parties.

Visa laws, policies, and processes offer opportunities for students to take advantage of international internships, yet they also can impede those opportunities. For instance, according to its Civic and Immigration Services, South Africa, home to universities with AI and ML and related multidisciplinary programs, does not authorize visas for internships for foreigners.[23] Sponsors of international internships reported other challenges in obtaining visas for interns and other short-term educational opportunities, such as:

- A U.S. university reported that the uncertainty surrounding the time it takes for foreign students selected for summer internships to obtain a visa resulted in an unpredictable internship program for the university and the student. One student's visa was approved late in the summer internship cycle, and the student then had to begin the internship the following summer.

- A PAI Partner noted that universities in the United States must carefully consider which visa to sponsor for incoming foreign interns to minimize potential impacts to future employment and other opportunities for incoming interns. For example, the U.S. J-1 Exchange Visitor Program visa for international interns has a "two year physical presence requirement" that requires certain individuals to return to their home country for two years after the program ends, per the Immigration and Nationality Act, if their home country has identified their skills as critical and necessary.[24] Skills such as "Computer and Information Sciences and Support Services," "Engineering," "Liberal Arts and Sciences, General Studies and Humanities," and "Technical Education/Industrial Arts" are found on the 2009 Revised Exchange Visitors Skills List, the latest version of the document that identifies the critical skills countries need to develop.[25] If the intern's J-1 program and country of citizenship are subject to the requirement, that person is unable to accept job offers from U.S.-based organizations until the student has stayed in their home country for two years. While interns are able to apply for a waiver to the physical presence

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23   South African Visitors Visa. *Civic and Immigration Services, South African Embassy and Consulates in the U.S.* Accessed Aug. 2019.

24   Exchange Visitor Visa, Two-year Home-Country Physical Presence Requirement. *Bureau of Consular Affairs, U.S. Department of State.* Accessed August, 2019.

25   2009 Revised Exchange Visitor Skills List. (2009, April) Public Notice 6546. Federal Register V74, N82. *U.S. Department of State.* Accessed August, 2019.

requirement, until this process is completed the intern must find an alternative arrangement.[26]

Some countries have established a path for university students and graduates to obtain permanent residency. Ireland's system allows people who have lived in Ireland for five years to apply for permanent residency. Those whose skills appear on the Critical Skills Employment List, including those with technical skills, may apply after two years for a Permit.[27] The United Kingdom currently offers students outside of Switzerland or the European Economic Area (EEA) countries an opportunity to obtain permanent residency. Doctoral students in the United Kingdom may stay for 12 months following the completion of their degree. If they find an employer in that timeframe who is able to provide them a Tier 2 visa, and they stay for the duration of this five year visa, they can apply for permanent residency.[28] Australia offers a Temporary Graduate Visa for international students who have recently graduated with a degree from an Australian institution, or with skills and qualifications that are relevant to specific occupations that Australia needs. Depending on the specific visa type, graduates can live, study and work in Australia for up to four years.[29] The Canadian government, as well as most provinces, offers a route to post-study work for international students.[30] Manitoba, for example, is launching an International Education Stream, which will give international STEM graduates a chance to apply for permanent residency as soon as they finish their studies.[31] The Nova Scotia Nominee Program (NSNP), and, in particular, the Skilled Worker stream, helps employers recruit foreign workers and recently graduated international students whose skills are needed in Nova Scotia.[32] These programs may serve as examples for other countries.

8. Redefine "Families"
    Adopt visa permissions that reflect a comprehensive definition of "family," modeled on the Finnish Aliens Act and similar definitions in other European nations. Family visas should not be numerically limited. Legal spouses, partners, and those with family ties should also be permitted to work or study in the host country. Long-term caregivers should be permitted to accompany and remain with the sponsor and their family while employed in that capacity.

In 2019, the definition of "family" is complex and evolving. Many consider people outside the legal definition of family to be essential members of their families. The global mobility of these households may be complicated or deterred if the definition of family is limited to immediate family members.

