



FALL 2019

NEW HAMPSHIRE INNOVATORS

Meet 12 New Hampshire
innovators shaping the
world for tomorrow

NEW HAMPSHIRE
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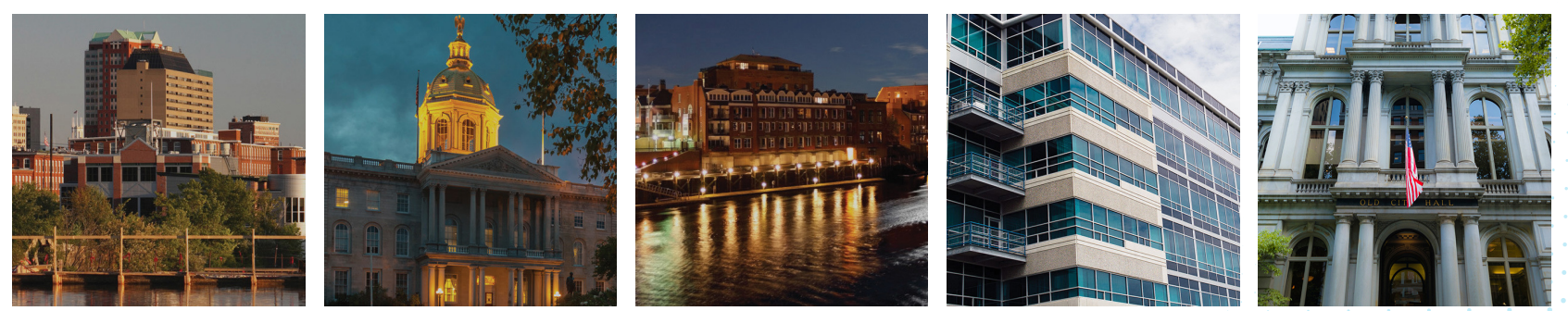
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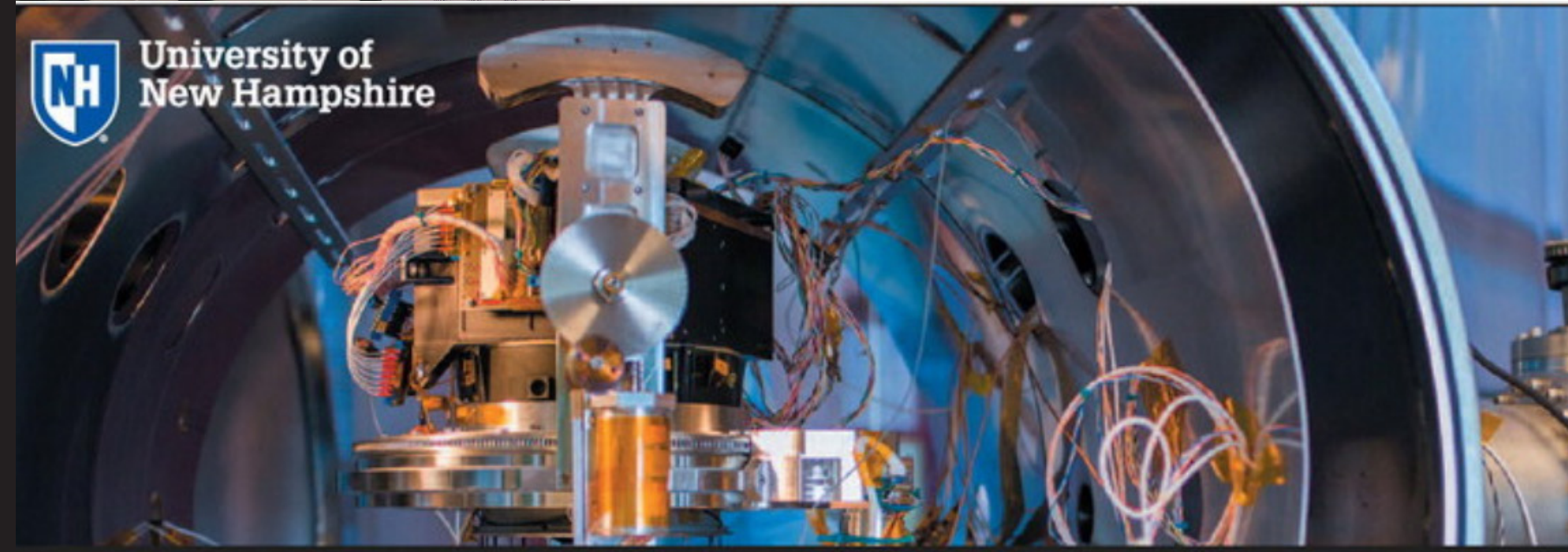
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Left: UNH's wall of student entrepreneurs. Innovators **Francesco Mikulis-Borsoi** and **Kristian Comer**, founders of **YouScheduler** (top left, featured on page 20) and **Joel Nkounkou**, **Dylan Wheeler** & **Nelson Thomas** (top right, featured on page 30) are featured on the wall.



CONGRATULATIONS
 TO NEW HAMPSHIRE INNOVATOR **MARC SEDAM**
 UNH ASSOCIATE VICE PROVOST FOR INNOVATION & NEW VENTURES

DRIVING INNOVATION AT UNH AND BEYOND

Congratulations also to UNH Entrepreneurship Center innovators Francesco Mikulis-Borsoi '20 and Kristian Comer '20 of youscheduler.com Joel Nkounkou '18 and Dylan Wheeler '20 of ecotext.com



Innovator **Erica Johnson**, CEO of QA Cafe in Portsmouth. Page 20

Courtesy



NEW HAMPSHIRE INNOVATORS

FALL 2019

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People drive innovation



The headline on the cover of this year's "New Hampshire Innovators" shortchanges the head count on the pages inside.

For this edition, we decided to focus on individuals rather than companies, aiming to focus as much on entrepreneurs as on their creations. We soon learned it's often hard to single out one person so we're featuring 16 people within 12 organizations.

Some of the profiles feature two or three people, such as Francesco Mikulis-Borsoi and Kristian Comer, students at the University of New Hampshire who founded YouScheduler, a startup that developed an online tool to create college course schedules.

Our update on Jeremy Hitchcock, who co-founded internet performance company Dyn, is a slice of a bigger story about how he and his former colleagues are launching other startups or joining other technology companies in New Hampshire and beyond.

Hitchcock is arguably the best known name among the mix. Mostly we wanted to spotlight people, organizations and companies whose impact on the Granite State has been flying below the radar outside technology circles. They include Jennifer Gray, whose Portsmouth recruiting company helps information technology companies find workers, and Matt Marra, a veteran of IBM and Uber who is an investor with 10X Venture Partners in New Hampshire.

We recruited Julie Demers, who just this month joined the New Hampshire Tech Alliance as its first full-time executive director, to introduce this year's "New Hampshire State of Technology." It's culled from the national Cyberstates 2019 report, which offers data on tech employment in the Granite State.

We solicited nominations this year from the University of New Hampshire, Southern New Hampshire University, Dartmouth College and the New Hampshire Tech Alliance, through Matt Cookson of Cookson Communications, the alliance's long-time executive director until this year.

Through these stories, we hope you learn as much about innovation -- and the people creating and driving it -- as we did.

