

HOW UNIVERSITY OF UTAH STUDENTS ARE

MAKING - A - DIFFERENCE

2020
STUDENT
INNOVATION
@ THE 

CONTENTS

12 Ways Students at the U are Making a Difference



How to Get Involved

Want to get involved and make a difference yourself? Browse our resource directory of programs and opportunities for students at the U.p. 27

About the Publication

"Student Innovation at the U" is an annual publication celebrating student innovation and impact at the University of Utah. A digital version is available at lassonde.utah.edu/studentinnovation2020. This publication is produced by the Lassonde Entrepreneur Institute, an interdisciplinary division of the David Eccles School of Business and the hub for student entrepreneurs and innovators at the U. Learn about the Lassonde Institute at lassonde.utah.edu.

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Student Contributors



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From the President

The University of Utah is recognized as a top 10 school for entrepreneurship. This is due in no small part to what is happening at the Lassonde Entrepreneur Institute. Thousands of students have had the opportunity to explore their wildest ideas thanks to the support they have received through the institute and at Lassonde Studios — our much acclaimed living-learning student residence and entrepreneur facility.

As you will see from the stories in this report, our students are creative thinkers and doers. With help from Lassonde and many other departments across campus, they are inventing the next big things and finding ways to make existing products and processes better, quicker, and more efficient. Our students are looking at everything from medicine to video games and all aspects of life in between — including how to generate income from private parking spaces! Every student is encouraged to bring an entrepreneurial mindset to learning and ideas for how to add value and make an impact on the world upon graduation.

Our focus on entrepreneurship reflects values incorporated in the U's foundation: student success, knowledge generation, and community engagement. We want our students to pursue their passions, to consider all the "what-ifs," and to embrace the determination and grit it takes to be inventive. This focus also supports significant institutional goals of increasing our impact through collaboration and innovation as One U and serving our state as the University for Utah.

Please read on to discover ways our students are reimagining our world. I think you will be as impressed as I am.

— **Ruth Watkins, president, University of Utah**

1. HEALTH



Better Diagnostics for Detecting Ear Infections

Tarek Marrouche came to the Master of Business Creation program at the University of Utah's David Eccles School of Business with an innovative solution for a common medical problem — middle ear infections in children.

When he was a master's student studying biomedical engineering at the U, Marrouche learned that middle ear infections are one of the most prevalent conditions among children, second only to the common cold. However, the device used to diagnose these infections is flawed — pediatri-

cians misdiagnose the condition about 50 percent of the time. This misdiagnosis is the number one reason for overprescription of antibiotics in children. With a team of other master's students, Marrouche developed the **Mapping Otoscope**, which uses quantitative measurement of tympanic membrane compliance during examinations. The bottom line is this — the Mapping Otoscope provides a more accurate diagnosis of middle ear infections than the current equipment. Marrouche's innovative technology won the grand prize at Bench to Bedside,

a student medical innovation competition, in 2019. With his company **Heimdall Health**, Marrouche hopes to bring his engineering expertise from the lab to doctors' offices across the country.

While his scientific training led to innovative ideas, Marrouche wanted more education to grow Heimdall Health. "Nothing is actually feasible until you have a plan of execution, which revolves around business knowledge," he said. Marrouche enrolled in the Master of Business Creation program to learn more about executing

a business plan and translating his ideas to a commercial setting. Marrouche said that there are two important sides to this new program. The first side is the schoolwork, with valuable faculty mentors and application-focused coursework. The other is the cohort itself, with a group of passionate students all on similar journeys with their startups.

Learn more about Heimdall Health at heimdallhealth.com.



Virtual Reality Medical Training

TraumaXR is a multi-user, process-based trauma simulation that allows surgeons and nurses to train in a shared virtual space. This cutting-edge technology will also allow rural health systems to practice uncommon trauma cases, which they may not normally experience.