Families are also increasingly caring for aging parents, and those who can afford to are employing caregivers for those family members. According to the United Nations, a third of the countries in North America and Europe include a household member older than 60. Households in countries in Africa and Asia are more likely to include children under the age of 15 and adults over the age of 60.[33] Other families include people with special needs, and caregivers are essential to their well-being.

26 Exchange Visitor Visa, Waiver of the Exchange Visitor Two-Year Home-Country Physical Presence Requirement. *Bureau of Consular Affairs, U.S. Department of State.* Accessed August, 2019.

27 Critical Skills Occupations List and Critical Skills Employment Permits. *Department of Business, Enterprise and Innovation, Ireland.* Accessed August, 2019.

28 Stay in UK after Finishing Your Studies as an International Student. *StudyinUK.* Accessed August , 2019.

29 Temporary Graduate Visa Subclass 485. *Australian Government, Department of Home Affairs.* Accessed August, 2019.

30 Post Graduation Work Permit. *Government of Canada.* Accessed August, 2019.

31 Atack, P. (2018, January) Canadian province offers residency to STEM grads. The Professional in International Education (PIE) News. Accessed August, 2019.

32 Government of Nova Scotia website. New Immigration Pathway Created for International Students (2014, June) and Nova Scotia Nominee Program, Skilled Worker stream. Accessed August, 2019.

33 United Nations, Department of Economic and Social Affairs, Population Division (2017). Household Size and Composition Around the World 2017 – Data Booklet (ST/ESA/ SER.A/405).

Some countries offer visas to allow parents to accompany or visit adult children working in their country. Singapore's Long Term Visit Pass allows individuals with an Employment Pass or and S Pass making a fixed monthly salary over SGD$12,000 to bring parents to Singapore for two years, and the Pass may be renewed.[34] Those who obtain Japan's Highly Skilled Professional visa may be able to bring their parents with them. Holders of this visa may also be able to bring a domestic worker with them, including a caregiver.[35]

These people, including family members, long-term caregivers, partners of family members, and those in serious relationships, are essential to advancing the intellectual, professional, and personal lives of the visa applicant. They are often as highly skilled as the primary visa applicant.[36] They should be given equal consideration in visa applications and work permits, so that these policies are reformed to be inclusive and thoughtful, reflecting our world as society redefines what "family" means. PAI is not recommending that multiple people be authorized to accompany the main visa applicant. Rather, those who accompany the main visa applicant should be permitted to accompany the sponsor based on the nature of their relationship to the family.

Finland's Aliens Act definition, similar to other European country definitions, provides a modern, inclusive definition of family.[37] The Finnish Aliens Act definition of family or spouse is also appealingly broad and represents the diversity of families around the globe. Together these aspects of Finland's residency permit offer another model for countries to consider as they are designing visas or permits for talented AI/ML individuals and their families.

In Finland's Aliens Act, "residence permits granted on the basis of family ties" offer unrestricted right to work, meaning the alien can work once the permit is issued. The family member "with whom you plan to lead a family life" must obtain a permit and is known as the sponsor. The sponsor and the family member can apply for residence permits sequentially or at the same time.[38] Finland defines a spouse as, "your husband or wife, your registered same-sex partner or your co-habitating partner who you have lived with for at least two years in a marriage-like relationship or with whom you have joint custody of a child."[39] If you are dating and intend to continue your relationship in Finland, you are granted a "restricted right to work" upon receipt of a residence permit. In those cases, the alien is allowed to work in select career fields, such as the arts or athletic endeavors, or in middle or senior management or international organizations.[40]

9. **Rely on Effective Policies and Systems to Protect Information**
    Immigration restrictions do not adequately protect information and intellectual property rights. For example, trade negotiations can strengthen intellectual property laws and establish courts to protect and enforce intellectual property rights owned by rights holders, whereas implementing immigration policies and practices that broadly apply to all applicants from a particular country do not.

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34   Eligibility for Long Term Visit Pass. *Singapore Government. Ministry of Manpower.* Accessed August, 2019.

