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AI AND IMMIGRANTS

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EXECUTIVE SUMMARY

Immigrants have founded or cofounded nearly two-thirds (65% or 28 of 43) of the top AI companies in the United States, and 70% of full-time graduate students in fields related to artificial intelligence are international students, according to a new National Foundation for American Policy (NFAP) analysis. Seventy-seven percent of the leading U.S.-based AI companies were founded or cofounded by immigrants or the children of immigrants. Forty-two percent (18 of 43) of the top U.S.-based AI companies had a founder who came to America as an international student.

NFAP conducted the research through interviews and gathering information on the 43 U.S. companies on *Forbes* AI 50, a list of the top startup companies "developing the most promising business applications of artificial intelligence—companies with compelling visions and the resources and technical wherewithal to achieve them."[1] Several AI companies were included in NFAP's study (July 2022) on *Immigrant Entrepreneurs and Billion-Dollar Companies*. That research found immigrants have started more than half (319 of 582, or 55%) of America's startup companies valued at $1 billion or more (as of May 2022) that had yet to become publicly traded on the U.S. stock market and also identified at least 25 billion-dollar U.S.-based AI companies with at least one immigrant founder.

Foreign-born individuals play a crucial role in AI as researchers and experts consider retaining international students after graduation vital to America's leadership in artificial intelligence. An NFAP analysis found 70% of full-time graduate students at U.S. universities in selected AI-related fields are international students. In computer and information sciences, the leading field of study for AI researchers, 71% of full-time graduate students at U.S. universities are international students.

Immigrant entrepreneurs in top AI companies were born in 21 different countries. Indian immigrants founded ten of the top U.S.-based AI companies. Immigrants from Israel and the United Kingdom were second with three, followed by Canada, China and France with two each. Immigrants from Argentina, Brazil, Chile, Colombia, Mexico, Iran, Kenya, Lebanon, Taiwan, Syria, Poland and elsewhere founded or cofounded one of top U.S. AI companies.

Artificial intelligence may be the most transformative technology of the 21st century and will likely lead to improvements for businesses, consumers and national defense. Given the central role of productivity growth in economic growth, the nations that best develop and integrate AI will likely be the most productive and do the most to improve their citizens' living standards.

[1] Kenrick Cai, "AI 50 2023 Methodology: Our New, Improved Process For Selecting Honorees, *Forbes*, April 11, 2023.

IMMIGRANT ENTREPRENEURS IN TOP AI COMPANIES

An NFAP analysis concluded that 65% (28 of 43) of the top AI companies in the United States have at least one immigrant founder. NFAP researched the U.S. companies on *Forbes* AI 50, a list of the top artificial intelligence startup companies. The list of 50 companies included 43 U.S. AI companies. Seventy-seven percent of top U.S.-based AI companies were founded or cofounded by immigrants or the children of immigrants.

Innovation often takes place when entrepreneurs put their ideas into practice and develop new products and services. Some economists have called entrepreneurs the heroes of a market economy.[2] The variety of AI-focused businesses founded by immigrants shows how artificial intelligence will likely benefit many Americans.

OpenAI has captured more attention than any other AI company. The company's most notable products are DALL-E, which creates art and images, Whisper (for speech recognition) and chatbot ChatGPT, which Microsoft has incorporated into the Bing search engine. The company has 375 employees and is valued at $29 billion. It also has several immigrant founders, including Elon Musk (South Africa), Ilya Sutskever (Canada) and Wojciech Zaremba (Poland). Zaremba earned a Ph.D. in deep learning from NYU. Sam Altman (CEO) and Greg Brockman, born in the United States, were also founders.

"Large language models and other forms of generative AI are still at an early stage, making it difficult to predict with great confidence the exact productivity effects they will have," write Martin Neil Baily, Erik Brynjolfsson and Anton Korinek in a report for the Brookings Institution. "Yet as we have argued, we expect that generative AI will have tremendous positive productivity effects, both by increasing the level of productivity and accelerating future productivity growth."[3]

Adept, founded by immigrants Niki Parmar (India), Ashish Vaswani (India) and CEO David Luan, is a billion-dollar startup focusing on using AI to allow people to use regular language and turn it into "actions on the software you use every day."[4] Parmar and Vaswani came to America as international students.

