

Chapter 10: The Talent Competition

Blueprint for Action

The United States must dramatically invest in its artificial intelligence (AI) talent pipelines in order to remain at the forefront of AI now and into the future. It is imperative that the United States strategically invest in science, technology, engineering, and mathematics (STEM) education at all levels and improve the immigration system to allow for more AI talent to enter and remain in the United States. Therefore, this Blueprint for Action is organized into two broad categories of recommendations for strengthening the U.S. talent pipeline: the U.S. education system and immigration.

Talent Pipeline: U.S. Education System

Investments in STEM education are a necessary part of increasing American national power and improving national security. This requires the United States to reform its education system to produce both a higher quality and quantity of graduates.

Recommendation

Recommendation: Pass a New National Defense Education Act

In response to the Soviet launch of Sputnik in 1957, the United States passed the National Defense Education Act (NDEA) in 1958 to extend U.S. leadership in education and innovation.¹ The NDEA promoted the importance of science, mathematics, and foreign languages for students, authorizing more than \$1 billion toward decreasing student loans, funding for education at all levels, and funding for graduate fellowships. Many students were able to attend college because of this bill; 3.6 million students attended college in 1960, and by 1970, it was 7.5 million.² This act helped America win the Space Race and accelerated our ability to innovate, and it is widely regarded as one of the most successful pieces of education legislation in U.S. history.

Now is the time for a new NDEA. The NDEA greatly increased the number of Americans with a college degree, expanded the number of math and science teachers to meet the demand of the K-12 system after the postwar baby boom, and was focused on defense-centric fields, particularly a deficiency in mathematicians. The impacts of federal spending on higher education today are echoes of the investments made in the late 1950s by the Eisenhower administration. The United States needs a second NDEA (NDEA II) in order to address the current digital talent gap and prevent the United States from falling behind in the race for AI and STEM talent.

Actions for Congress:

- **Increase Funding for STEM- and AI-Focused After-School Programs**

- o STEM and AI-focused after-school learning programs expose students to STEM- and AI-related programs beyond normal school hours. The length of the school day limits teachers' ability to cover a myriad of topics. American elementary school students are exposed to an average of 20 minutes of science and 60 minutes of math during the school day.³ Given the short amount of time that teachers are able to spend on STEM in their classrooms, some school districts have begun to offer after-school programs that expose students to STEM in a less structured environment. More time spent studying STEM topics helps students' test scores, and for those who are underrepresented in STEM fields, federal funding for after-school programs will increase students' accessibility to quality educational tools.⁴ Appropriations for after-school programs should favor applications that are jointly submitted by a local educational agency and a community-based organization or other public or private entity as a way to defray costs and encourage community engagement.

- **Increase Funding for STEM- and AI-Focused Summer Learning Programs**

- o STEM- and AI-focused summer learning programs will encourage students to engage in STEM and AI activities during the months when students are typically unengaged and experience learning loss. The 21st Century Community Learning Centers Act is an example of a program that funds "academic enrichment opportunities during non-school hours for children, particularly students who attend high-poverty and low-performing schools" and has exhibited proven, positive results.⁵ Much like the after-school initiative, priority should be given to those applications that are jointly submitted by a local educational agency and a community-based organization or other public or private entity.

- **Allocate Funds for K-12 STEM Teacher Recruitment, Retention, and Training**

- o Teachers are an integral part of the learning experience for STEM subjects. One inequity is the lack of teachers with the requisite proficiency in STEM. Evidence shows that STEM teacher training for current teachers is sporadic, ineffective, and not effective in addressing the specific needs of individual students.⁶ Moreover, recruiting high-quality K-12 teachers with STEM experience and proficiency is difficult. This is particularly concerning, as teachers are one of the most influential aspects of school, having two to three times the impact of other components, such as leadership and school services.⁷ As the world continues to integrate technology into education, teachers must be taught how to use this technology as well as how to teach students the critical foundations and basic functions that come with it.⁸ Support should be given to school districts to create and execute teacher training in AI concepts, techniques, and curriculum design, with preference given to professional development courses that count against continuing education requirements for teacher certification.