35   Points-based Preferential Immigration Treatment for Highly Skilled Foreign Professionals. Immigration Bureau of Japan,. Accessed August, 2019.

36   Top 10 Surprising Facts About Family-Based Immigration. (2019, July) *Boundless.* Accessed August, 2019.

37   Residence Permit on the Basis of Family Ties, *Finnish Immigration Service.* Accessed August, 2019.

38   Residence Permit on the Basis of Family Ties, *Finnish Immigration Service.* Accessed August, 2019.

39   Residence permit application based on family ties when your spouse has a residence permit in Finland. *Finnish Immigration Service.* Accessed August, 2019.

40   Residence permit application on the basis of intimate relationship. *Finnish Immigration Service.* Accessed August, 2019.

Immigration systems are not an effective line of defense against the theft of information, trade secrets, and other intellectual property. Other methods reflect the strong incentives organizations have to secure and protect these valuable resources. For instance, companies, universities, and research institutes implement training and other programs to protect valuable information and intellectual property, while encouraging collaboration and publication of key findings and research.[41]

Questions concerning whether fundamental and basic research should be protected from rivals are not new. The United States examined this question at the height of the Cold War and in the weeks immediately following the tragic events of September 11, 2001, and declined to quell international scientific collaboration. National Security Decision Directive 189, dated September 21, 1985, determined, "It is the policy of this Administration that, to the maximum extent possible, the products of fundamental research remain unrestricted...No restriction may be placed on the conduct or reporting of federally funded fundament [sic] research that has not received national security classification, except as provided for in U.S. Statutes."[42] National Security Advisor Condoleeza Rice affirmed that this Directive remained U.S. policy in November 2001. She wrote, "The key to maintaining U.S. technological preeminence is to encourage open and collaborative basic research. The linkage between the free exchange of ideas and scientific innovation, prosperity, and U.S. national security is undeniable."[43] These findings are still valid and can and do extend to countries around the world.

Intellectual property theft has been taking place for decades, with perpetrators of various types located in countries around the world. For instance, as of 2019, the Office of the United States Trade Representative Annual Special 301 report (first published in 1989), identifies 36 trading partners "...that do not adequately or effectively protect and enforce intellectual property (IP) rights or otherwise deny market access to U.S. innovators and creators that rely on protection of their IP rights."[44]

Intellectual property theft takes place within countries, too, and these actors do not pass through an immigration system in order to illicitly obtain intellectual property. According to a 2014 CREATe/PwC report, malicious insiders, organized crime, foreign intelligence services, competitors, and "hacktivists" are most likely to steal company information.[45] Organizations employ a number of techniques to ensure that trade secrets, and other forms of intellectual property and proprietary information remain secure. Cybersecurity techniques, for instance, are intended to protect information stored in electronic form. Yet, information, trade secrets, and other intellectual property can be stolen via cyber means from any location on the planet - the perpetrator does not need to physically enter a certain country.

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41   For example, see: Reif, L. (2019, June) "Letter to the MIT community: Immigration is a kind of oxygen." MIT News. Accessed August 2019.

42   National Security Decision Directive 189. (1985, September). National Policy on the Transfer of Scientific, Technical and Engineering Information. Office of the Under Secretary of Defense for Acquisition & Sustainment, Accessed August, 2019.

43   Condoleezza Rice letter on NSDD-189 (2001, November) Association of American Universities. Accessed August, 2019.

44   Office of the United States Trade Representative. (2019, April) USTR Releases Annual Special 301 Report on Intellectual Property Protection and Review of Notorious Markets for Piracy and Counterfeiting. Accessed August, 2019.

45   Economic impact of trade secret theft: a framework for companies to safeguard trade secrets and mitigate potential threats (2014, February) Center for Responsible Enterprise And Trade (CREATe.org) and PricewaterhouseCoopers LLP (PwC).