[2] Alan Greenspan and Adrian Wooldridge, "How to Fix the Great American Growth Machine," *Wall Street Journal*, October 12, 2018.
[3] Martin Neil Baily, Erik Brynjolfsson and Anton Korinek, Machines of mind: The case for an AI-powered productivity boom," Brookings Institution, May 10, 2023.
[4] Adept.

Table 1
Top U.S. AI Companies With Immigrant Founders

Company	Immigrant Founder or Cofounder	AI Product/Service	Employees
Adept	Niki Parmar (India), Ashish Vaswani (India)	Digital assistant	25
AlphaSense	Jack Kokko (Finland), Raj Neervannan (India)	Search engine for market intelligence	1,112
Anthropic	Jack Clark (UK)	AI safety and research	150
Arize AI	Aparna Dhinakaran (India)	Data analysis for AI	65
Bayesian Health	Suchi Saria (India)	AI for hospital staff	23
Canvas	Maria Telleria (Mexico)	Construction robotics	60
Character.AI	Daniel De Freitas (Brazil)	Chatbot systems	22
Clari	Venkat Rangan (India)	Sales-related data	650
Coactive	William A. Gaviria Rojas (Colombia)	Analysis of images and video	14
Databricks	Ali Ghodsi (Iran), Ion Stoica (Romania), Matei Zaharia (Romania), Reynold Xin (China), Arsalan Tavakoli-Shiraji (Iran)	Analytics and data storage	5,000
Eightfold.ai	Ashutosh Garg (India) Varun Kacholia (India)	AI for human resources	500
FarmWise Labs	Sébastien Boyer (France), Thomas Palomares (France)	AI-enabled weeders	70
Glean	Arvind Jain (India), Piyush Prahladka (India), T.R. Vishwanath (India)	Internal company searches	205
Gong	Amit Bendov (Israel) and Eilon Reshef (Israel)	AI-powered sales	1,200
Hugging Face	Clément Delangue (France), Julien Chaumond (France), Thomas Wolf (France)	Non-biased AI	54
Inflection	Mustafa Suleyman (UK)	AI models	30
Insitro	Daphne Koller (Israel)	AI for pharmaceuticals	230
MosaicML	Hanlin Tang (Taiwan)	Training for AIs	60
Moveworks	Jiang Chen (China), Vaibhav Nivargi (India), Varun Singh (India)	AI IT support	540
Neeva	Sridhar Ramaswamy (India), Vivek Raghunathan (India)	Search engines	52
OpenAI	Elon Musk (South Africa), Ilya Sutskever (Canada), Wojciech Zaremba (Poland)	Developer of ChatGPT	375
Pachama	Diego Saez Gil (Argentina), Tomas Aftalion (Argentina)	AI for environmental analysis	83
PathAI	Aditya Khosla (India)	AI for diagnosis, clinical trials	250
Runway	Anastasis Germanidis (Greece), Alejandro Matamala-Ortiz (Chile), Cristóbal Valenzuela (Chile)	Visual and audio software	44
Tome	Keith Peiris (Canada)	AI-powered presentation tools	40
Vectra AI	Hitesh Sheth (Kenya)	Cybersecurity	617
Viz.ai	David Golan (Israel), Chris Mansi (UK)	Medical diagnostics	395
Writer	May Habib (Lebanon), Waseem AlShikh (Syria)	AI for marketing, other uses	52

Source: National Foundation for American Policy; NFAP analysis of 2023 Forbes AI 50; Company sources, LinkedIn. Employees as of April 2023.

Table 2
Job Creation In Selected Immigrant-Founded AI Companies

COMPANY	EMPLOYEES
Databricks	5,000
Gong	1,200
AlphaSense	1,112
Clari	650
Vectra AI	617
Moveworks	540
Eightfold.ai	500

Source: National Foundation for American Policy; 2023 Forbes AI 50. Employee totals global and as of April 2023.