- **Direct and Fund the National Science Foundation to Create STEM Scholarships and Fellowships**

- o We recommend that the NSF create 25,000 STEM undergraduate scholarships, 5,000 STEM PhD fellowships, and 500 postdoctoral positions over five years to increase the number and quality of STEM and AI practitioners that will reach the job market in a few years.⁹ Growing the nationwide STEM talent pool in high-demand

areas requires a pipeline of students who have studied relevant STEM coursework during their undergraduate careers. Between 2000 and 2017, the share of STEM bachelor's degrees earned—as a percentage of total bachelor's degrees earned in the U.S.—rose from 32% to 35%.¹⁰ The sharpest recent increases were among computer science and engineering majors.¹¹ For AI specifically, a degree in cognitive science or computer science with concentrations in AI or machine learning (ML) can pave the way for future careers in AI research or practice. AI is rarely offered as a major at the undergraduate level. Instead, universities offer standalone courses, a sequence of AI courses, or the option to study a technical major with a concentration in AI. Until a major in AI is more universally offered at U.S. universities, STEM scholarships will increase the number of individuals with the skills necessary to work on AI.

- o Scholarship and fellowship recipients should receive full tuition and room and board. Undergraduate recipients should receive a stipend of \$40,000 a year, and graduate recipients should receive a stipend of \$70,000 a year.¹² Combined with postdoctoral positions, this will bring the total cost to \$7.2 billion over five years.¹³

Actions for the Department of Education:

- **Add Elements of Computational Thinking and Statistics to Student Testing**

- o Computational thinking and statistics are vital for students to understand how AI works.¹⁴ As interdisciplinary fields, the use of computational thinking and statistics within AI can be found at all stages of discovery, from developing and planning studies to assessing the results. Critical thinking along with problem-solving are vital skills taught in statistics. Unfortunately, the majority of high schools in America do not require testing for skills related to computational thinking for graduation.¹⁵ There is no way to comprehensively measure U.S. students' overall abilities or aptitude for skills related to computational thinking and statistics. Students are taught what is needed to pass exams. Compared to other countries, many of which have statistics in their curriculum, the United States ranks low in math.¹⁶ By including subjects critical for computational thinking and statistics in standardized testing at the state level, the United States can gain a better understanding of students' capabilities and work to implement curriculum and lessons focused more on computational thinking and statistics in order to ensure students' success.

Recommendation

Recommendation: Require Statistics in Middle School and Computer Science Principles in High School

Actions for State Legislatures:

- **Require statistics as a required course in middle school and computer science principles in high school. Many fundamental concepts in AI, ML, and their subfields are applied statistics in disguise.¹⁷ The techniques and algorithms used are heavily based in statistical methods, such as cluster analysis and model selection. Statistics and computer science principles are needed to prepare students for AI courses, concentrations, and internships. Providing training in statistics starting in middle school will better prepare students for the increasingly advanced analytic techniques in demand for AI and STEM careers. Similarly, currently only 47% of U.S. high schools offer computer science coursework.¹⁸ This is much higher than just a decade ago, thanks to nationally organized initiatives, but this still leaves many high schools without computer science education.**

Moreover, adoption has been piecemeal and curriculum depth varies widely. Therefore, state action is needed.

- **On their own, neither statistics nor computer science are sufficient to teach students the concepts needed to understand AI. Having both allows students to experience the critical bases that must be covered early on in order to prepare students for a technological career. Simple math such as basic probability and summarizing numerical data is applying concepts of statistics and computer science.**

Talent Pipeline: Immigration

Immigration reform is imperative for strengthening the U.S. talent pipeline, particularly given the significant benefits the United States experiences due to highly skilled immigration. Therefore, the United States must pursue reforms to accelerate highly skilled immigration and retention of international students within the United States.

The following recommendations are intended to help the United States lead the world's development and implementation of AI by gaining a decisive majority of a critical and limited resource: AI talent. The recommendations will improve the United States' ability to attract talent to the United States and, just as important, away from competing countries.