IV. Conclusion

AI affects many facets of life today, and it is expected to offer greater contributions -- and associated questions -- to society's future. Talented individuals in the global AI/ML community have invented AI/ML techniques and applications that have transformed society by supporting technologies that are ever more embedded in our daily lives, advancing medicine as well as entertainment, and generating economic opportunities for people around the world. In other cases, AI/ML techniques have created unintended consequences, and raised questions concerning which skills will be necessary to succeed in an AI/ML-enabled future. Much work remains to mitigate these consequences as increasingly sophisticated tools continue to permeate daily life.

Bringing together experts from countries around the world that represent different cultures, socio-economic experiences, backgrounds, and perspectives is imperative. Their expertise and skills are essential for AI/ML to flourish and help create the future we desire. Changes to visa laws, policies, and practices are necessary to ensure that globally diverse voices will be available to convene, study, and work together to advance AI/ML technologies in a thoughtful and beneficial manner. In order to advance scientific understanding and create opportunities for global cooperation, multidisciplinary experts from around the world must be able to obtain visas in time to contribute their diverse voices to important international conversations. This paper contains policy recommendations to help countries and organizations address these challenges, and attract, retain and benefit from global AI/ML talent. We hope this document can serve as a useful resource for the AI/ML community and beyond, in support of balancing government public safety responsibilities with the benefits of immigration, freedom of movement, and global collaboration.

Appendix A: Frequently Asked Questions (FAQ)

Q: Why would PAI tackle a subject such as visas and immigration? This topic is not really related to artificial intelligence research.

PAI believes that bringing together experts from countries around the world that represent different cultures, socio-economic experiences, backgrounds, and perspectives is essential for AI/ML to flourish and help create the future we desire. Artificial intelligence is projected to affect all facets of society, and in some ways it already is having those effects. PAI's work addresses a number of topics related to AI, such as criminal justice and labor and economy. Our work to address immigration challenges affecting the AI community is quite similar.

Q: How does this document pertain to PAI's mission and work?

This document makes visa policy recommendations that would improve the mobility of global AI/ML talent and enable companies, organizations and countries to benefit from their diverse perspectives. Fostering, cultivating, and preserving a culture of diversity and belonging in our work and in the people and organizations who contribute to our work is essential to our mission, and embedded in our Tenets. These include: committing to open research and dialogue on the ethical, social, economic, and legal implications of AI, ensuring that AI technologies benefit and empower as many people as possible, and striving to create a culture of cooperation, trust, and openness among AI scientists and engineers to help better achieve these goals.

Q: Who benefits from this policy paper?

Unlike large, multinational companies and prominent, well-funded universities and colleges, startups, small- and medium-sized enterprises, individuals traveling to conferences, less affluent applicants, students, and interns often lack the resources to hire experts to ensure their preferred candidates have the greatest chance to obtain visas for internships, to study, or to work in their organizations. These groups and individuals often cannot successfully compete for visas, especially those that are numerically limited. They would be the greatest beneficiaries should governments implement these recommendations.

Q: Why is PAI uniquely suited to address this issue?

As a multi-stakeholder non profit, PAI convenes over 100 global Partners, originating from 12 countries and four continents, and representing industry, civil society, and academic and research institutes. As such, we are uniquely qualified to describe the impacts of immigration laws, policies, and practices on the AI/ML community. The impetus for this document came from many of PAI's Partners and colleagues, who have shared how certain visa laws, policies, and practices negatively affect their organizations' abilities to benefit from global representatives and perspectives in their work.

Q: Why is PAI focused on incorporating diverse voices in AI/ML?

Diverse perspectives are necessary to ensure that AI is developed in a responsible manner, thoughtfully benefiting all people in society. Voices and contributions from global talent are also essential to reducing the unintended consequences that can arise from AI/ML development and deployment, including those related to safety and security. Due to the emergent and rapidly evolving nature of AI technology, AI in particular engenders high impact AI safety and security risks, which can be mitigated by increasing the diversity of participating voices.[46] Diverse representation also serves to promote the safety of key members of the AI/ML community. Underrepresented voices, such as those of minorities and the LGBTQ community, are important as we design AI/ML systems to be inclusive of all populations.