Overseen by the Therapeutic Games and Applications Lab (The GApp Lab) at the University of Utah, TraumaXR is being developed by six graduate students in the Master of Entertainment Arts &

Engineering program: **Liz Ross** as artist, **John Davies** as tech artist, **Arash Tadijiki** and **Boson Huang** as engineers, and **Sritej Canchi** as the producer. Each student is participating in a Digital Fellowship with The GApp Lab, which is a division with the Center for Medical Innovation.

The simulation will involve multiple users, the virtual patient, surgeon, nurse, and a remote operator allowing for surgeons and nurses to practice a variety of trauma scenarios remotely all while receiving real-time feedback.

The technology that TraumaXR has developed will enhance the accessibility, bring down costs, and increase modularity.

TraumaXR is focused on creating an immersive realistic experience by using the latest virtual reality (VR) technology. "Surgeons and nurses will be able to feel the experience just by getting into the VR headset," Canchi said.

Currently, surgeons practice on "moulage patients," or training models or actors with realistic looking injuries, which require more money, time,

and resources compared to TraumaXR's tech. "We wanted to make it cheaper and more accessible and will provide a much more realistic scenario," Davies said.

At the 2020 Silicon Slopes Tech Summit, the team showcased their simulation for the first time as part of the University of Utah Health's focus on innovative healthcare.

Making Epinephrine More Accessible

Vitapul Injectables is on a mission to save lives by improving the treatment of severe allergic reactions. The student founders are developing a device to inject epinephrine, a drug that narrows blood vessels and opens airways in lungs, in a way that is cheaper and more accessible than existing products like the EpiPen.

Recently, EpiPen manufacturers have been questioned due to rising prices and limited pharmacological changes, causing some people's health to be at risk, according to the student team.

The team consists of University of Utah medical students **Suzanna Ohlsen, Brian Parker, Trent Perry, Alejandro Blitch,**

and **Teryn Holeman**, and MBA graduate **Alex Huhn**. They believe they can make a better product by separating the active ingredient, epinephrine, in a powdered or "dust" form until just before injection. The uniqueness of this product is in the company's name — "vitapul" is Latin for "bringing dust to life."

Not only does the company aim to improve shelflife and accessibility, but Parker explained how they will continue to do more. "Every three minutes, one person is on their way to a hospital in an ambulance due to an anaphylactic (or severe allergic) reaction," he said. "In Utah, basic level EMT's are not allowed to carry epinephrine. Part of our



mission is to work with policy-makers and take these steps as well to improve accessibility."

Vitapul Injectables has already achieved some success. It was awarded a seed grant from the Lassonde Entrepreneur Institute from the monthly Get Seeded program to help them

further with testing and securing a patent which they will be working on simultaneously. They were also awarded "Best in the Business" from the Bench to Bedside medical innovation competition in 2019 and won the University of Utah Opportunity Quest in 2020.

Smart Probes for Improved Biopsies

When faced with adversity, instead of becoming frustrated, **Nathan Knighton** innovated. Knighton has always had the desire to be in STEM, as well as help people. When he and his wife had a child that needed extra medical attention, Knighton gained a unique perspective on the impact his work had the potential to achieve.

Knighton began to work on creating a better solution to biopsies. While biopsies can be necessary and informative, they often cause harm to the patient that can lead to further complications and often incur great cost in money and time. Knighton wanted to negate biopsies' invasive, expensive,

and time-consuming nature by replacing the procedures with light. Optical biopsy is a technique that allows light to interact with tissues that may be of concern and reveal its medical implications. Knighton developed smart probes, which integrate optical biopsy with existing techniques to find harmful tissues in the heart and lungs. Not only do the catheter-like devices simultaneously image and allow targeted treatments with accurate prognoses, they are cost effective and can deliver a result in minutes.

Knighton's goal is to create a line of affordable, easy-to-use, medical products. For now, he is focusing on improving the



smart probe with artificial intelligence to get a deeper, clearer image of heart tissue.

Knighton credits professors **Bob Hitchcock** and **Frank Sachse** for their support to his work.