The United States needs to take bold steps to ensure it wins the competition for international talent for years to come. Such steps should ensure that our immigration system attracts students, technical experts, and entrepreneurs; grants stability while they continue to contribute to the American economy and research environment; and retains students, entrepreneurs, and experts rather than sending them home or to competing countries. The best way to accomplish these goals and to send a clear message to AI and STEM talent around the world is to pass a National Security Immigration Act that specifically helps STEM talent remain in the United States, reduces the overall burden of the citizenship process, and creates specific paths for entrepreneurs.

Recommendation: Pass a National Security Immigration Act

Recommendation

1) Grant Green Cards to All Students Graduating with STEM PhDs from Accredited American Universities

This would issue an incredibly clear message to talented young people around the world that they are welcome in the United States and would ease their transition to American citizenship. It is a very aggressive maneuver to gain a larger share of the world's STEM talent.

Such a proposal is admittedly bold, but the benefits of attracting vetted, top-tier talent outweigh the risks. Bold measures are needed to preserve America's advantages in STEM fields today and to ensure we out-innovate and outperform competitors in the future.¹⁹ Few

other proposals are significant enough to make a dramatic difference in the competition for talent, or to force China into a dilemma on their domestic front. It is also noteworthy that similar proposals have received bipartisan support in the past.²⁰

Actions for Congress:

- **Amend 8 U.S.C. 1151(b)(1) to grant lawful permanent residence to any foreign national who:**
 - o Graduates from an accredited United States institution of higher education with a doctoral degree in a field related to science, technology, engineering, or mathematics in a residential or mixed residential and distance program;
 - o Has a job offer in a field related to science, technology, engineering, or mathematics; and
 - o Does not pose a national security risk to the United States.
- **Vetting for national security concerns should be enabled by the FBI and Intelligence Community**
- **Graduates granted lawful permanent residence through this program should not count against overall or country-of-origin green card caps**

2) Double the Number of Employment-Based Green Cards

Whether one aims for the United States to achieve AI dominance, grow gross domestic product (GDP), stimulate job growth, reduce government deficits, or bolster the solvency of the U.S. Social Security program, the most straightforward solution is the same: increase the number of highly skilled permanent residents. Under the current system, employment-based green cards are scarce: 140,000 per year, fewer than half of which go to the principal worker.²¹ This leaves many highly skilled workers unable to gain permanent residency and unable to transfer jobs or negotiate with employers as effectively as domestic workers. If underpaid, these workers cannot leave their jobs or bargain for better wages without risking revocation of the employer's green card sponsorship or even firing and forced departure from the United States. This decreases the appeal of joining the American workforce.

The H-1B system is problematic for most employers, as well, with a consistently oversubscribed "lottery" of 85,000 visas each year (of which 20,000 are reserved for advanced degree holders from U.S. universities).²² To reduce the backlog of highly skilled workers, the United States should double the number of employment-based green cards, with an emphasis on permanent residency for STEM and AI-related fields. If it were easier for U.S. employers to sponsor global talent for a green card as opposed to an H-1B visa, the H-1B program could then serve its originally intended function as a vehicle for truly temporary high-skilled work needs.

Action for Congress:

- **Amend 8 U.S.C. 1151(d)(1)(A) by changing “140,000, plus” to “280,000, plus”**

3) *Create an Entrepreneur Visa*

International doctoral students are more likely to want to found a company or become an employee at a startup than their native peers; but, in practice, they are less likely to pursue those paths. One reason is the constraints of the H-1B visa system.²³ Similarly, immigrant entrepreneurs without the capital to use the EB-5 route to permanent residency are forced to use other visas that are designed for academics and workers in existing companies, not entrepreneurs.²⁴ All of these issues make the United States less attractive for international talent and, just as important, reduce the ability of startups and other small companies, the main source of new jobs for Americans, to hire highly skilled immigrants that have been shown to improve the odds that the business will succeed.