Mike Cote

Deputy Managing Editor, Business, New Hampshire Union Leader



Southern New Hampshire University's Sandbox Collaborative, the university's innovation lab. Innovator **Brian Fleming** serves as the lab's executive director. *Page 12*

Allegra Boverman

NEW HAMPSHIRE INNOVATORS

FALL 2019

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NEW HAMPSHIRE STATE OF TECHNOLOGY



Cyberstates 2019 report is full of good news for New Hampshire

BY JULIE DEMERS

As the new executive director of the New Hampshire Tech Alliance, I was given a very nice welcome present when I received the 2019 Cyberstates report. This annual national report produced by CompTIA on the state of the technology industry provides state-by-state data that gives us a clear sense of the impact of the sector based on the previous calendar year data.

In summary, the report highlights how the tech sector is a major economic driver and job creator for New Hampshire. Our tech sector is filled with innovators from early-stage startups to mature companies that continue to develop new products, processes and services that fuel growth. It's especially appropriate that we

highlight this data in the New Hampshire Innovators magazine produced by the New Hampshire Union Leader. It's my pleasure to call out some highlights based on the 2018 data:

- Tech employment in the Granite State is nearly 70,000, and we showed a year-over-year gain of 2,819 jobs, equating to a 4.2% increase.
- Tech employment as a percentage of the overall workforce in New Hampshire is nearly 10 percent (9.8%).
- The economic impact of the sector represented 13.8% of the state's gross domestic product, up from 12.6% in 2017.
- Median tech occupation wages continue to increase and are 80%

higher than median state wages.

- Software and web developers is the largest sector at 8,776 employees and grew by 5.9% in 2018.
- Looking at tech industry sectors, IT services and custom software services became the largest sector in 2018 with an 8% year-over-year growth to 15,921 employees.

Our challenge will be sustaining this growth given our low unemployment rate and demographic challenges. The New Hampshire Tech Alliance will be conducting a Listening Tour this fall across the state for our members and for nonmembers alike to tell us what we can do as an organization to support them and build off this track record of success. Visit us at NHTA.org to learn more and sign up for our e-blasts to stay on top of our latest news. We hope to see you at one of these listening sessions.

Julie Demers is an experienced nonprofit executive and began serving as the executive director of the New Hampshire Tech Alliance on Sept. 3.

34TH

TECH EMPLOYMENT RANK

25TH

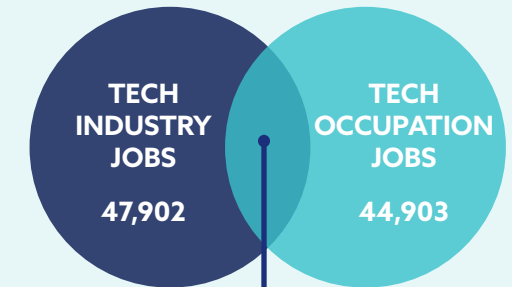
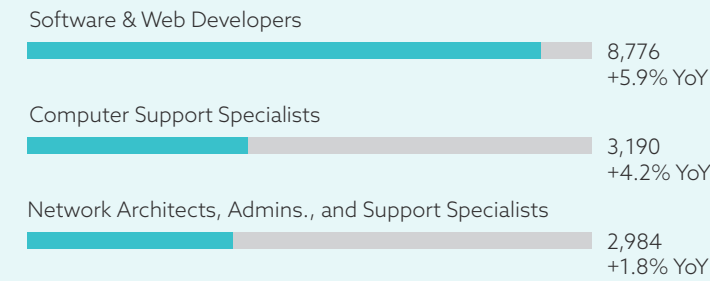
TECH EMPLOYMENT JOBS ADDED RANK

31ST

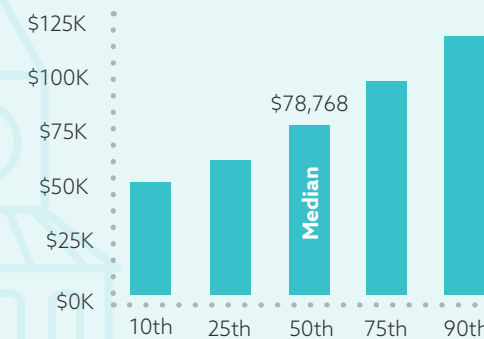
INNOVATION SCORE RANK

Primary data sources: EMSI | U.S. Bureau of Labor Statistics | U.S. Bureau of Economic Analysis | Burning Glass Technologies Labor Insights. All data are estimates cover the 2018 time period, unless specified as earlier.

LEADING TECH OCCUPATION CATEGORIES



TECH OCCUPATION WAGES (by percentile)

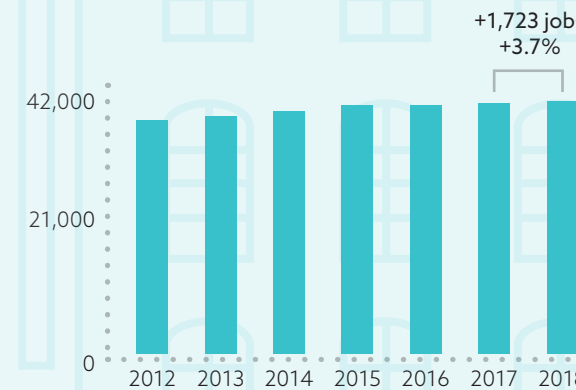


80%
Median tech wages are 80% higher than median state wages

LEADING TECH INDUSTRY SECTORS (by employment)

	2018	YoY % Change
IT Services & Custom Software Services	15,921	8.0%
Tech Manufacturing	15,473	1.2%
R&D, Testing, and Engineering Services	6,955	2.8%
Telecommunications & Internet Services	6,148	1.6%
Software [packaged]	3,404	2.3%

TECH INDUSTRY EMPLOYMENT



STATE OF TECHNOLOGY AT A GLANCE

- 69,888** NET TECH EMPLOYMENT¹
- 2,819** NET TECH JOB GAINS [2018 vs. 2017]
- 4.2%** YoY % CHANGE IN NET TECH EMPLOYMENT
- 9.8%** NET EMPLOYMENT AS A % OF OVERALL WORKFORCE
- 4,269** TECH BUSINESS ESTABLISHMENTS [firms with payroll]
- 12,135** TECH OCCUPATION JOB POSTINGS [2018 total]
- 15%** EMERGING TECH JOB POSTINGS % CHANGE [2018 vs. 2017]

¹net of tech industry + tech occupation + self-employed [see methodology for details]

\$10.6 billion

estimated direct contribution of the tech sector to the New Hampshire economy



BOB WILKINS

Serial entrepreneur turns attention to CPAP device cleaning

BY ERICA SWALLOW



Allegra Boverman

Talking with Bob Wilkins is like hearing the story of the best day ever, but instead of a day, it's a career you're talking about. One good idea leads to another one, and another one. This is the career of Bob Wilkins.

Wilkins was born in Seattle but came to Peterborough in 1995 to run PC Connection (now Connection), a technology solutions provider based out of Merrimack.

"PC Connection was a struggling company," Wilkins says. "I, and a few other executives, got in there and turned it around. We took it public in three years and grew it to a billion dollars in revenue in four years. When I left in 2006, we were at \$1.6 billion (annually)."

When Wilkins's PC Connection work was up, though, he didn't move back West. He made a life and career in New Hampshire, working on innovation after innovation. Currently, he serves as the CEO of a medical device company called SoClean. Based in Peterborough, SoClean produces an automated CPAP cleaning and sanitizing device that eliminates disassembly and time-consuming cleaning processes.

If you know anyone who uses a continuous positive airway pressure (CPAP) device, you know they're quite



Allegra Boverman

The customer service center at SoClean, now based in Peterborough. Customer Service representative Jacqueline Davis troubleshoots with a customer at one of the tables where many CPAP machines and parts, as well as SoClean products, are laid out to look at while discussing their issues.

cumbersome. They're noisy. They're bulky. And they're difficult to clean. But not with SoClean.