Coactive AI employs artificial intelligence to analyze images and videos for content moderation and other purposes. Cody Coleman and William A. Gaviria Rojas founded the company in 2021. Rojas was just a boy when his family escaped Colombia and applied for asylum in the United States. “We left because of the violence at the time caused by the narcoterrorism activity (Cali cartel and the FARC), and our family was targeted,” said Rojas.[5]

Aparna Dhinakaran also immigrated with her parents. She was six months old when her parents came to America from India.[6] Dhinakaran cofounded Arize AI, where she works as chief product officer, with CEO Jason Lopatecki. Arize is “a machine learning observability platform” to provide “teams the tools they need to understand whether their models are performing as expected in production and quickly get to the cause behind issues that emerge.”[7]

Maria Telleria, CTO at Canvas, was born in Mexico. She was 14 when her father, an engineer in the auto industry, was transferred to work in Detroit, Michigan. Telleria needed to adapt to a new country and a new school. The school had a robotics team, on which she competed nationally. She earned an undergraduate degree and a Ph.D. at MIT. Telleria cofounded Canvas with Kevin Albert, the CEO. According to Jill Lonergan, director of marketing, Canvas is a construction robotics company that puts “new tools into the hands of skilled workers.” Lonergan said, “Our first robot, a drywall finishing machine with a robotic arm that telescopes to 16 feet, produces consistently high-quality drywall finishes while protecting workers from musculoskeletal injuries and accidental falls.”[8]

Immigrants May Habib (Lebanon) and Waseem AlShikh (Syria) founded Writer, which allows customers to use AI for marketing and other purposes.

[5] William A. Gaviria Rojas.
[6] https://www.sramanamitra.com/2022/02/14/from-developer-to-successful-machine-learning-entrepreneur-aparna-dhinakaran-co-founder-cpo-of-arize-part-1/.
[7] Arize AI.
[8] Jill Lonergan.

Hugging Face focuses on providing non-biased AI. Immigrants Clément Delangue (France), Julien Chaumond (France) and Thomas Wolf (France) started the company in 2016, employing 160 people. "More than 200,000 daily active users and 15,000 organizations use the platform to integrate artificial intelligence into their products and workflows," according to *Forbes*.[9]

Two immigrants from Argentina, Diego Saez Gil and Tomas Aftalion, founded Pachama in 2018. The company uses AI and satellite data for investments in carbon credits. Aftalion earned an M.S. in management systems and information technology from Carnegie Mellon University.

Significant job creation is evident in AI companies with immigrant founders, even though many are relatively new firms. Databricks, which provides analytics and data storage, has 5,000 employees. The company's immigrant founders are Ali Ghodsi (Iran), Ion Stoica (Romania), Matei Zaharia (Romania), Reynold Xin (China) and Arsalan Tavakoli-Shiraji (Iran). The company also has three U.S.-born founders.

Alphasense provides a search engine for market intelligence and employs 1,112 people. Immigrants Jack Kokko (Finland) and Raj Neervannan (India) cofounded Alphasense. Hitesh Sheth, who was born in Kenya, founded Vectra AI.

Immigrants Ashutosh Garg (India) and Varun Kacholia (India) founded Eightfold.ai, which provides AI to help human resources, focusing on recruitment and talent acquisition. Ashutosh Garg is in a select group of people who founded two companies valued at over $1 billion—Eightfold.ai and Bloomreach. Eightfold.ai has 500 employees.

Two immigrants founded Viz.ai—David Golan (Israel) and Chris Mansi (UK). The company, which has 395 employees, "is the leading AI-powered care coordination platform for disease detection and workflow optimization," according to the company's website. It "uses artificial intelligence to connect care teams earlier, increasing the speed of diagnosis and care and optimizing clinical care pathways across hospitals and health systems."[10]

Gong, cofounded by immigrants Amit Bendov (Israel) and Eilon Reshef (Israel), has 1,200 employees. Gong has developed an AI platform to allow companies to improve sales. The company is valued at $7.3 billion. Runway, a billion-dollar startup, was founded by three immigrants who came to America as international students—Anastasis Germanidis (Greece), Alejandro Matamala-Ortiz (Chile) and CEO Cristóbal Valenzuela (Chile). Runway provides its customer with AI tools for images and videos.

[9] Profile of Hugging Face, AI 50, *Forbes*, April 11, 2023.
[10] Viz.ai.

INTERNATIONAL STUDENTS AS ENTREPRENEURS IN TOP AI COMPANIES

Forty-two percent (18 of 43) of the top U.S.-based AI companies had a founder who came to America as an international student.