Actions for Congress:

- **Create an entrepreneur visa. This visa should serve as an alternative to employee-sponsored, investor, or student visas and should instead target promising potential founders. Legislation should:**
 - o Define an entrepreneur as an alien whose organization and operation of a business would provide significant public benefit to the United States if allowed to stay in the country for a limited trial period to grow a company.
 - o Prioritize entrepreneurs active in high-priority fields such as AI or in fields that use AI for other applications, such as agriculture. The National Science Foundation should update the list of high-priority fields every three years.
 - o Use capital capture as a screening criterion for entrepreneurs.
 - o Emphasize job creation for Americans—potentially emphasizing underserved regions or areas with high unemployment—as a core factor in the assessment of significant public benefit.

4) *Create an Emerging and Disruptive Technology Visa*

A new nonimmigrant visa designed to attract top technology talent in critical fields would allow universities and businesses that work on AI and other emerging technologies access to a greater pool of talent necessary to create cutting-edge research. It would also respond more flexibly to labor market demands as new technologies emerge. The effect would be to “revitalize our country’s research ecosystem, empower our country’s innovation economy, and ensure that the United States remains a world superpower in the coming decades.”²⁵

Action for Congress:

- **Create an emerging and disruptive technology visa that:**
 - o Requires the National Science Foundation to identify critical emerging and disruptive technologies every three years;
 - o Allows students, researchers, entrepreneurs, and technologists in applicable fields to apply; and
 - o Does not include emerging and disruptive technology visa holders in any other visa category cap.

Recommendation

Recommendation: Broaden the Scope of “Extraordinary” Talent to Make the O-1 Visa More Accessible and Emphasize AI Talent

The O-1 temporary worker visa is for people with extraordinary ability or achievement.²⁶ O-1 visas are valid for three years and can be renewed annually an unlimited number of times. There is also no limit on the number of visas issued per year. Currently, about 15,000 to 18,000 new O-1 visas are issued annually.²⁷ For these reasons, the O-1 visa is generally a more flexible visa category than the H-1B visa, which is, with some exceptions, capped in duration and number.²⁸

While O-1 visas provide many advantages, they are a poor fit for many highly skilled workers due to the uncertainty of their criteria and the administrative burden of the application and adjudication process. Adjudicators determine an applicant’s eligibility through subjective assessments of whether applicants received nationally recognized prizes, have been published in major outlets, have done original work of major significance, and meet other similar criteria. For the sciences and technology, this aligns largely with academic criteria such as publications in major outlets and is not well suited for people who excel in industry.

Actions for the U.S. Citizenship and Immigration Service (USCIS):

- **Issue new guidance with clear and broad standards for regulatory criteria, such as what counts as a major outlet, nationally recognized prize, or original work.**
 - o For example, if a publication in a top-five academic journal within a scientist’s field counts as a major outlet, many PhD graduates would likely qualify.
- **Initiate a regulatory process to decrease the threshold for eligibility for an O-1 visa, for example by reducing the number of criteria an applicant has to fulfill.**
 - o The current standard is three out of eight criteria.²⁹
- **Broaden criteria to better accept non-academic AI and STEM accomplishments.**
 - o For instance, some top-tier engineers have not earned an undergraduate degree or published major papers, instead focusing on developing and monetizing cutting-edge technology in the private sector. New criteria should make O-1 visas more accessible to this demographic.

Recommendation: Implement and Advertise the International Entrepreneur Rule

Recommendation

The International Entrepreneur Rule (IER) allows USCIS to grant a period of authorized stay to international entrepreneurs who demonstrate that “their stay in the United States would provide a significant public benefit through their business venture.”³⁰ The IER would be relatively easy for the Executive Branch to implement and is more directly tied to job creation than most other immigration proposals, making it more helpful to most Americans.

