

# Powering the U.



**International STEM Students  
Help Fuel the Science and Tech  
Industries in the United States**

By Phil Manzano

# S. Tech Engine

**I**N 2010, AREAN VAN VEELEN, 46, who is originally from the Netherlands, was living comfortably in the Seattle, Washington, area with his wife and a baby on the way when he was faced with a life-changing venture. He had to decide whether or not to take on a risky project with a friend—launching a start-up company.

“If you had asked me that when I was 24, 23 in Holland,” van Veelen says, “I would’ve said that was crazy. I would never do that all at once.”

van Veelen’s older self, however, took the plunge, and with business partner Nick Huzar launched OfferUp in 2011. The mobile app offers users an easier way to buy and sell items with friends and neighbors. It has 42 million users, has raised more than \$260 million from investors, and is valued at more than \$1 billion.

A former information systems management and business graduate student at Ferris State University in Big Rapids, Michigan, van Veelen is one example of the outgrowth of steadily increasing numbers of international students studying in the science, technology, engineering, and mathematics (STEM) fields.

“I think that international students see the United States as the top place for both studying in science and engineering fields and being able to do cutting-edge research afterwards,” says Stuart Anderson, executive director of the National Foundation for American Policy (NFAP).

This combination of factors has created a flow of international students who go on to power the country’s technology and science industries. In October 2018, NFAP released a study showing that immigrants founded or cofounded half of the 91 start-ups in the United States currently valued at more than \$1 billion, as identified by the *Wall Street Journal*. About a quarter of those companies had a founder or cofounder who first came to the country as an international student.



## Investing in STEM Studies

Of the slightly more than 1 million international students in the United States, nearly half are studying in STEM-related fields, according to the 2018 *Open Doors* report from the Institute of International Education. During the 2016–17 academic year, 21.3 percent of international students studied engineering, 17 percent studied math and computer science, 7.2 percent physical and life sciences, and 3.2 percent health professions. The next Elon Musk—the entrepreneur from South Africa, who studied at University of Pennsylvania, founded Tesla and SpaceX, and cofounded PayPal—could currently be studying on a campus somewhere in the United States.

U.S. colleges and universities attract some of the world's best talent, says Nitin Paschisia, founding partner of Unshackled Ventures, a venture capital firm in Silicon Valley with a mission to create 100,000 jobs by helping immigrant-founded start-ups.

"A lot of the entrepreneurs that we've invested in came to the United States through our university system," Paschisia said on a NEAP conference call in October. "So it's fair to say that universities are like the new Ellis Island."

The stories of international students who have passed through those portals—from van Veelen, the "unicorn" start-up founder from the Netherlands, to scientists from Singapore and Ghana—prove the collective impact on the United States's science and tech industries.

## Creating a 'Unicorn'

When van Veelen arrived at Ferris State University to complete a master's degree in information systems management, he did not have any major life plans. He saw the master's exchange program as a chance to explore the United States for a period and then head back to the Netherlands.

His perspective eventually changed when he met other international students from Africa, Asia, and the Middle East on campus. Most of his international peers either felt that they could not get the same quality education back home, or they were looking to establish careers in the United States. He also met many U.S. students who had years of experience in the working world and then chose to return to college for career advancement.

"[A university education] was the first step of a process of changing their lives—very different from me," he says. "I almost felt a little embarrassed: 'I'm just here hanging out. You guys have serious long-term plans.'"

That exposure and interaction led van Veelen to re-examine his life and take advantage of his time in the United States, with its rapidly growing high-tech industries in Silicon Valley. He later went on to earn a certificate in software production management at the University of Washington in Seattle, a city with its own burgeoning tech scene.