Users simply put their CPAP mask in the cleaning unit when they wake up in the morning, and SoClean does the rest. Cycling ozone through the entire CPAP system, SoClean kills 99.9% of CPAP germs and bacteria. Wilkins says the process takes about one-and-a-half hours,

but that's all automated, while the user isn't using the device. That sure beats the daily upkeep. Wilkins says theirs was the first CPAP cleaning device on the market.

"Bob is the quintessential entrepreneur," SoClean CIO Keith Brown says. "He has proven to be ahead of the curve since I first met him in the late '80s."

The two met when Wilkins was working on his first company,

Zones, a mail-order reseller of Macintosh computers and equipment that had written its own order management, warehousing and customer service system. Wilkins likes to say that the software was sold to a "new startup" at the time.

The startup? Amazon. After Zones, he raised venture capital and founded Mac's Place, another mail-order Mac reseller — he sold it to

Now, CPAP cleaning is a snap!®



"I love my SoClean—
it makes it simple
to keep the CPAP
sanitized."
— William Shatner

SAVE
\$50
WHEN YOU
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PLUS, Free Shipping



- SoClean kills 99.9% of CPAP germs & bacteria
- Works with all popular CPAP machines & masks
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- Completely automated — Hands-free!

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Egghead Software, one of the dominant software retailers at the time. Then came his 11-year career at PC Connection. But how did Wilkins go from selling computers to selling medical devices? Compact discs. After leaving PC Connection, Wilkins took a few years off to golf, he says. Realizing he wasn't going to be a pro golfer, he got back to his ideas, founding and working with a number of companies. One of those companies was VenMill, where he was serving as chairman of the board. It produced a CD repair product. CDs, though, weren't the next big thing, so Wilkins encouraged the team to use their cleaning technology to build something else.

Those conversations led to... CPAP cleaning. Hello, SoClean. Along the way, Wilkins has founded a number of other companies, too, including three that still operate today: productivity tool Action Items, commerce platform ZiftrShop, and web marketing agency AirTank. The current CEO of AirTank, Benjamin Perez, speaks highly of Wilkins and has known him for the past 15 years.

"Bob is a unicorn," Perez says. "He is one of the most unique business people I've been exposed to. He's very diverse in the skills he covers — from a technical standpoint, he can go as far as to code. And he's a talented business guy with strong financial management and marketing skills."

"For New Hampshire, Bob has had an

impact over an extended time, starting with his role at PC Connection, a major employer, entity and publicly-traded company," Perez says. "For this chapter, he has brought to market some interesting ideas — not all of them have materialized, but he is very resilient and has never wavered. He sources top talent, and with SoClean, he's not only creating jobs in Peterborough, but is also making an economic impact on other communities." SoClean has four warehouses and four

call centers across the country and also operates in the UK, Germany, and France. Wilkins is an active investor through Our Town Capital, Millworks Fund and Borealis Ventures. He says he and his wife have started to think of ways to introduce children to technology sooner. "Not quite a foundation..." Wilkins says, trailing off. "But some way to get robotics and engineering in the hands of second and third graders, at least." If his track record is any indicator, he'll find a way.



Bob Wilkins of SoClean, now based in Peterborough.

Allegra Boverman



BRIAN FLEMING



Allegra Boverman


Innovation in a Sandbox: SNHU lab fosters a place for ideas to take shape


BY MARK HAYWARD


Six years ago, Southern New Hampshire University launched a Change and Innovation Lab, a move that many corporations were undertaking at the time. The Zen-like idea provided a separate space for university leaders to break out of their routine and reshape the university for the future. The lab was so successful that it became its own innovation – the College for America, a university branch that offers alternative, competency-based degrees to supplement an employer’s training and employee development efforts. So when SNHU launched a second innovation lab in 2015, the lab got its own charter, which enshrines the effort and keeps it grounded in idea generation and research, no matter what brilliant ideas should emerge. And much of that happens at the Sandbox ColLABorative, which occupies the top floor of the SNHU operations building, located on Elm Street in Manchester. The Sandbox is what one would expect in an idea factory – fifth-floor views of Manchester; wood-paneled walls; an auditorium space with cushion-adorned, stair-like seating spaces; chalk-and white boards with elaborate designs; cubicles with diner-style booths, tables and chairs on wheels, which allows them to be easily pulled apart and reconfigured. It’s a place where ideas get fine tuned and then either launch to success or crash and burn. “We are an internal consultant to a university,” said Brian Fleming, executive director of the Sandbox. The Sandbox handles ideas both big and small. Its current big-idea project involves the potential creation of a portfolio


of digital-based curricula for people whose jobs require credentials in areas such as leadership, business strategy and lab safety. A smaller task is the creation of real classroom experiences for SNHU students seeking teaching degrees. Some 180 different projects have gone through Sandbox, he said. Fleming said Sandbox provides a place for faculty, administrators and staff to develop strategies and not be distracted from their day-to-day jobs. With a staff of 40, the Sandbox provides the guidance, market research, analysis, reports and pilot projects. While the SNHU effort is formalized, Fleming said any company or organization can innovate. “Anything we do here could be done in a garage with a couple of chalk boards,” he said. The value of Sandbox is tied to risk mitigation for the university. “Our job in many cases is to take things on and let them fail – fail fast, fail cheap, fail forward, meaning helping us learn from them,” he said. At the Sandbox, the mission statement of SNHU – to transform both the lives of students and higher education – is in the forefront. It’s written on a blackboard, as well as predictions for the world in 2030, including more human-machine collaboration and a world of simulation that even bends the concept of reality. An innovation lab is all well and good for SNHU, a \$1.2 billion organization that boasts one of the largest online universities in the country. But what about a small business? “If I had a company of 50 people, I would not create an innovation


THE WORLD IN 2030: Future Forces, As Predicted by SNHU

- 

Personal economies
The rise of digital platforms allows people to fashion their own economic opportunities.
- 

Human-machine collaboration
Artificial intelligence and machine learning allow development of human-machine teams.
- 

Masterminds of reality
The Internet of Things enables people to integrate simulation into their daily lives.
- 

Spectrum demographics
Spectrum identities replace traditional demographics, enabling highly personalized services and allowing people to manage their reputations.
- 

Shape-shifting organizations
Distributed computing allows organizations to maximize human value in a rapidly changing world.

lab. My whole company would be an innovation lab,” Fleming said. A company of 500 should have its own innovation lab, he said. A company president should

be constantly listening to his workers and taking stock of their ideas, especially those on the front lines with customers. “Innovation,” he said, “starts with people.”



CHRISTINA RUSSELL



GOING GLOBAL: Chrystina Russell is helping SNHU bring college education to refugees in Africa and the Middle East

BY JOSIE ALBERTSON-GROVE

Allegra Boverman

Bringing a college education to students in refugee camps has the potential to change the world — and might just revolutionize higher education in the United States.

After a decade teaching special education in the Bronx and leading a middle school in Harlem, Chrystina Russell moved to Rwanda in 2013 to work for a program that helps students work through Southern New Hampshire University's online degree.

With Russell's vision, the program has become the Global Education Movement, and brings SNHU degrees to people in refugee camps in Africa and the Middle East, with new programs popping up around the world.

Russell got the idea to bring SNHU degrees to refugees when she started volunteering at the Kiziba refugee camp in Rwanda. She met bright young people hungry for education, but who had few opportunities. In some ways, Russell said, the young people she met in the camp were like her students in Harlem and the Bronx.