Suchi Saria had an impressive academic career in America before founding Bayesian Health and becoming its CEO. Saria came to America from India and earned degrees in physics and computer science at Mount Holyoke and in computer science at the University of Massachusetts, Amherst. She received a master's degree at Stanford in computer science, followed by a Ph.D. at Stanford in AI, computer science, statistics and clinical applications. In 2012, she became a professor at Johns Hopkins University, where she remains on the faculty and is founding director of research and technical strategy at the Malone Center for Engineering in Healthcare. Bayesian Health uses its AI platform to help hospitals gain "actionable clinical insights that can catch life-threatening events early, resulting in better patient health outcomes."[11]

Three of the four founders of Moveworks were international students at U.S. universities. Varun Singh (India), vice president of product, earned a master's degree in engineering and applied engineering at UCLA and a Ph.D. in engineering and design optimization from the University of Maryland. Jiang Chen (China), vice president of machine learning, holds a Ph.D. in computer science from Yale. Vaibhav Nivargi (India), the company's CTO, earned a master's degree in computer science from Stanford. Moveworks uses AI to provide information technology support for companies.

Sébastien Boyer (France) and Thomas Palomares (France) came to America as international students. Boyer earned master's degrees in computer science and technology and policy from MIT. Palomares received an M.S. in management science and engineering at Stanford. In 2016, the two men founded FarmWise, which employs AI for precision weeding on farms.

COUNTRY OF ORIGIN

Immigrant entrepreneurs in top AI companies are diverse, hailing from 21 different countries. Indian immigrants created ten of the top U.S.-based AI companies. Immigrants from Israel and the United Kingdom founded the second-most top AI companies with three, followed by Canada, China and France with two each, and several other countries were the birthplace of the other entrepreneurs who were founders of top AI companies, including Argentina, Brazil, Chile, Colombia, Mexico, Iran, Kenya, Lebanon, Taiwan, Syria and Poland.

[11] Bayesian Health.

Table 3
International Students Who Became Founders of Top U.S. AI Companies

NAME	UNIVERSITY/DEGREE	COMPANY FOUNDED/COFOUNDED	EMPLOYEES
Tomas Aftalion (Argentina)	Carnegie Mellon, M.S. Info. Mang. Sys., Info. Tech.	Pachama	83
Sébastien Boyer (France)	MIT, M.S. Comp. Sci., Tech & Policy	FarmWise Labs	70*
Julien Chaumond (France)	Stanford, M.S. Comp. Sci.	Hugging Face	54
Jiang Chen (China)	Yale, Ph.D. Comp. Sci.	Moveworks	540*
Daniel De Freitas (Brazil)	Stanford	Character.AI	22
Ashutosh Garg (India)	Univ. of Ill., Urbana-Champaign, Ph.D. Elec. & Comp. Engineering	Eightfold.ai	500*
Anastasis Germanidis	Wesleyan, B.A. Comp. Sci, NYU, MPS	Runway	44
Arvind Jain (India)	Univ. of Washington, M.S., Comp. Sci.	Glean	205*
Varun Kacholia (India)	UC Berkeley, M.S. Comp. Sci.	Eightfold.ai	500*
Aditya Khosla (India)	Caltech, Stanford, MIT, Ph.D. Comp. Sci.	PathAI	250
Jack Kokko (Finland)	UPENN Wharton, MBA	AlphaSense	1,112*
Daphne Koller (Israel)	Stanford, Ph.D. Comp. Sci.	Insitro	230
Alejandro Matamala-Ortiz (Chile)	NYU, M.P.S.	Runway	44*
Elon Musk (South Africa)	Univ. of Penn., B.A., Econ & Physics, Wharton School, B.S. Business	OpenAI	375*
Raj Neervannan (India)	Bowling Green State, M.S. Comp Sci., Wharton MBA	AlphaSense	1,112*
Vaibhav Nivargi (India)	Stanford, M.S. Comp. Sci.	Moveworks	540*
Thomas Palomares (France)	MIT, M.S. Mng. Sci. & Eng.	FarmWise Labs	70*
Niki Parmar (India)	USC, M.S. Comp. Sci.	Adept	25*
Sridhar Ramaswamy (India)	Brown, Ph.D. Comp. Sci.	Neeva	52*
Venkat Rangan (India)	Univ. of Miami, M.S. Comp. Sci.	Clari	650
Vivek Raghunathan (India)	Univ. of Illinois Urbana-Champaign, Ph.D. & M.S. Elec. & Comp. Eng.	Neeva	52*
Suchi Saria (India)	Mount Holyoke, Physics & Comp. Sci., Univ. of Mass., Amherst, Comp. Sci., Stanford, M.S. Comp. Sci., Harvard Medical School, Stanford, Ph.D. AI, Comp. Sci., Statistics, Clinical Applications	Bayesian Health	23
Hitesh Sheth (Kenya)	Univ. of Texas, Austin, B.A. Comp. Sci.	Vectra AI	67
Varun Singh (India)	UCLA, M.S. Eng. & Applied Eng., Univ. of MD, Ph.D. Eng. & Des. Optimization	Moveworks	540*
Ion Stoica (Romania)	Carnegie Mellon Univ., M.S. Comp. Sci., Ph.D. Elec. and Comp. Engineering	Databricks	5,000*
Cristóbal Valenzuela (Chile)	NYU, Interactive Telecommunications Program	Runway	44*
Ashish Vaswani (India)	USC, M.S. and Ph.D. Comp. Sci.	Adept	25*
T.R. Vishwanath (India)	Univ. of Texas, Austin, M.S. Comp. Sci.	Glean	205*
Reynold Xin (China)	UC Berkeley, Ph.D. Comp. Sci.	Databricks	5,000*
Wojciech Zaremba (Poland)	NYU, Ph.D. Deep Learning	OpenAI	375*