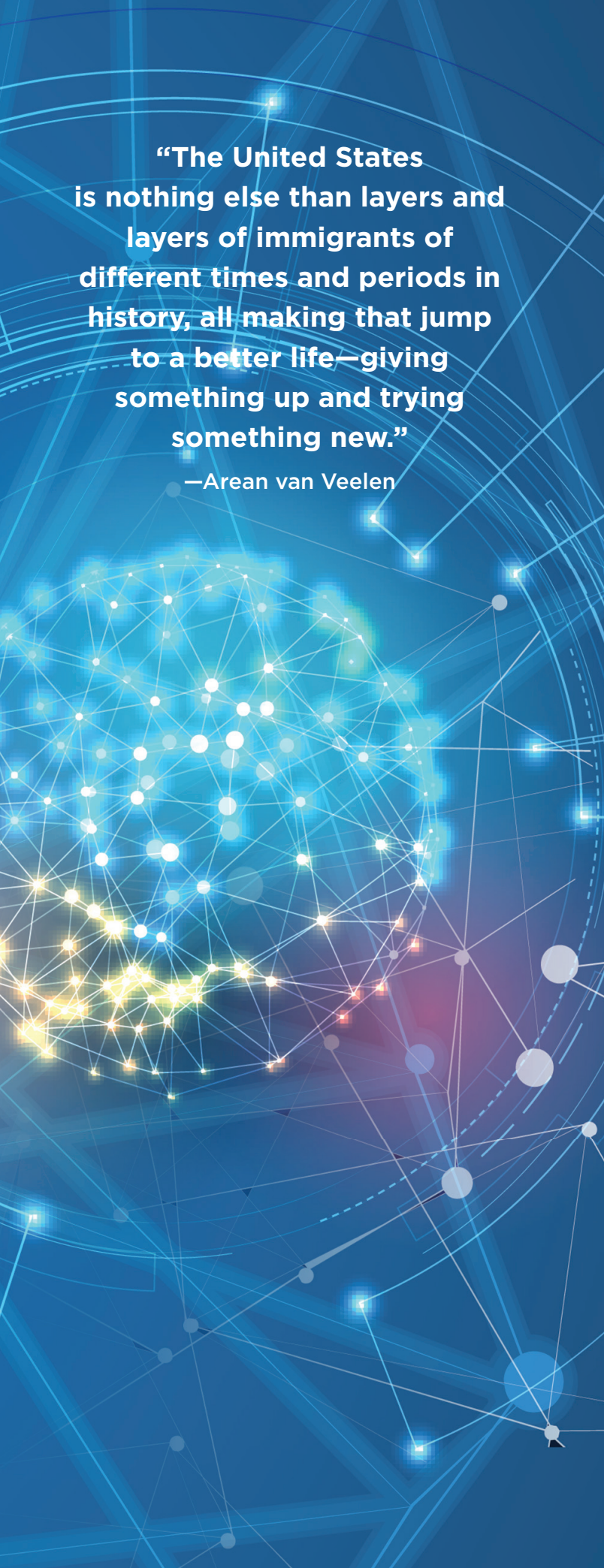
His experience at Ferris State "got me to think differently," he says. "Instead of having a big company shape my career, I wanted my career to be driven by my expertise and interests so I could add value to something bigger. It was more like, [the difference between] joining a company versus starting one."

In 2011, van Veelen and a friend, Nick Huzar, were having lunch in nearby Tacoma, where they had both previously worked at a start-up. van Veelen was soon to be a new dad and was finding shopping on Craigslist for baby items to be overwhelming. Huzar mused that with increasingly sophisticated smartphones and their built-in cameras, why were people struggling to post an item online to sell? Knowing the current technology, and anticipating what was coming, "It has to be easier," said van Veelen.

Their solution became OfferUp, a mobile application company headquartered in Bellevue, Washington, which now has about 240 employees. The company's success put van Veelen in a select group of 20-plus international students who have gone on to found "unicorn" companies: technology start-ups that have a billion dollar or more valuation.



"To me, a university was much more than just a degree, but [it] afforded me the opportunity to explore the United States and its culture," says Arean van Veelen, left, who cofounded OfferUp with Nick Huzar.



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van Veelen said the company arose out of his lifelong pursuit to use technology to find solutions to everyday problems—but his experience as an international student also played a significant role.

“My mindset has always been shaped by that technology problem,” he says, and exposure to international students got him to see the world from different perspectives.

“Studying abroad was a big step for me and took some risk,” he says. “The second risk I took was the decision to build a life in the U.S., which then set me up to take the biggest risk of all: starting my own company.”

So many other students who he met during his time in graduate school also had the intangible quality of entrepreneurial risk-taking—harboring a deep goal and a willingness to explore the unknown.

“The United States is nothing else than layers and layers of immigrants of different times and periods in history, all making that jump to a better life—giving something up and trying something new,” van Veelen says. “I think it’s ingrained.”

### **Exploring New Boundaries**

Unlike van Veelen’s laid-back approach to studying in the United States, in 2010, Wei Jia Ong’s ambitious plans paved her way. Growing up in Singapore, she developed an interest in the history of China, Japan, and Korea—especially their early history and culture prior to the influence of British colonialism.

“I was really into that, and that was what I wanted to study,” Ong, 28, says, which led her to an unlikely place: Washington University in St. Louis. “Not exactly a hotspot for Singaporeans, I would say,” Ong quips.

Though Australia and the United Kingdom are popular destinations for Singaporean students studying abroad, Ong wanted to go somewhere that would take her out of her comfort zone.

“I wanted to go somewhere where I could meet different people, people who are very different from me, to have that experience,” before she returned to Singapore, she says.

Initially drawn to Washington University for its large East Asian studies department, wide variety of courses, and large contingent of international students, Ong found that a new world opened up for her in St. Louis. A self-described sheltered and shy student, her friends and colleagues drew her out of her shell.

“When I first came here, I was very quiet,” says Ong. “I probably couldn’t even make eye contact with people.” It took a month for her to feel comfortable calling her professors by their first names.



East Asian studies may have been her major, but her career took a different path based on encouragement from her father—who hoped she would be an engineer—to try a physics class. During an introductory physics course, she visited the lab where two professors, a husband and wife team, urged her to work with them as an undergraduate assistant.

Not only did her professors challenge her academically and intellectually, but they told her to think that every day should be interesting and every day she should learn something new. “Without those three people,” says Ong of those two professors and her graduate school adviser, “I think I would be a tenth of the scientist that I am today.”