"Something that brought me back to my New York City principal years was all that potential that was not being harnessed, and not having an opportunity to flourish," she said.

With university president Paul LeBlanc's blessing, Russell set about starting up a college program in the refugee camp. Local "coaches" help students navigate the online courses,

and students work with a cohort of other learners working on the same degrees. Then, the program connects students with internships and jobs.

Russell said the students themselves were key to starting the program.

"The amazing thing about the students was they wanted it to happen so much," Russell said. The motivation factor is just off-the-charts. Our students understand this is it, this is the opportunity."

One of those students is Julia Nduta Oduol, a Kenyan student living in a refugee camp in Cape Town, South Africa. Nduta Oduol finished

her associate's degree while working full-time, and is now pursuing her bachelor's degree in management through the Global Education Movement. The program gave her skills she uses in her work, she said, and hope for the future.

"It helped me realize that there is hope, regardless of the harsh conditions surrounding refugees in Cape Town," she wrote in an email.

Students admitted to the program can earn one of three bachelor's degrees in business and management, or a general-studies associate's degree. With degrees, Russell said, refugees can become more empowered.

"We're hoping to make refugees a part of the solution rather than passive recipients of policy," Russell said. "We're trying to create leaders with the credentials needed to solve the issues."

It's that idea that has led Russell to push for the program to expand to more sites, rather than scale up existing programs, she said. In 2018, she worked to open college programs for refugees in South Africa, Malawi, Kenya and Lebanon.

Graduates with SNHU degrees are using what they learned to improve their communities, Russell said. Some are using new tech skills to create phone



Courtesy/ Julia Cumes

Through the Global Education Movement, Chrystina Russell brings SNHU degrees to people in refugee camps in Africa and the Middle East.

THERE'S A REASON THE CEILING'S MADE OF GLASS.

Break through at snhu.edu



Courtesy/Julia Cumes

applications to solve problems in refugee camps, like an app that allows refugees to make appointments, rather than spending hours waiting in line. One student started a primary school in Malawi. Many students go on to work with humanitarian organizations such as the United States Agency for International Development – positions they are uniquely qualified to hold, but where someone without a college degree might have been passed over. Some are even hired on at Global Education Movement sites. Kevin Niragire, 24, is a refugee from the Democratic

Republic of Congo living in the Kiziba camp. He knew higher education could change his life, and make life better for his family, he said. After earning his bachelor's degree through the SNHU program in July, Niragire got a job with the program. The degree gave him the skills he needed to do his job, he said. "My life will not remain the same," Niragire said. In addition to coursework and coaches, the program provides a laptop for every student, and convenes parent advisory committees – like the groups that advise grade schools in the United States, Russell said. The parent groups have been

key to solving unique local problems: For example, Russell said, in one location where students stay in a classroom building late to study, parents arrange to walk students home after dark. That collaborative problem-solving, Russell said, has been key to the program's success. "The solution does not come from one place," she said. "It comes from the whole group." Russell said she thinks the Global Education Movement model – working through the online degree with the help of a coach – could be brought back to the United States. "I think the model has so much

promise to learners in the U.S. who are facing difficult life circumstances," she said. "The idea of online faculty combined with in-person coaches has a lot of promise," Russell said, particularly paired with SNHU's "competency-based" online degree. Rather than sitting through a certain number of hours of class, students complete a series of projects at their own paces. The program is working, she said, as long as it serves students as well as or better than a traditional university. "We'll continue to make sure we're looking at our results," Russell said.



ERICA JOHNSON



Courtesy

Work at UNH's InterOperability Lab prepared Erica Johnson for CEO role at software company

BY JASON SCHREIBER



Courtesy

Johnson, CEO of QA Cafe in Portsmouth, speaks with employees.

Erica Johnson has always been a problem solver.

After becoming a staff employee at the University of New Hampshire's InterOperability Laboratory, which tests networking and data communications products, the University of New Hampshire graduate discovered she had a passion for bringing new ideas to life and implementing strategies in computer networking.

Her experience at the UNH lab prepared her for the role she now plays as chief executive officer of QA Cafe, a Portsmouth-based software company that provides IP testing solutions and packet capture analysis tools for broadband access, home networks, consumer electronics, and enterprise IT.

"As director and with a great passion for its mission, I quickly grew the UNH-IOL's business helping industry and teaching the next generation of engineers. This gave me the confidence and experience I needed to take the reigns of an innovative company like QA Cafe," she said.

The company was founded in 2001 by Joe McEachern. Johnson said he bootstrapped the company and created CDRouter, its flagship product.

"CDRouter is an innovative platform that really changed the way engineers developed internet routers people use in their homes. Our product is able to test, validate, and increase the quality of these devices," Johnson said.

She said companies around the world were interested in CDRouter to help build a robust quality assurance and development process.

"As our customer base grew, so did new features, test cases, and automation capabilities. Over time, this positioned QA Cafe and our CDRouter as the industry standard for home gateway and edge router testing. From there, we

became entrenched at every stage of the supply chain working with chipset vendors like Intel to internet service providers like AT&T," she said.

For the first 10 years, McEachern and his team invented a way to analyze, share and collaborate with packet captures. Johnson said engineers and technicians developing network protocols and technologies need to see the actual data on the network, which is known as a packet capture.

"Current tools existed, but there really wasn't a good way to share the captures and collaborate as a team," she said.

The company then developed CloudShark, a product that allows network engineers and IT departments to securely share, manage, annotate, and analyze packet capture files.

"This solution appeals to a much wider customer base, including all companies with IT departments or cybersecurity offices. CloudShark has been sold to companies within the financial, government, health care, and even the fashion industry worldwide. Because of the massive attraction we received to a global market it was decided to make CloudShark an independent brand," Johnson said. Johnson was hired as CEO in 2018 to manage the business functions so McEachern could focus more on the technology.

The company now has 17 employees.

She said QA Cafe has been a perfect fit for her.

"It has really enabled me to stretch my business skills as we evolve and grow as a company in an industry I am very passionate about," she said.

Future goals are to be sustainable and continue to help the industry make and deploy better networks, Johnson said. The team is also researching new products to leverage its strengths and expertise in new industries.

"Our people and culture set us apart. We all believe that better networks make for a better world and this is demonstrated through our values. We work hard at making our customers successful while being fun, creative, and passionate," Johnson said. "This is proven by our low turnover and long-time dedicated employees. It's not just barbecues and foosball games, although those are a big hit. It's about empowering our employees to be innovative, bring ideas, and create change within our company."