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46   Han, T. A., Pereira, L. M., Santos, F. C., & Lenaerts, T. (2019). Modelling the Safety and Surveillance of the AI Race. *arXiv preprint.*

Q: Is PAI suggesting that AI/ML practitioners should be treated differently than other skilled workers? How is this different from other visa categories?

PAI's recommendations would enable AI/ML practitioners, from a variety of disciplines, to travel and work more freely. In some cases, this could entail special visa classifications, similar to those that already exist for skilled workers in other specialized occupations, such as medical professionals, professional athletes, entertainers, religious workers, entrepreneurs, skilled laborers and trades workers.

This paper also highlights the many disciplines involved in the development and operations of AI/ML systems, above and beyond what is sometimes defined as "skilled technology work." Responsible AI/ML systems involve input from researchers and practitioners in social sciences such as economics, sociology, philosophy, ethics, linguistics, and communications, and the "experiential expertise" offered by those working in labor and workers' rights,[47] in addition to technical fields such as mathematics, statistics, computer science, data science, neuroscience, and biology.

Q: How does this work? Unlike medical professionals or engineers, AI/ML practitioners don't have a certificate or license for governments to determine that they are experts.

Countries establish criteria for evaluating applications, whether for technical talent, a professional athlete, or someone skilled in trades or labor. Established eligibility criteria, and the process for evaluating this criteria, vary greatly from country to country. The PAI paper offers models for countries to consider and draw upon if they decide to create a classification for AI/ML practitioners.

For example, some In some cases, countries require letters from a potential employer, or to have someone in the field[48] attest to the applicant's particular skills, or other supporting documentation that proves the applicant has the desired skills. Some examples:

- **An independent review board:** The UK Tech Nation Visa, also known as the Tier 1 Exceptional Talent Visa, assigned an independent, "designated competent body," to review and endorse applications. The Tech Nation Visa Guide outlines the skills and specialties typically exhibited in applications reviewed by this independent body, and the eligibility criteria.

- **Points-based system:** Canada's Express Entry Program, like other Canadian visas, evaluates applicants on the basis of the types of occupations and levels of skills they hope to attract. Certain occupations and skills, among other criteria, garner greater numbers of points. The higher the overall point total, the greater the likelihood of being admitted entry.

- **Government review:** Japan's Skilled Labor Visa program seeks documentation to support the visa application, and that documentation must prove, among other elements, that the applicant has a certain number of years of experience. The government will review the documentation, and issue a Certificate of Eligibility (COE) if they think the applicant possesses the necessary experience and skills. The existence of the COE in the application can accelerate the visa processing time.

- Additional examples can be found in *Recommendations for Policymakers #1* and *Appendix C* of this paper.

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47   *See discussion of "experiential expertise" in:* Young, M., Magassa, L., & Friedman, B. (2019). Toward inclusive tech policy design: a method for underrepresented voices to strengthen tech policy documents. *Ethics and Information Technology,* 21(2), 89-103.

48   For example, see SportsvisaAmerica.com

Appendix B: The Global Demand for AI Talent

The estimated numbers of people in today's "global AI talent pool" range from 36,524 to 200,000 - 300,000.[49] While these numbers diverge and solely represent the technical researcher community, the demand for AI talent and expertise is clear. Excerpts from national AI strategies demonstrating this demand are outlined below.

- **Canada:** One of four major goals of the Pan-Canadian Artificial Intelligence Strategy is to "... increase the number of outstanding artificial intelligence researchers and skilled graduates in Canada." The Strategy further indicates that Canada's Institute for Advanced Research will work closely with researchers to "...attract and retain outstanding AI talent in Canadian universities and industry."[50]

- **China:** China's "Three Way Action Plan for Promoting Development of a New Generation Artificial Intelligence Industry (2018 - 2020), identifies "Attract and train high-end talent for AI and innovative entrepreneurship in a variety of ways, and support the growth of a group of leading talent and top-notch young talents" as a key "assurance measure."[51]