Source: National Foundation for American Policy; NFAP analysis of 2023 Forbes AI 50; Company sources, LinkedIn. Employees as of April 2023.

Two of Glean's founders are international students. Glean CEO Arvind Jain (India) earned an M.S. in computer science from the University of Washington. T.R. Vishwanath (India) leads the company's infrastructure teams and received an M.S. in computer science from the University of Texas, Austin. Tony Gentilcore and Piyush Prahladka (India) are Glean's two other cofounders. Gentilcore heads product engineering and Prahladka leads search and intelligence. The company, started in 2019, has 205 employees. Glean allows businesses to use AI to automate and analyze internal operations to become more efficient.

Neeva has created an AI-powered search engine designed to be ad-free. Neeva's two Indian-born immigrant founders came to America as international students. Sridhar Ramaswamy was Google's head of advertising, and Vivek Raghunathan was a leading executive at YouTube. Ramaswamy earned a Ph.D. from Brown, and Raghunathan has a Ph.D. from the University of Illinois Urbana-Champaign.

Table 4
Country of Origin: Immigrant Founders of Top AI Companies

COUNTRY	NUMBER OF TOP AI COMPANIES FOUNDED
India	10
Israel	3
UK	3
Canada	2
China	2
France	2
Argentina	1
Brazil	1
Chile	1
Colombia	1
Finland	1
Greece	1
Iran	1
Kenya	1
Lebanon	1
Mexico	1
Poland	1
Romania	1
South Africa	1
Syria	1
Taiwan	1

Source: National Foundation for American Policy; NFAP analysis of 2023 Forbes AI 50; Company sources, LinkedIn. Companies with multiple founders from the same country counted only once.