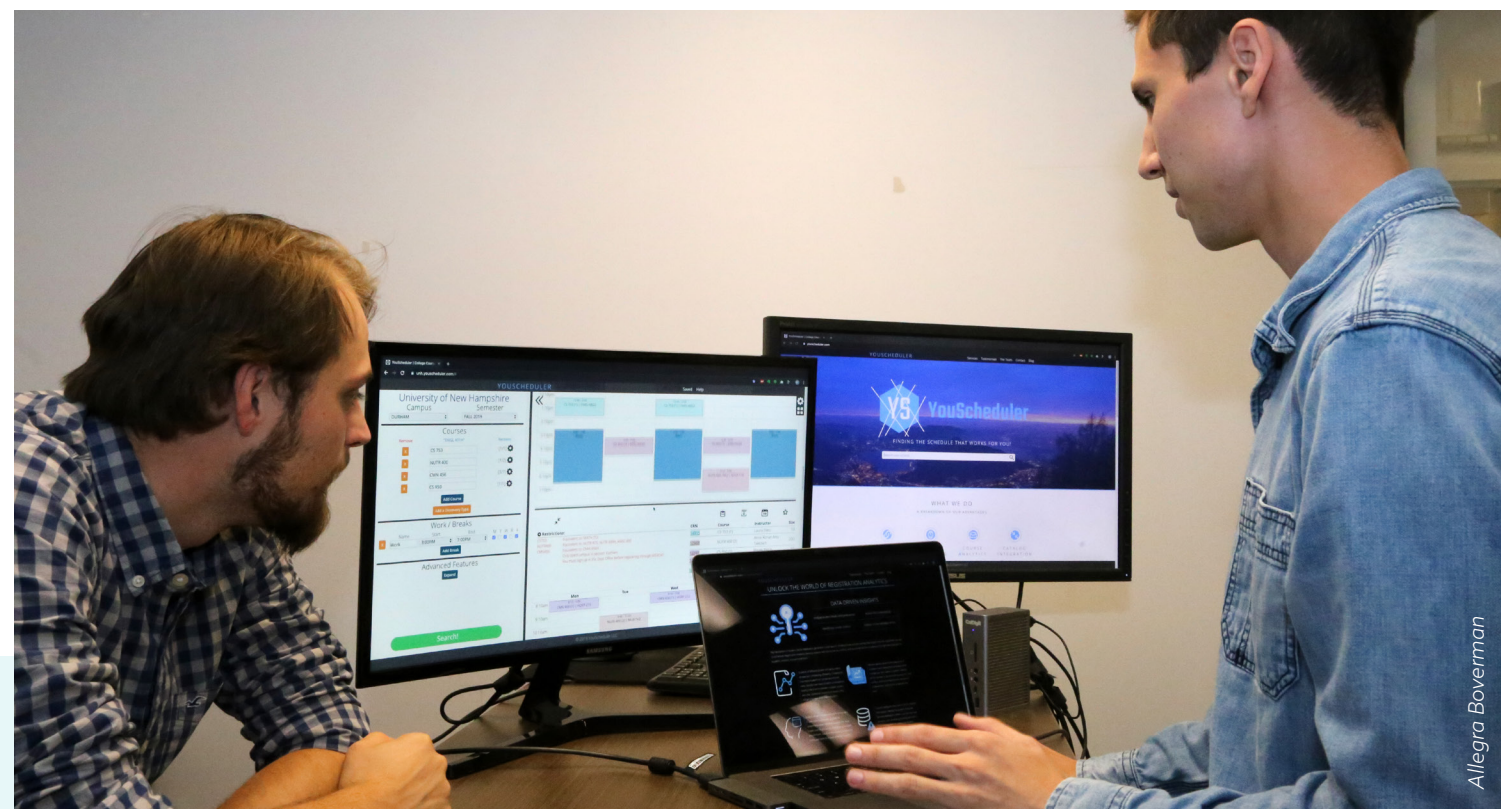


YouScheduler: UNH students created a road map for college coursework

BY KIMBERLEY HAAS



Allegra Boverman



Allegra Boverman

YouScheduler is a startup by UNH seniors Kristian Comer, right, of Hudson, and Francesco Alessandro Stefano Mikulis-Borsoi of Nashua.

Looking for a way to avoid 8 a.m. classes, University of New Hampshire computer science student Francesco Mikulis-Borsoi reached out to his friend Kristian Comer in October 2017.

Two years later, they are generating revenue with YouScheduler, a website that allows UNH students to generate a schedule that works for them. All of their demands – including time for employment, sports, activities and meals – can be programmed in.

“It’s just a waste of time to build your schedule by hand,” Comer said as he explained the website from their office at UNH Innovation on Madbury Road.

Mikulis-Borsoi and Comer are getting paid by UNH, which allows students to map out their

schedules using the program for free. They estimate 6,500 students used it to create their schedule this fall semester. That is about half of the college’s students.

The system works without collecting any personal data from students because they still have to go through the process of registering for their courses themselves. Mikulis-Borsoi said that anonymity is something college students want from services.

“There is no name. There is no way for anyone to see what you have searched for,” Mikulis-Borsoi said.

Now seniors, Mikulis-Borsoi and Comer have been working on YouScheduler so they can launch

their service on other college campuses. They have started with testing at the University of Maryland.

Mikulis-Borsoi and Comer say their website also helps colleges by leveraging the data generated from the students building schedules. They can provide detailed reports isolating inefficiencies and offer solutions to optimize the learning experience for students and the teaching experience for professors.

Mikulis-Borsoi and Comer won the Paul J. Holloway Prize Innovation to Market Competition and \$10,000 in 2018. They competed in the Regional Economic Development Center’s pitch competition this May in Derry.



HEATHER LAVOIE

Geneia looks to use AI and data science tools to predict high-cost conditions like diabetes, opioid addiction

BY PAUL FEELY



Dave Lane

Standing in her Commercial Street office, Heather Lavoie looks out across the Merrimack River and chuckles.

From her desk at Geneia, the Manchester native can see the West Side neighborhood where she grew up. She attended Queen City schools before embarking on a 30-year journey to her current post in life – president of a growing health-care technology company that uses artificial intelligence to predict future health ailments and disease-related costs.

“I worked incredibly hard to move across the river,” jokes Lavoie.

Geneia is headquartered in Pennsylvania, with 50 employees in the Millyard – about half of whom reverse-commute out of Boston

In 2017, U.S. health-care costs were nearly \$3.5 trillion. By 2026, costs are expected to increase to \$5.7 trillion, representing

nearly 20 percent of the economy.

Traditionally, health plans have used actuarial models that determine risk and future costs at the population level.

The Geneia Data Intelligence Lab (GDI Lab) is using machine learning techniques to create a “risk score model” that enables health plans to act on the insights to prevent health deterioration and future costs.

Lavoie said the growing use of artificial intelligence represents the biggest change she has seen in her industry over the last 30 years.

“We’ve created a factory, a pipeline, for development and deployment of artificial intelligence models, predictive models,” Lavoie said.

“Before you may not have had the infrastructure to process through such large volumes of data, and now the systems are such that it’s easy to contain,

manage, process through that much data. The tooling is better in terms of being able to process through that data, and it creates a more rapid cycle time for learning. There’s no way that a human with standard algorithms can make sense of so many different factors in the way that artificial intelligence can, so it allows us to be much more predictive.”

Lavoie said her firm is developing methods to use genomic data to predict the onset of disease and other medical issues.

“We have ones that predict diabetes,” Lavoie said. “One in three people in our country are pre-diabetic, and one out of every \$7 we spend is on diabetes, and so it’s a significant issue that is bubbling up. Self-funded employers, commercial employers, they think about oncology as one of the most significant cost-drivers for their

organizations. But diabetes is about to hit, because it’s getting into younger and younger populations – not just the elderly – and because of the prevalence. So we’re spending a lot of time trying to predict that and predict complication rates, so that we can intervene sooner.”

Geneia also has models that predict opioid addiction, Lavoie said.

“The team has a model that they’ve been testing out,” she said. “We prove them out for a long period of time before we commercialize it, but they’re ready to commercialize it, and they’re thinking by Q1 of next year that it will be ready.”

Lavoie said Geneia’s models are proving to be highly correlated with actual addiction.

“It’s obviously a sensitive area, but it’s a critically important area to understanding based on



Left: Heather Lavoie, CEO of Geneia in Manchester speaks with a reporter on Sept. 4.