- **France:** In order to attract French and international academics, the French AI strategy, known as "The Villani Report," recommends that institutes create: "an attractive working environment in order to effectively address competition from "Big Tech." They should therefore be set up as AI "free zones," with a considerable reduction in administrative formalities across the board, hefty salary top-ups, and support in improving quality of living. These institutes could offer full-time positions as well as intermediary affiliate status for researchers who remain in founding establishments."[52]

- **Finland:** Finland's Ministry of Economic Affairs and Employment explains that: "World class expertise and top experts are of vital importance to Finland in its transition to the age of artificial intelligence…Finland must be made an appealing alternative to international experts in artificial intelligence. Appealing means that Finland has top expertise in the field of artificial intelligence... as well as piloting environments for the testing of artificial intelligence solutions (such as artificial intelligence accelerators and free intelligence areas)...Attracting international artificial intelligence experts to Finland is possible when moving to Finland is easy and the necessary services are available also here for the experts' families; these services include a sufficient number of international schools and day care centres as well as employment opportunities for each expert's partner. In order to attract experts, Finland will carry out a campaign that is bold in both its message and its other implementation, and corresponds with Finland's image as a pioneer in the utilisation of artificial intelligence. The target group will be consulted during the planning and implementation of the campaign."[53]

- **India:** The recommendations in India's "National Strategy for Artificial Intelligence Discussion Paper" state that: "In the short-term, given the paucity of quality faculty in India in AI, appropriate incentivisation mechanism (which could be a combination of promise of topnotch infrastructural

49   Gagne, JF. Global AI Talent Report 2019. *Element.ai.* And Vincent, J. (2017, December). Tencent says there are only 300,000 AI engineers worldwide, but millions are needed. *The Verge.* Accessed August, 2019.

50   Pan-Canadian Artificial Intelligence Strategy. Canadian Institute for Advanced Research (CIFAR). Accessed August 27, 2019.

51   Triolo, P., Kania,E., and Webster, G. (2018, January). Translation: Chinese government outlines AI ambitions through 2020. *New America.* Accessed August 27, 2019.

52   Villani, C. (2018, March). For a Meaningful Artificial Intelligence-Towards a French and European Strategy. *AI for Humanity - French Strategy for Artificial Intelligence.* Accessed August 27, 2019.

53   Finland's age of artificial intelligence. Turning Finland into a leading country in the application of artificial intelligence. Objective and recommendations for measures.(2017, December) *Ministry of Economic Affairs and Employment of Finland.* MEAE reports 47/2017. Accessed August, 2019

facilities and remunerations matching international standards) to bring top-tier international faculty, especially the Indian diaspora, needs to be developed."[54]

- **Mexico:** Mexico's AI strategy is based on the "Towards a National Strategy for AI in Mexico" report, which notes that the government should be "...actively attracting the best talent to return or come to work in Mexico."[55]

54   National Strategy for Artificial Intelligence Discussion Paper (2018, June) *NITI Aayog, Government of India.* Accessed August, 2019.

55   Emma Martinho-Truswell, E. and Gomez Mont, C. (2018, May). Mexico leads Latin America as one of the first ten countries in the world to launch an artificial intelligence strategy. *Oxford Insights.* Accessed August, 2019.
        Towards and AI Strategy in Mexico: Harnessing the AI Revolution. (2018, June) *Oxford Insights.* Accessed August, 2019.

Appendix C:
Background Information on Visa, Residence and Work Permit Related Laws, Policies, and Practices

Immigration laws, policies, and practices have not kept pace with technology's global reach. Visa laws, policies, and practices vary among countries, are are often further differentiated depending upon the country from which the applicant applies, the purpose of the visit, the applicants' background or nationality, the type of passport held by the applicant, required necessary documentation to accompany applications, and the length of stay.

Countries also differ in the relative ease of obtaining a visa or entering into their country. The signatories to the Schengen Agreement have established policies that permit members, as well as citizens from specifically named countries to visit or conduct business for a limited period of time without obtaining a visa. Other countries, such as the United States, New Zealand, France, and South Africa, require a visa or visa waiver no matter the length of stay.