Table 5
AI-Focused Immigrant-Founded U.S. Billion-Dollar Companies

Company	Immigrant Founder or Cofounder	Product/Service	Number of Employees	Company Valuation
Databricks	Ali Ghodsi (Iran), Ion Stoica (Romania), Matei Zaharia (Romania), Reynold Xin (China), Arsalan Tavakoli-Shiraji (Iran)	Data and AI platform	5,000	$31 Billion
OpenAI	Elon Musk (South Africa), Ilya Sutskever (Canada), Wojciech Zaremba (Poland)	AI research and deployment company	375	$29 Billion
SambaNova Systems	Christopher Ré (France), Kunle Olukotun (UK)	AI hardware and integrated systems	144	$5 Billion
Dataiku	Florian Douetteau (France), Clément Stenac (France), Marc Batty (France)	Centralized data platform for enterprise AI	1,000	$3.7 Billion
Cerebras Systems	Jean-Philippe Fricker (Switzerland)	Computer systems for AI	368	$4.0 Billion
HighRadius	Sashi Narahari (India)	Data-driven AI software platform	3,635	$3.10 Billion
Uniphore	Ravi Saraogi (India), Umesh Sachdev (India)	Conversational AI and automation	709	$2.5 Billion
Algolia	Julien Lemoine (France), Nicolas Dessaigne (France)	AI-powered search and discovery platform	624	$2.25 Billion
Eightfold.ai	Ashutosh Garg (India) Varun Kacholia (India)	AI talent management platform	500	$2.1 Billion
Moveworks	Jiang Chen (China), Vaibhav Nivargi (India), Varun Singh (India)	Conversational AI for human resources	456	$2.1 Billion
Hive	Dmitriy Karpman (Belarus)	Enterprise AI solutions	250	$2.0 Billion
ConcertAI	Romesh Wadhwani (India)	Data and AI technologies for medical research	995	$1.90 Billion
H2O.ai	Sri Satish Ambati (India)	AI cloud platform	347	$1.7 Billion
Cambridge Mobile Tel.	Hari Balakrishnan (India)	AI, transportation	401	$1.5 Billion
SparkCognition	Amir Husain (Pakistan)	Enterprise AI solutions	400	$1.4 Billion
Phenom People	Mahe Bayireddi (India), Hari Bayireddy (India)	AI for human resources	1,352	$1.4 Billion
Viz.ai	David Golan (Israel), Chris Mansi (UK)	AI for healthcare	395	$1.2 Billion
SeekOut	Anoop Gupta (India), Aravind Bala (India), Vikas Manocha (India)	AI talent platform	158	$1.2 Billion
BigPanda	Elik Eizenberg (Israel)	AI software	269	$1.2 Billion
Rebellion Defense	Oliver Lewis (UK)	AI products for defense and national security	250	$1.15 Billion
People.ai	Oleg Rogynskyy (Ukraine)	AI revenue intel platform	294	$1.10 Billion
Globality	Ran Harpaz (Israel)	AI to automate business functions	300	$1.0 Billion
Feedzai	Nuno Sebastiao (Portugal), Paulo Marques (Portugal), Pedro Bizarro (Portugal)	AI to combat financial crimes	620	$1.0 Billion

Source: National Foundation for American Policy; CB Insights, company-provided information/websites, Crunchbase, LinkedIn, Craft. CB Insights list of privately-held, venture-backed companies worth $1 billion. Valuations updated as of May 2023. Employees as of May 2022.

IMMIGRANT FOUNDERS OF U.S. BILLION-DOLLAR AI COMPANIES

NFAP research has identified at least 25 AI-focused U.S. billion-dollar companies with an immigrant founder. Billion-dollar companies are often among America's most innovative businesses, making it unsurprising many have produced AI products and services. These companies use AI as a data platform (Databricks), to assist in medical research (ConcertAI), company productivity (Globality, Moveworks, HighRadius, HEO.ai, Hive), acquiring talent (Eightfold.ai, Phenom People, Turing), national defense (Rebellion Defense), combat financial crime (Feedzai), produce AI hardware and integrated systems (SambaNova Systems) and other functions. Companies that also could be included are VerbIT, which provides AI-based transcription and captioning, Turing, an AI-driven jobs platform focused on engineers, and MOLOCO, which offers mobile ad solutions.

AI RESEARCHERS

An NFAP analysis found 70% of full-time graduate students at U.S. universities in selected AI-related fields are international students. In computer and information sciences, the leading area of study for AI researchers, 71% of full-time graduate students at U.S. universities are international students.[12] The difficulty in gaining H-1B status and later permanent residence in the United States often leads to international students at American universities pursuing careers in other countries.[13] Experts consider retaining international students in the United States after graduation essential to U.S. leadership in artificial intelligence.[14]

Table 6
Full-time Graduate Students at U.S. Universities in Selected AI-Related Fields

Number of Full-Time Selected AI-Related Fields	Percent of International Students	Number of Full-Time Graduate Students – International Students	Number of Full-Time Graduate Students – U.S. Students
129,501	70%	91,078	38,423

Source: National Science Foundation, National Center for Science and Engineering Statistics, Survey of Graduate Students and Postdoctorates in Science and Engineering, 2021. National Foundation for American Policy. U.S. students include lawful permanent residents.