Dave Lane

prescribing patterns and other patterns who has a stronger likelihood to be addicted if then prescribed, so then being able to alert prescribers in advance of them providing medication. Not necessarily looking right now at the genetic side of addiction, but rather on the behavioral side and being able to provide it as a tool for prescribers." Lavoie has led startups, health plans and provider organizations during her 30-plus year tenure in health care. She has directed initiatives for private and public organizations on strategy,

transparency, diversification, product innovation, operations and analytics. Previous to Geneia, Lavoie co-founded and served as vice president of product development, delivery and engineering for Choicelinx Corp., through its successful exit to CIGNA Health Care. Lavoie is a graduate of Notre Dame College and received a master of business administration degree from Southern New Hampshire University. Sitting in her third floor office, Lavoie says statistics suggest she shouldn't be where she is today.

"I grew up on the West Side, over by the Workmen's Club, so not on the fancy part of the West Side," Lavoie said. "My mom was 17, my dad was 18 when they had me. They worked in the shoe factory. My dad was a leather cutter, and my mom worked in the factories as well until they left, and then they had to reinvent themselves from there." The Adverse Childhood Experiences (ACE) test is a tally of different types of abuse, neglect, and other hallmarks of a rough childhood. According to the ACE study, the rougher your

childhood, the higher your score will likely be, and the higher your risk to develop later health problems. "I score pretty high," Lavoie said. "I had a difficult childhood. My grandfather committed suicide when I was 12, and I was there. I can answer about eight out of 10 (on the ACE score), so that puts me on the rate of really high correlation with chronic disease. What you see with kids like myself, you kind of go one of two ways - you can really have a significantly challenged life or you may go in the other direction

and just really work like heck and focus on high performance. Thankfully I went in the other direction, but it's a bit of a flip of the coin. I fortunately had great teachers at West, great teachers coming up and a great community there." Lavoie said the best advice she can give anyone, in their careers or in life, is embrace the zigzag in life. "It (life) just doesn't follow a linear path," Lavoie said. "There's times I made a lateral move instead of just an advancement. Sometimes that makes you more well-rounded."

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JENNIFER GRAY

Recruiting for IT: Jennifer Gray's Market Street Talent helps companies find coveted workers

BY JASON SCHREIBER

Allegra Boverman



When Jennifer Gray founded Market Street Talent in 2008, it was just her, a part-time bookkeeper and a part-time recruiter hired later that year. Since then, the nationally recognized staffing firm that provides permanent, contract and temporary jobs in information technology has steadily grown and now has a core team of 12 employees. Gray said the Portsmouth company has grown "purposefully and thoughtfully" over the years. "Our vision is to promote and foster the growth of information technology in our communities - one candidate, one client, one community at a time. We do this by pursuing excellence in everything we do, having empathy towards the customers' true needs, keeping a clear focus on only the important opportunities,

showing honest care for the desired quality and outcomes, and treating all people with the utmost respect," she said. The company specializes in IT staffing and consulting, with a focus on staffing solutions for short-term contract positions and full-time permanent positions within a 60-mile radius of Portsmouth, including the Seacoast, Manchester, Portland, Maine, and Greater Boston. "We are living in a time we affectionately refer to as 'reverse unemployment,' where there are far more open positions in IT than there are qualified people to fill these positions, and we don't see this changing any time soon. We will continue to focus on the clients we serve and look to grow by diving deeper and wider into the markets we serve," she said.



"A strong team and a healthy culture is of utmost importance for sustained growth and success"

Courtesy/ Raya on Assignment

A graduate of Franklin Pierce University with a degree in international business, Gray described herself as an entrepreneur and technology executive whose firm knows "what it takes to find highly skilled technology specialists that fit seamlessly into a company's culture." Gray's team believes in being community-minded and

community-driven. Market Street Talent has a corporate give-back program in which it picks two local nonprofits each year and offers time, talent and resources as a team throughout the year. The company also sponsors various local, innovative, technology networking events, such as eBrew, and user groups like the New Hampshire User Experience Professionals Association. Its "Women in Technology" annual events aim to raise awareness about important issues around diversity, inclusion, hidden bias and gender parity, she said. "We truly believe that the health of an organization centers around its people. A strong team and a healthy culture is of utmost importance for sustained growth and success, and today more than ever, people are looking to work for companies whose values align with their own," Gray said.



Market Street Talent, of Portsmouth. From left: Sharon Hussey, Tori Leavitt, Jay Robichaud, Kelsey Kane, Jennifer Gray, CEO, Ryan Flanagan, Sarah LeBlanc, Sam Kuncio, Katie Brown.

Courtesy/ Raya on Assignment



JEREMY HITCHCOCK



Dave Lane

Jeremy Hitchcock, right, and Gray Chynoweth of Minim speak with a reporter on Sept. 4, 2019.

Beyond Dyn + Oracle: Jeremy Hitchcock hopes he and his former colleagues continue to innovate in NH

BY MIKE COTE

Dyn's acquisition by Oracle in late 2016 – and the tech giant's decision to shed dozens of Manchester workers this spring – might seem like the closing chapter for a homegrown success story.

For Dyn co-founder Jeremy Hitchcock, it represents the beginnings of a bunch of other stories he hopes will continue to resonate in New Hampshire and throw sparks in the state's high-tech community as his colleagues join other companies or start new ones. Hitchcock's latest project, Minim, offers a great example. When Adored, a company founded by fellow Dyn alumnus Cory von Wallenstein, failed to find traction, Hitchcock recruited its engineers for his own 2017 launch.

"That startup didn't work so I inherited that technology team," Hitchcock said earlier this month when Minim announced its formal commercial launch. It also marked the arrival of Gray Chynoweth, a former Dyn executive who is now Minim's chief executive officer.

Chynoweth is one of several former Dyn employees who have joined Hitchcock to grow Minim, a 30-employee startup that has developed a cloud-based WiFi and internet-of-things security platform for "smart" homes. The company has \$2.5 million of investment capital and a great location: upstairs from The Bookery, an Elm Street bookstore and cafe that is among numerous investments Hitchcock and

his wife, Liz, have made in Manchester. Liz Hitchcock also is a co-founder of Minim.

Dyn was an internet performance company whose clients included Twitter, Netflix, Visa and Pfizer. The distributed denial-of-service attack on Dyn in October 2016, which targeted the company's customers and caused outages to internet platforms and services worldwide, inspired Hitchcock to found Minim.

"What Minim is doing is taking all of the complexity and sophistication that's been developed over the last 15 years and incorporating it into a network environment and simplifying it and making it consumer accessible so that end-users, people in their homes, can feel secure in their internet environments," said Hitchcock.

A week after Minim's announcement, Jeremy Hitchcock's long time friend and Dyn colleague Kyle York announced the public launch of his new company, York IE, an investment firm that is a partnership with two other Dyn leaders. York and his partners, Joe Raczka and Adam Coughlin, remained with Dyn after Oracle acquired the company. They left in July to start their own business focused on growing local startups and providing related services.

Both York and Hitchcock noted the presence of Dyn workers in other technology companies, including Fastly, a cloud computing services company

"They're looking at New Hampshire and this greater Boston ecosystem as a place where they are looking for talent. And where they can find the talent, they want to expand it."

based in San Francisco, and NS1, a software company based in New York City. "It's a bunch of clusters," Hitchcock said.

Some of the companies where Dyn employees are landing are considering opening local offices here, Hitchcock said. "They're looking at New Hampshire and this greater Boston ecosystem as a place where they are looking for talent. And where they can find the talent, they want to expand it. I think that's great," he said. "Those executives, they go tell other people."