After graduating with a bachelor’s degree in physics, Ong obtained her PhD in physics from Michigan State University. She was encouraged to apply for a position at Lawrence Livermore National Laboratory in Livermore, California, where she began working as a nuclear astrophysicist in 2018. One of her key areas of study is nucleosynthesis, the process by which the elements are formed in the stars.

Ong misses her family back in Singapore, but she has made a life for herself in the United States. She follows local politics and baseball—she’s a St. Louis Cardinals fan but also appreciates the skills of Dodger’s pitcher Clayton Kershaw, whose great-uncle discovered Pluto.

“Apparently it’s a point of pride in their family,” she says. “They were all really upset that Pluto is no longer considered a planet.”

Is her father proud of her? “I know he’s proud of me,” says Ong. “He makes dad jokes like, ‘Oh, now that you’re a PhD, every meeting I have with you is a doctor’s appointment. I know he’s proud of me, [and] that’s just his weird way of showing it.’”



**Edwin Quashie**

### **Finding Their Element**

Lawrence Livermore National Laboratory is home to two other former international students who came to the United States looking for a challenge. Edwin Quashie, 35, from Ghana, and Reto Trappitsch, 32, from Liechtenstein, are currently putting their degrees to work, contributing to the country’s advancements in science.

Quashie graduated from Kwame Nkrumah University of Science and Technology in Kumasi, Ghana, and attended Florida Agricultural and Mechanical University (Florida A&M) after a friend recommended its PhD physics program.



Though he was planning to pursue engineering, Quashie realized that physics was more interesting and challenging. He also found the blend of different cultures on the U.S. campus to be stimulating and the support of his professors to be motivating.

“Everybody’s different. Everybody’s coming from a different place,” he says of his experience as an international student.

His research in atomic and molecular physics at Florida A&M led to an internship at Lawrence Livermore labs. “I liked it much more than what I was doing earlier [in engineering]. So, when I went back [to school], I discussed that with my professor,” says Quashie. “He’s always supportive, so he would say, ‘Oh, if this is the area you want, let’s pursue that.’”

Now, Quashie studies particle irradiation through different media to determine its impact, which has implications for cancer treatment.

“We want to know the depth of relatively different light ions—such as proton, helium, carbon, and oxygen—when it moves through the body. Where does it actually stop?”

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**—Nitin Paschisia**

Quashie says. “You want to target tumor cells, so that the maximum energy (Bragg peak) loss of the ion lies in the vicinity of the tumor. And this energy deposited is what kills the tumor cells.”

While Quashie studies elements in the human body, Reto Trappitsch’s work at Lawrence Livermore labs investigates those same elements at the astronomical level. Growing up in Vaduz, Liechtenstein, Trappitsch’s parents bought him a telescope to encourage his budding curiosity about space and the solar system. That interest bloomed at the University of Bern in Switzerland, where Trappitsch received a bachelor’s degree in physics astronomy and a master’s degree in experimental physics.

He went to the University of Chicago in Illinois in 2010 to work on his PhD after an adviser informed him that funding would be available for him to pursue his work there. A year before Trappitsch received his doctoral degree in 2016, he was offered a position at Lawrence Livermore labs, where he studies pre-solar grains—matter that originated before the sun and is found embedded in meteorites that land on Earth.

“I’m trying to understand how elements in stars formed from hydrogen and helium from the Big Bang to today,” Trappitsch says. “How the galaxy evolved chemically, isotopically, over time by analyzing such grains.”

Trappitsch says that coming to the United States as an international student was invaluable for the experiences it has given him, ones that surprise and stretch a student’s imagination—such as owning a car, enjoying Chicago’s campus design and makeup, and living in a different culture.

“I can adapt much more easily, and when I talk with different people, I can...bridge the cultural gaps,” he says. “That’s for sure advantageous. I would not want to miss the international experience.”

### **Keeping the Pipeline Flowing**

For international students studying in STEM fields who aim to populate the tech and science industries in the United States—whether it’s the next “unicorn” start-up, breakthrough scientific research, or answers to the big questions in the universe—the main challenge is navigating the visa process. Streamlining procedures for students and potential employees (and founders) for U.S. companies will continue to be critical.

“It’s important that we create an environment—business environment, political environment, policies, everything—to not just invite and attract, but also retain this talent to create these jobs here,” says Paschisia of Unshackled Ventures.

“If we don’t, that’s one of the worst forms of offshoring jobs. Because these entrepreneurs that are going to leave the [United States] will go back to their home countries and create jobs there. And those are jobs that could be American jobs.”

Start-ups founded or cofounded by international students in the United States have created almost 30,000 jobs and established companies collectively valued at nearly \$100 billion, according to NFAP—and that accounts for just a fraction of the contributions international students have made to the country’s science and tech industries. In addition to job creation and economic contributions, students like van Veelen, Ong, Quashie, and Trappitsch keep the United States competitive in the world of ever-changing innovation. ■

**PHIL MANZANO** is a journalist in Seattle, Washington.

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For more about why U.S. policymakers should ease restrictive laws for international students, see “International Students’ Crucial Contributions” on page 46.