[12] National Science Foundation, National Center for Science and Engineering Statistics, Survey of Graduate Students and Postdoctorates in Science and Engineering, 2021. National Foundation for American Policy. U.S. students include lawful permanent residents.
[13] Jon Marcus, "How other countries are luring workers trained in U.S. universities," *Washington Post*, June 17, 2023.
[14] https://www.nscai.gov/2021-final-report/.

Table 7
Full-time Graduate Students at U.S. Universities in Computer and Information Sciences

Field	Percent of International Students	Number of Full-Time Graduate Students – International Students	Number of Full-Time Graduate Students – U.S. Students
Computer and Information Sciences	71%	53,748	21,889

Source: National Science Foundation, National Center for Science and Engineering Statistics, Survey of Graduate Students and Postdoctorates in Science and Engineering, 2021. National Foundation for American Policy. U.S. students include lawful permanent residents.

NFAP examined the degrees in fields outside of computer and information sciences found useful in artificial intelligence. At U.S. universities, international students account for 73% of full-time graduate students in electrical and computer engineering, 69% in applied mathematics, 65% in statistics, 58% in multidisciplinary data science and 39% in linguistics.

Table 8
Full-time Graduate Students at U.S. Universities in Selected AI-Related Fields Outside of Computer and Information Sciences

Field	Percent of International Students	Number of Full-Time Graduate Students – International Students	Number of Full-Time Graduate Students – U.S. Students
Electrical and Computer Engineering	73%	24,508	9,236
Applied Mathematics	69%	6,442	2,874
Statistics	65%	5,063	2,738
Multidisciplinary Data Science	58%	455	366
Linguistics	39%	862	1,350

Source: National Science Foundation, National Center for Science and Engineering Statistics, Survey of Graduate Students and Postdoctorates in Science and Engineering, 2021. National Foundation for American Policy. U.S. students include lawful permanent residents.

Prominent AI researchers include many immigrants. *VentureBeat* recently noted Kyunghyun Cho is highly regarded for his foundational work on neural machine translation, which helped lead to the development of the Transformer architecture that ChatGPT is based on."[15] Cho, an immigrant from South Korea, is an assistant professor in the Department of Computer Science at New York University and a senior director of frontier research at Genentech.

[15] https://venturebeat.com/ai/top-ai-researcher-dismisses-ai-extinction-fears-challenges-hero-scientist-narrative/.

Cho "expressed disappointment about the lack of concrete proposals at the recent Senate hearings related to regulating AI's current harms, as well as a lack of discussion on how to boost beneficial uses of AI."[16]

Ion Stoica, an immigrant from Romania, was an international student. He earned a Ph.D. at Carnegie Mellon University. For more than two decades, Stoica has conducted research as a professor at U.C-Berkeley. He is a cofounder of two companies with an AI focus, Databricks, where he is a former CEO and the current executive chairman, and Anyscale, where he is the executive chairman. According to Anyscale's website, Ray is an open source project from the UC Berkeley RISELab. "Ray came out of our experience with the scaling challenges around machine learning and AI. From there, we built a fully managed platform for Ray to make the toughest problems in distributed computing easier for developers."[17]

Like Stoica, Wojciech Zaremba, an immigrant from Poland, is a cofounder and past head of robotics at OpenAI. He earned a Ph.D. in Deep Learning at NYU.

Immigrants play a key role in making available the computer power needed for AI. "Jensen Huang, the chief executive of Nvidia, has the company: He cofounded Nvidia in 1993, and the market cap is now about $950 billion, though at the end of May it was briefly in the $1 trillion club, putting it in a similar league to Apple, Alphabet and Amazon," according to the *New York Times* in a recent profile. "He has the product: a data processing chip that is key to A.I. development, which is to say, the life of ChatGPT and Bard, which is to say, the current paradigm shift.[18] Huang, born in Taiwan, immigrated to America as a child with his family.[19]

Like Huang, Lisa Su, the CEO of chipmaker AMD, was also born in Taiwan and immigrated to America with her family as a child. "If you look out five years," she told *Forbes*, "you will see AI in every single product at AMD, and it will be the largest growth driver."[20]

[16] Ibid.
[17] https://www.anyscale.com/about.
[18] https://www.nytimes.com/2023/06/14/style/jensen-huang-nvidia-leather-jackets.html.
[19] https://www.techtimes.com/articles/261166/20210607/nvidia-ceo-jensen-huang-taiwanese-immigrant-thrived-started-big-semiconductor.htm.
[20] https://www.forbes.com/sites/iainmartin/2023/05/31/lisa-su-saved-amd-now-she-wants-nvidias-ai-crown/?sh=14a1fd5c1ec9.