Hitchcock and fellow Manchester native Tom Daly founded Dyn in 2001, when both were students at Worcester Polytechnic Institute. Daly left the company in 2012. Hitchcock stayed on as CEO, growing the company to about 500

workers in several locations, but mostly in Manchester. The West High School graduate left in 2016 shortly after the company attracted \$50 million in investment from the venture capital firm Pamplona Capital Management and several months before Oracle acquired the company.

While interest from a global company like Oracle in a homegrown New Hampshire business makes a compelling story, don't expect them to move their corporate offices here. Smaller outposts in the Granite State are the more likely scenario.

"I don't think we're going to have these large multinational companies that are necessarily headquartered here," Hitchcock said. "But, hey, if they grow up to have offices that are 50 or 100 people, that's a pretty good outcome."



Cutting college costs: ecoTEXT offers digital versions of textbooks

BY KIMBERLEY HAAS

When Joel Nkounkou was a student at the University of New Hampshire he was searching for a PDF version of a textbook he needed when he came up with the idea for ecoText. "The idea of ecoText was birthed on a random night junior year," Nkounkou said. "I had a friend of mine, who every semester, I gave him a list of my textbooks and

said, 'Do your magic. Find the PDF version of this textbook so I don't have to pay anything.' I think I was going through that exercise with him, and there was one engineering book that we couldn't find." Nkounkou said that \$300 book felt like \$3 million at the time. The electrical and electronics engineering student from Dover

Allegra Boverman

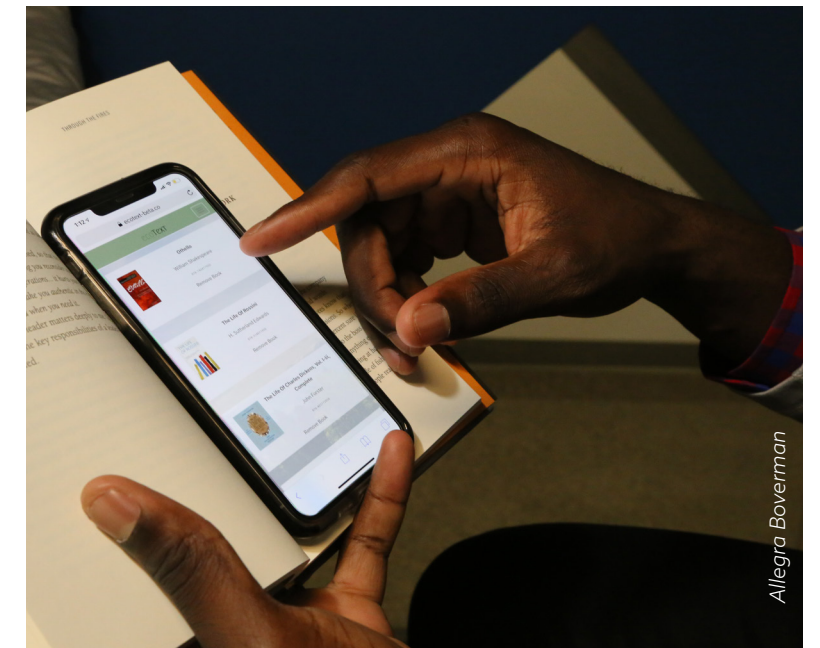
said he started thinking about how people used to buy CDs for music and now download only the songs they want for less than a dollar. So he sought out advice about starting his own website where college students could get the books they need for all of their classes online. With the help of mentor Ian Grant, who is the executive director of the Peter T. Paul Entrepreneurship Center, Nkounkou came up with a viable business model. "He opened up that world and really provided a deeper perspective on how businesses grow," Nkounkou said. "We ended up traveling. We went to these pitch competitions to maybe win some money and network." Grant said Nkounkou won UNH's first Maurice Prize and \$5,000 in 2018 for his idea. He also competed in the Startup Shindig in Manchester this May. Dylan Wheeler, who founded his own software company in high school, helped Nkounkou finish the development of ecoText, and they are in live beta use now. Their current product, which has 50,000 books in digital form, took a year to develop.



Wheeler shows how using the app, you can highlight text.

Allegra Boverman

Nkounkou's team also includes Hans Massie, Sam Werman, Evan Shaw and Nelson Thomas. Thomas is ecoText's chief marketing officer, and the UNH football player met Nkounkou, who ran track in college, through athletics. Nkounkou and Thomas said students are more stressed about affording books for college than many people realize because it is an out-of-pocket cost that averages over \$1,200 a year. "The biggest question from students is, 'What is going to



Nkounkou searches for Shakespeare plays with the app.

Allegra Boverman



Allegra Boverman

ecoTEXT is a startup at UNH by, from left: UNH seniors Dylan Wheeler and Nelson Thomas and Joel Nkounkou, a 2018 UNH graduate.

be the biggest beneficial aspect for me?’ and the most beneficial aspect is we are going to be embedded into tuition costs, and it eliminates the out-of-pocket costs for them,” Thomas said. The price is another benefit. Textbooks for a year using ecoText cost between \$400 and \$500.

Nkounkou said only 20 percent of college students buy new textbooks and that 30 percent don’t buy textbooks at all, so publishers know that selling a digital version of their books to ecoText brings in revenue they would not otherwise see. Nkounkou said they had 40 students sign up for ecoText

within a week at the beginning of UNH’s fall semester. He hopes to grow that number to 1,000 by the middle of the semester. Nkounkou said ecoText can be used by students at any college, and he hopes to work with more schools to make sure the company is offering the textbooks being used at their institutions.



Allegra Boverman



JUSTICE AMOH & JEFFREY BEMOWSKI

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Allegra Boverman

Business meets tech at Dartmouth: Two students launch medical device company

BY ERICA SWALLOW

Jeffrey Bemowski and Justice Amoh met in much the same way some of the best bonds are formed: They were roommates at Dartmouth.

Bemowski was enrolled as an MBA candidate at the Tuck School of Business, and Amoh was working on his Ph.D. in machine learning and medical devices, with special funding in the Ph.D. Innovation Program to commercialize any technology he wished.

Innovation was something they connected on. Bemowski's background was in municipal finance and management consulting, but he had caught the entrepreneurial bug along the way. When Bemowski got to Tuck, he hadn't realized that his first entrepreneurial venture was going to be with his roommate. But soon enough, their business and technology expertise merged, and they began working on what would become Clairways, a medical device company currently focused on providing smart lung monitoring for pharmaceutical clinical trials. "As I got to know Justice and his work, I saw that he was really passionate," Bemowski says. "And the work he was doing was important: helping people manage their respiratory diseases."

Amoh invited his roommate to conduct market research to understand commercialization opportunities for his technology, a discrete respiratory monitor worn by patients to monitor respiratory metrics including lung function, respiratory rate, coughs, wheezing, inhaler use and heart rate.

Bemowski used entrepreneurship courses and an independent study at Tuck to test the market

— that's how they determined that pharmaceutical companies running clinical trials would be the perfect entry market. Pharmaceutical companies need to capture loads of data to determine the efficacy of new drugs — a wearable device is a perfect solution that patients can easily wear in the hospital and at home, for better monitoring. Amoh says Clairways' application of machine learning not only helps with data processing, but also helps the company determine which data it collects in the first place.

"We collect custom data, not everything the sensor is picking up," Amoh says. "Real-time machine learning on the device means we can save energy and processing time, because we're only receiving the data we know is useful. Only then do we process the data for patterns and inferences."