Action for the President:

- **An immediate executive action could announce the administration’s intention to use the IER to boost immigrant entrepreneurship, job creation for Americans, and economic growth.**

Actions for the USCIS:

- **Announce that USCIS will give priority to entrepreneurs active in high-priority STEM fields such as AI, or in fields that use AI for other applications, such as agriculture.**
- **Use capital capture as a screening criterion for entrepreneurs.**
- **Emphasize job creation for Americans—potentially emphasizing underserved regions or areas with high unemployment—as a core factor in its assessment of significant public benefit.**

Recommendation: Expand and Clarify Job Portability for Highly Skilled Workers

Recommendation

The Department of Homeland Security (DHS) published a final rule in November 2016 that made a number of reforms to improve temporary work visa programs, including some measure of relief for workers tethered to the employer sponsoring their green card petition during a potentially decades-long waiting period.³¹ The rule allows workers on H-1B, O-1, and other temporary work visas to obtain open-market work permits for a one-year renewable period under compelling circumstances. Compelling circumstances include:

- Serious illness or disability faced by the worker or his/her dependents,
- Employer retaliation against the worker,
- Other substantial harm to the worker, and
- Significant disruption to the employer.³²

The criteria for compelling circumstances are too limited and ambiguous. Expanding visa holders’ ability to obtain a work permit would allow for greater rates of entrepreneurship, tighter skill-matching with new employers, and for visa holders to negotiate compensation on a level playing field with domestic workers.

Actions for the USCIS:

- **Clarify when highly skilled, nonimmigrant workers are permitted to change jobs or employers;**
- **Increase job flexibility when an employer either withdraws their petition for an H-1B or goes out of business, is acquired, or downsizes; and**
- **Increase flexibility for H-1B workers seeking other H-1B employment.**

Recommendation

Recommendation: Recapture Green Cards Lost to Bureaucratic Error

Congress mandates annual caps on the number of green cards that may be issued to certain family-based immigrants (226,000) and employment-based immigrants (140,000).³³ Because federal agencies do not want to exceed the annual green card caps, they generally issue fewer green cards than they are allowed to. Due to this trend, as of 2009, the Federal Government had not issued more than 326,000 green cards.³⁴ The number today is likely higher, but DHS has not published updated statistics.

Actions for the Departments of Homeland Security and State:

- **Publish an annual report on the number of green cards lost due to bureaucratic error.**
- **Review whether existing authorities can be used to:**
 - o Issue lost green cards the subsequent year without counting against green card caps.
 - o Prioritize highly skilled immigrants who have waited the longest, followed by highly skilled immigrants with long projected wait times.
- **If existing authorities are insufficient, engage with Congress to recapture green cards lost to bureaucratic error through special legislation.**

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¹ Pub. L. 85-864.

² *Sputnik Spurs Passage of the National Defense Education Act*, U.S. Senate (last accessed Jan. 29, 2021), https://www.senate.gov/artandhistory/history/minute/Sputnik_Spurs_Passage_of_National_Defense_Education_Act.htm#:~:text=The%20National%20Defense%20Education%20Act%20of%201958%20became%20one%20of.and%20private%20colleges%20and%20universities.

³ *Highlights From the 2018 NSSME+*, The National Survey of Science and Mathematics Education at 17 (Jan. 2019), <http://horizon-research.com/NSSME/wp-content/uploads/2019/01/Highlights-from-2018-NSSME.pdf>. Additionally, almost half of Americans believe that students don't spend enough time during school hours on STEM subjects. Cary Funk & Kim Parker, *Most Americans Evaluate STEM Education as Middling Compared with Other Developed Nations*, Pew Research Center (Jan. 9, 2018), <https://www.pewsocialtrends.org/2018/01/09/5-most-americans-evaluate-stem-education-as-middling-compared-with-other-developed-nations/>.

⁴ Kristen A. Malzahn, et al., *Are All Students Getting Equal Access to High-Quality Mathematics Education? Data From the 2018 NSSME+*, The National Survey of Science and Mathematics Education at 15 (Feb. 2020), <http://horizon-research.com/NSSME/wp-content/uploads/2020/02/Math-Equity-Report.pdf>.

⁵ *21st Century Learning Centers*, Department of Education (last accessed Jan. 1, 2021), <https://www2.ed.gov/programs/21stcclc/index.html>.

⁶ *Successful K-12 STEM Education*, National Research Council at 20-21 (2011), <https://www.nap.edu/catalog/13158/successful-k-12-stem-education-identifying-effective-approaches-in-science>.

⁷ Isaac M. Opper, *Teachers Matter: Understanding Teachers' Impact on Student Achievement*, RAND (2019), <https://www.rand.org/education-and-labor/projects/measuring-teacher-effectiveness/teachers-matter.html>.