CONCLUSION

Immigrants provide America with an edge in the global battle over technology and artificial intelligence. "[T]he United States needs to win the international talent competition by improving both STEM [science, technology, engineering and math] education and our system for admitting and retaining highly skilled immigrants," write Eric Schmidt and Robert Work in the Final Report of the National Security Commission on Artificial Intelligence released in 2021. Schmidt, former CEO and chairman of Google and cofounder of Schmidt Futures, chaired the commission. Work, a former deputy secretary of defense, served as vice chair.

In a summary of "Win the global talent competition," the report states: "The United States risks losing the global competition for scarce AI expertise if it does not cultivate more potential talent at home and recruit and retain more existing talent from abroad. The United States must move aggressively on both fronts. Congress should pass a National Defense Education Act II to address deficiencies across the American educational system—from K-12 and job reskilling to investing in thousands of undergraduate- and graduate-level fellowships in fields critical to the AI future. *At the same time, Congress should pursue a comprehensive immigration strategy for highly skilled immigrants to encourage more AI talent to study, work, and remain in the United States through new incentives and visa, green card, and job-portability reforms*." [21]

In the section "Strengthen AI talent through immigration," the report concludes: "Immigration reform is a national security imperative. Nations that can successfully attract and retain highly skilled individuals gain strategic and economic advantages over competitors. Human capital advantages are particularly significant in the field of AI, where demand for talent far exceeds supply. Highly skilled immigrants accelerate American innovation, improve entrepreneurship and create jobs."[22]

The report recommended expanding the number and portability of high-skilled temporary visas, exempting from employment-based green card limits individuals with Ph.D.'s from U.S. universities in STEM fields, creating an entrepreneur visa, doubling the annual limit on employment-based immigrant visas and establishing a disruptive technology visa. At a Congressional hearing, Schmidt argued against banning Chinese students, in part due to the significant contributions of Chinese-born immigrants and graduate students to AI in the United States.[23]

[21] https://www.nscai.gov/2021-final-report/. (Emphasis added.)
[22] Ibid.
[23] https://www.forbes.com/sites/stuartanderson/2021/03/03/ai-commission-immigrants-key-to-americas-tech-competitiveness/?sh=da6adca6d23e.

Several media reports have featured speculation that AI could lead to significant job losses, even though past predictions of such losses from new technology have not materialized. An economist at the Department of Labor's Bureau of Labor Statistics examined such speculation and found it unwarranted.[24]

"Breakthroughs in artificial intelligence (AI) and robotics have led to substantial concern that large-scale job losses are imminent," writes Michael J. Handel in the BLS *Monthly Labor Review*. "Selected occupations are often cited as illustrations of technological displacement that is or will become a more general problem, but these discussions are often impressionistic. . . . There is little support in U.S. Bureau of Labor Statistics data or projections for the idea of a general acceleration of job loss or a structural break with trends pre-dating the AI revolution with respect to the occupations cited as examples."[25]

Immigrants in America play a vital role in artificial intelligence as entrepreneurs and researchers. Immigrants have started 65% (28 of 43) of the top AI companies in the United States, according to an NFAP analysis. Seventy-seven percent of top U.S.-based AI companies were founded or cofounded by immigrants or the children of immigrants. Forty-two percent (18 of 43) of the top U.S.-based AI companies had a founder who came to America as an international student. An NFAP analysis found 70% of full-time graduate students at U.S. universities in selected AI-related fields are international students. In computer and information sciences, the leading field of study for AI researchers, 71% of full-time graduate students at U.S. universities are international students.

Artificial intelligence may be the most transformative technology of the 21st century and will likely lead to improvements for businesses, consumers and national defense. Given the central role of productivity growth in economic growth, the nations that best develop and integrate AI will likely be the most productive and do the most to improve their citizens' living standards.

[24] Michael J. Handel, "Growth trends for selected occupations considered at risk from automation," *Monthly Labor Review,* U.S. Bureau of Labor Statistics, July 2022, https://doi.org/10.21916/mlr.2022.21.
[25] Ibid.

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