The best teams are made of

teammates with complementary skills, and those who know Bemowski and Amoh say they're a perfect match.

"Jeff and Justice are an outstanding team," says Daniella Reichstetter, Tuck adjunct professor and executive director at the Tuck Center for Entrepreneurship.

She should know. She had front-row seats to the team's early development. She worked closely with Bemowski in the project-based course where he and a team evaluated market potential and explored various applications for Amoh's technology. She got to know Amoh as she continued to work with him and Bemowski after that initial entrepreneurship course.

"Jeff brings a strong business background with very relevant prior experience around medical devices and sensor technology, as well as more general business experience in finance

and consulting," Reichstetter says. "Justice's engineering expertise complements Jeff remarkably well, offering deep technical expertise in machine learning and medical devices. This combination of technical, industry and business expertise is a winning recipe for innovation." Clairways has now been operating full time for more than a year now and has its office in the Dartmouth Regional Technology Center in Lebanon. The company also has a co-founder in Kofi Odame, who advised Amoh during his Ph.D. and acts as Clairways' scientific adviser now.

"Their startup journey serves as an inspirational example of entrepreneurial determination born in the lab and brought to life by tirelessly exploring the right product-market fit," Reichstetter says. "Their broader impact on the world is yet to be seen, but I think they're onto great things."



Allegra Boverman

Clairways co-founders Jeffrey Bemowski, left, and Justice Amoh on the Dartmouth College campus.

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MATT MARRA



A NH native and Uber alumni looks for the next big thing

BY ERICA SWALLOW

Allegra Boverman

Finding a second act after Uber is a lot harder than calling up another ride. "A lot of Uber alumni have found themselves looking for their next venture," says angel investor and adviser Matthew Marra. "It's pretty hard to replace the adrenaline of working at a company with the growth and scale that Uber had."

Marra was the 33rd employee at Uber and the first at Uber Boston, as its operations and logistics manager, where he launched and scaled Uber Black, TAXI, SUV, and UberX in the Boston market. For three years, he worked in operations. For three more years, he served on the national strategic finance team, working on special partnerships, including the nationwide Vehicle Solutions Program, which enabled would-be drivers without qualifying cars to rent cars from Hertz, Enterprise, or Avis to be Uber drivers.

Some of his work at Uber ties into his pre-Uber role as a senior consultant at IBM, where he traveled the country consulting with clients on technology integrations. He worked with Detroit original equipment manufacturers,

for example, and learned about fleet purchasing of vehicles and dealership economics along the way. So, he applied that seemingly in-depth knowledge to his contributions to one of the fastest growing startups the world has ever known. Smart. Marra could be doing anything he wants right now. So, naturally, he opted to put stakes down on the Seacoast of New Hampshire and embed himself in the tech community.

"I consider Matt a champion of innovation," says Joshua Cyr, director of the startup initiatives at the New Hampshire Tech Alliance, including the accelerator program Accelerate NH. "He performs a key service and does it well. He has done quite a bit in his own career and puts that to work for others now."

Cyr says you can find Matt speaking at startup events, mentoring founders, or judging startup pitches on the regular. He's actively involved in New Hampshire Tech Alliance startup programming.

"Matt is an active investor and adviser who also puts real time into directly

helping the founders," Cyr says. "His engagement is high caliber and supportive."

While the Seacoast is a beautiful place to be, Marra also has deep roots there. Born in Exeter and raised in Hampton, he is a New Hampshire man through and through. Though he left the Granite State for college in New York and a fast-paced career at IBM and Uber, the New Hampshire spirit pulled him back. In 2016, he and his wife bought a home and settled on the Seacoast — this summer, they welcomed a new New Hampshireer into the world: their son, Mason.

Marra is an investor with 10X Venture Partners in New Hampshire and also invests in Massachusetts through Launchpad Venture Group and SideCar Angels.

"My investment thesis is around offline-to-online marketplaces, and also disruptive proprietary technology in more sleepy industries," Marra says.

He invests, for example, in manufacturing analytics platform Datanomix, wedding venues marketplace Mayflower Venues, and small business crowdfunding investment platform Mainvest. In fact, Massachusetts-based Mainvest just launched in New Hampshire.

The first New Hampshire business to use Mainvest's platform — a coffee shop called Teatotaller — raised more than \$61,000 to expand from its Somersworth location to a second location in Concord. Mainvest is now looking to partner with economic development councils to reach more Main Street businesses — Marra has been a part of helping make those connections.

With a number of investments, adviserships and board roles, Marra seems to be getting some of the adrenaline rush that his Uber days stoked. Let's just hope he finds the next big thing in New Hampshire.



Left: Matt Marra at Cup of Joe's in Portsmouth, one of his favorite places to do his work.

Allegra Boverman



MARC SEDAM

Innovation meets commerce: Marc Sedam is helping to drive entrepreneurship at UNH

By KIMBERLEY HAAS



Allegra Boverman

Since Marc Sedam started working at the University of New Hampshire in 2010, thousands of students have been exposed to the concept of entrepreneurship.

Sedam was the founding director of the Peter T. Paul Entrepreneurship Center and serves as the executive director of the New Hampshire Innovation Research Center. He is the associate vice provost for innovation and new ventures and managing director of UNHInnovation.

"The Paul College is the academic home for entrepreneurship, so they're teaching classes. They have the Holloway Competition, and all that stuff... So, you see kids from Paul College over here because they want to work on those ideas, and we're giving them a place they can work on that stuff," Sedam said.

"But we see engineers, art history majors and sculptors. And from a graduate population, where the focus is more refined, it's biomedical engineering and electrical engineering, biochemists. It's basically every discipline under the sun," Sedam said.

Sedam said the Entrepreneurship Center sees at least 600 students a year taking advantage of their offerings.

For the past two years, Sedam has been instrumental in efforts to establish a research park planned for a parcel of land located west of the football stadium near an intersection with Mast Road. There are 270 of these parks in the United States.

University officials hope the park will attract companies that can benefit from having access to UNH students and faculty.

"It's coming soon. What I like to tell people is we're super enthusiastic about it. We have a good business model. We're really convinced that it works. But we owe it to the stakeholders to make sure that they believe what we believe and that they agree with this," Sedam said.

Sedam explained that there are some procedural hurdles they have to get through within the university and the system to make the commitment. He's hopeful they will have



UNH Innovation in Madbury Commons in Durham.

something to say about the park by the end of the calendar year.

UNH has hundreds of different license agreements per year, Sedam said.

Brent Loy, emeritus professor of plant genetics, and his groundbreaking research has generated more than \$2 million in royalties since commercialization of his hybrid and inbred varieties started. UNH officials expect royalties generated by this portfolio to increase each year.

Soteria Solutions on Madbury Road was co-founded by Jane Stapleton, who was one of the UNH researchers behind a report released by the college in January that estimated 52 percent of women and 22 percent of men in New Hampshire have been victims of sexual harassment at work. The report led to the development of Soteria, which

provides training, consulting and other services to curb sexual harassment in the workplace.

"One year we had licensed that idea something like 100 times. It basically had to become a startup company because it was making such a substantial impact. The only way to continue to grow it was to spin them out," Sedam said.

UNH has also become a leader in creative works licensing, Sedam said.

Sedam credits his success to the environment UNH has created for him, calling the university a place where he can feel free to think creatively.

"Honestly, I'm proud of the university. All I did was unlock its potential. The stuff was all here. I didn't make anything. The work of the faculty and the work of the students, and the work of the staff, has been here all along," Sedam said.

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