⁸ Amy Johnson, et al., *Challenges and Solutions When Using Technologies in the Classroom*, Adaptive Educational Technologies for Literacy Instruction (2016), <https://files.eric.ed.gov/fulltext/ED577147.pdf>.

⁹ James Manyika & William H. McRaven, *Innovation and National Security: Keeping our Edge*, Council on Foreign Relations (Sept. 2019), <https://www.cfr.org/report/keeping-our-edge/recommendations/>.

¹⁰ Josh Trapani & Katherine Hale, *Trends in Undergraduate and Graduate S&E Degree Awards*, National Science Foundation at Figure 2-6 (Sept. 4, 2019), <https://nces.nsf.gov/pubs/nsb20197/trends-in-undergraduate-and-graduate-s-e-degree-awards>.

¹¹ *Id.*

¹² The \$70,000 stipend is intended to incentivize American students to pursue graduate research, rather than transitioning to the private sector directly after completing their undergraduate degree. Research has shown that higher stipends increase the number and quality of program applicants, likely "attract[ing] some potentially outstanding science and engineering students who would otherwise choose other careers." See Richard Freeman, et al., *Supporting "The Best and Brightest" in Science and Engineering: NSF Graduate Research Fellowships*, The National Bureau of Economic Research and Harvard University at abstract (Mar. 2006), https://users.nber.org/~sewp/Freeman_NSFstip_Proceedings.pdf.

¹³ Based on the Commission staff's research, the Commission calculates this total allotting an estimated \$175,000 per postdoctoral fellow per year.

¹⁴ Computational thinking can be defined as "a way of solving problems, designing systems, and understanding human behavior that draws on concepts fundamental to computer science." Center for Computational Thinking at Carnegie Mellon (last accessed Feb. 8, 2021), <http://www.cs.cmu.edu/~CompThink/>. Some current subjects relevant to computational thinking include computer science, coding, and statistics.

¹⁵ See *50 State Comparison: High-School Graduation Requirements*, Education Commission of the States (Feb. 2019), <https://internal-search.ecs.org/comparisons/high-school-graduation-requirements-01>. As shown in this 50-state comparison, unlike algebra, statistics is rarely listed as a graduation requirement. See *Id.*

¹⁶ Erin Richards, *Math Scores Stink in America. Other Countries Teach It Differently and See Higher Achievement*, USA Today (Feb. 29, 2020), <https://www.usatoday.com/story/news/education/2020/02/28/math-scores-high-school-lessons-freakonomics-pisa-algebra-geometry/4835742002/>.

¹⁷ Statistics includes foundations of probability, hypothesis testing, expected utility, decision analysis, and causality, and introductions to topics in the broader data sciences, such as basics of pattern recognition and machine learning.

¹⁸ *2020 State of Computer Science Education: Illuminating Disparities*, Code.org Advocacy Coalition, Computer Science Teachers Association & Expanding Computing Education Pathways Alliance (2020), https://advocacy.code.org/2020_state_of_cs.pdf.

¹⁹ According to the National Science Foundation (NSF), in 2018, 179,500 undergraduate and 233,600 graduate international students were enrolled in science and engineering programs in the United States. Beethika Kahn, et al., *The State of U.S. Science and Engineering 2020*, NSF (Jan. 15, 2020), <https://nces.nsf.gov/pubs/nsb20201/u-s-and-global-education#degree-awards>. It should not be assumed that all of these students would meet the listed criteria.

²⁰ A 2013 Senate-passed bill would have exempted all PhD and master's STEM degree holders (U.S. graduates) and all PhD holders in any field (worldwide graduates) from green card caps. Madeleine Sumption & Claire Bergeron, *Remaking the U.S. Green Card System: Legal Immigration Under the Border Security, Economic Opportunity, and Immigration Modernization Act of 2013*, Migration Policy Institute 2, at 8 (June 2013), <https://www.migrationpolicy.org/research/remaking-us-green-card-system-legal-immigration-economic-opportunity>.