Visas are generally classified as nonimmigrant or immigrant visas, with different rules pertaining to each. Countries organize different types of nonimmigrant visas into "categories," based on the occupation of the applicant or purpose of the visit. Many countries have created visa classifications for specialized professions, including medical professionals, professional athletes, entertainers, religious workers, and entrepreneurs. Different rules, such as the length of the validity of the visa, apply to each of the categories. Other countries, such as France, issue different types of visas based on the length of time the traveler wants to stay in the country. Other countries issue residence and work permits rather than visas. Some countries, including the US, may require visas as well as an equivalent work permit, to be employed in that country. [56]

Existing visa programs for experts or people who can afford to invest:

Some countries have created laws, policies, and practices to facilitate the ability of experts or people with special skills to obtain visas. Many countries have also created special visa categories with accelerated review timelines for entrepreneurs and investors who are willing to invest a minimum amount of money in the country. A few specific examples are listed below:

- Visa Tech Chile grants a one-year working visa in 15 working days or less if the applicant provides a certificate of sponsorship or letter of invitation.[57]

- The French Tech Visa allows people to obtain a visa for four years that is renewable and does not require a separate work permit. Spouses also obtain these residence permits and are able to work in France during this time. These visas are issued to startup founders, people who are hired by a firm identified by the Government of France as eligible to recruit for these visas, investors, or those being hired to join a venture capital firm. The visa can take up to three months to be issued.[58]

- The French Researcher-Talent Passport Long-Stay Visa is issued to researchers, professors conducting research, and doctoral students who have an agreement governing their work, and can be issued for a year or four years.[59]

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56   *For examples, see:* Dominic Lau, D. (2018, February.)The International Startup Visa Guide. *Medium*
      Mcbride, E. (2018, November) Overview of startup visas in 5 European countries. *Hitecher.* Accessed August, 2019.

57   Visa Tech Chile. I*nvest Chile.* Accessed August, 2019

58   What is the French Tech Visa? *La French Tech.* Accessed August, 2019

59   The "Researcher-Talent Passport" Long-stay Visa. *Campus France.* Accessed August, 2019.

- The State of Jalisco in Mexico created a Tech Visa Program in 2018. Applicants from the United States are granted a visa in a day at a Mexican consulate, after paying a US$36 fee and demonstrating that they can support themselves on US$2000 per month. After one month, they are granted a residency card valid for three years, and recipients do not pay Mexico taxes.[60]

- The UK's Tier 1 Exceptional Talent Visa, also known as the Tech Nation Visa, issues three year visas to those determined to have Exceptional Talent, and up to five years for those determined to possess Exceptional Promise. Demand for the Tech Nation Visa has been growing since its inception in 2014, up 45% to 650 applicants in 2018-2019.[61]

These visas, while not available worldwide, represent examples for how countries can enable applicants with select expertise or the ability to invest to contribute to national and global conversations. Yet, it is not sufficient to create similar visas worldwide to fully realize the inclusion of diverse voices in AI/ML, as most people cannot afford to invest large sums of money in destination countries and/or are not interested in becoming entrepreneurs. Countries will need to adopt other recommendations, such as those outlined in this report, to ensure global, diverse voices can contribute to AI's future.

60   Tech Visas Program. *Consulate General of Mexico in San Francisco.* Accessed August, 2019

61   What is Tech Nation Visa? *Tech Nation.* Accessed August, 2019. *'45% Increase': Demand for UK Tech Visas Booms.* (2019, June) *Open Business Council.* Accessed August, 2019.

Acknowledgements

About Partnership on AI

The Partnership on AI (PAI) is a global multi-stakeholder nonprofit committed to the creation and dissemination of best practices in artificial intelligence through the diversity of its Partners. By gathering the leading companies, organizations, and people differently affected by artificial intelligence, PAI establishes a common ground between entities which otherwise may not have cause to work together – and in so doing – serves as a uniting force for good in the AI ecosystem. Today, PAI convenes more than 90 partner organizations from around the world to realize the promise of artificial intelligence. Find more information about PAI at partnershiponai.org.

PARTNERSHIP ON AI