²¹ William Kandel, *The Employment-Based Immigrant Backlog*, Congressional Research Service at 4-5 (March 26, 2020), <https://fas.org/sfp/crs/homesec/R46291.pdf>.

²² *H-1B Fiscal Year (FY) 2021 Cap Season*, U.S. Citizenship & Immigration Services (last accessed Jan. 4, 2021), <https://www.uscis.gov/working-in-the-united-states/temporary-workers/h-1b-specialty-occupations-and-fashion-models/h-1b-fiscal-year-fy-2021-cap-season>.

²³ Michael Roach, et al., *Are Foreign STEM PhDs More Entrepreneurial? Entrepreneurial Characteristics, Preferences and Employment Outcomes of Native and Foreign Science & Engineering PhD Students*, National Bureau of Economic Research at 12 (2019), <https://www.nber.org/papers/w26225>.

²⁴ William R. Kerr, *Global Talent and U.S. Immigration Policy: Working Paper 20-107*, Harvard Business School at 14 (2020), https://www.hbs.edu/faculty/Publication%20Files/20-107_0967f1ab-1d23-4d54-b5a1-c884234d9b31.pdf.

²⁵ Oren Etzioni, *What Trump's Executive Order on AI Is Missing: America Needs a Special Visa Program Aimed at Attracting More AI Experts and Specialists*, Wired (Feb. 13, 2019), <https://www.wired.com/story/what-trumps-executive-order-on-ai-is-missing/>.

²⁶ O-1A is the relevant O-1 category for STEM; it also encompasses those in "education, business, or athletics." *O-1 Visa: Individuals with Extraordinary Ability or Achievement*, U.S. Citizenship & Immigration Services (last accessed Jan. 29, 2021), <https://www.uscis.gov/working-in-the-united-states/temporary-workers/o-1-visa-individuals-with-extraordinary-ability-or-achievement>.

²⁷ *Nonimmigrant Visas Issued by Classification*, U.S. Department of State (last accessed Jan. 29, 2021), <https://travel.state.gov/content/dam/visas/Statistics/AnnualReports/FY2020AnnualReport/FY20AnnualReport-TableXVB.pdf>.

²⁸ *H1-B Fiscal Year (FY) 2021 Cap Season*, U.S. Citizenship & Immigration Services (last accessed Jan. 29, 2021), <https://www.uscis.gov/working-in-the-united-states/temporary-workers/h-1b-specialty-occupations-and-fashion-models/h-1b-fiscal-year-fy-2021-cap-season>.

²⁹ 8 C.F.R. 214.2(o)(3)(iii)(b).

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³⁰ *International Entrepreneur Parole*, U.S. Citizenship & Immigration Services (last accessed Jan. 29, 2021), <https://www.uscis.gov/humanitarian/humanitarian-parole/international-entrepreneur-parole>. There is currently no visa category well-suited to entrepreneurship in U.S. statutes related to immigration. The IER, which relies on parole authority, was initiated after legislative avenues were exhausted. Legislative fixes would be preferable but have so far proven politically infeasible.

³¹ 81 Fed. Reg. 82398, *Retention of EB-1, EB-2, and EB-3 Immigrant Workers and Program Improvements Affecting High-Skilled Nonimmigrant Workers*, U.S. Department of Homeland Security (Nov. 18, 2016), <https://www.federalregister.gov/d/2016-27540>.

³² *Id.*

³³ Julia Gelatt, *Explainer: How the U.S. Legal Immigration System Works*, Migration Policy Institute (April 2019), <https://www.migrationpolicy.org/content/explainer-how-us-legal-immigration-system-works>.

³⁴ A 2009 report to Congress indicates that some 242,000 unused family-based green cards were ultimately applied to the employment-based backlog. Congress also recaptured some 180,000 out of roughly 506,000 unused employment preference green cards via special legislation, leaving more than 326,000 green card numbers wasted out of the nearly 750,000 unused green cards. *Annual Report 2010*, Department of Homeland Security Citizenship and Immigration Services Ombudsman at 35 (June 30, 2010), https://www.dhs.gov/xlibrary/assets/cisomb_2010_annual_report_to_congress.pdf.