2. TECHNOLOGY



Predicting Drone Traffic in 2025

Have you ever wondered what 100,000 drones will look like in the sky at one time? A group of University of Utah students with the Therapeutic Games and Applications Lab (The GApp Lab) are collaborating with the Utah Department of Transportation and the Federal Aviation Administration to predict what drone traffic will look like over the Salt Lake City area in 2025 with their simulation, **Drone Commander**.

Drone Commander is being developed by graduate students from the Master of Entertainment Arts & Engineering program: **Kent Chi Pan** as engineer, **Junhao Fu** as tech artist, **Srija Kambhampati** and **Azhar Siddiqui** as engineers, and **Sritej Canchi** as the producer. Each team member is participating in a Digital Fellowship with The GApp Lab, which is a division of the Center for Medical Innovation at the U.

Drone Commander is a simulation tool for drone traffic over Salt Lake City, developed to test the threshold and breaking points of overall drone traffic of air taxi, medical supply, and package delivery drones. The team will be testing the infrastructure, rules and requirements, unexpected events, and many more parameters.

"We are testing how many drones can fit into the sky at one given time before it breaks,"

Kambhampati said.

The team has completed the research phase and is in the transition phase and will continue to work with UDOT and the FAA. Canchi has big expectations for the Drone Commander's future. "The final goal is for the simulation to act as a standardized training tool for all air traffic controllers," Canchi said.



Dave Titensor, University of Utah

Making a Real 'Luke Skywalker Arm'

A team that includes many students and is led by **Gregory Clark** at the University of Utah is researching DEKA's **LUKE robotic arm**, which is named in part after Luke Skywalker and developed through a multi-disciplinary and multi-institutional project. The U team is working in cooperation with other groups and companies, such as Blackrock Microsystems, DEKA, and Ripple Neuro.

The student group supporting the project is composed of engineering and science

students. One of the students involved, computer science major **Troy Tully** said, "I have a fair amount of free reign on what I want to research. We can push ourselves and think independently."

The LUKE arm is a neuroprosthetic that can be attached to someone's own body. However, it goes further than do most conventional prosthetics. The LUKE arm has sensors for touch and movement. The output of these sensors can be used to stimulate remaining sensory

fibers via Utah Slanted Electrode Arrays in the arm to evoke the senses of touch and movement. Although the arm is still in experimental form, several tests and personal experiences with it already underline its usefulness and emotional impact on those who have tried it. The goal is to make it easier for people to return to activities they found difficult before.

The research on this project is leading the way for related potential technology. The method of transmitting information via

electrodes to the sensory fibers can also be used for spinal cord injury, bladder control, and pain reduction.

Another student working on the project, biomedical engineering major **Sri Radhakrishnan** said, "One effort is developing a control system for prosthetic arm movement that is less expensive than the current models we are using." The LUKE arm is only the tip of the iceberg for where the team hopes the technology can go.

Protecting Against Cyber-Attacks

Ethan Melvick has been interested in security since he was 12 years old. Now a sophomore in computer engineering at the U, Melvick is part of a lab developing programs that will protect engineer's systems against cyber-attacks.

Melvick and professor **Armin Tajalli's** work targets a specific type of side-channel attacks called "power analysis." These attacks track the current consumption of a circuit and eventually discover the secret key used in encryption. This is a very common technique that hackers use to easily and quickly decrypt data.

Together, the team has developed an engine that simulates the circuits under

attack, enabling engineers to evaluate robustness of their systems' security. The engine is a software program that simulates performance of any digital hardware and provides quantitative measures on the level of vulnerability a system against attacks.

"These kind of power-analysis attacks are shockingly easy to figure and carry out if you have enough technological knowledge on the subject. Those that have the resources are the type of people you really don't want to look at your data," Melvick said. "The average user of technology won't know that this program is there and keeping them secure, but it is."

The program just entered



its first major round of testing. So far, it has been successful in simulating circuits on a logic level and is now working toward accuracy on tracking current consumption levels and detecting any signature that might be produced by the system.

Everyone Deserves a Good Night's Sleep

When **Joseph Arrington** was a child, he dreaded sleeping. Arrington, a University of Utah graduate student with an MBA, has suffered from various sleeping disorders, like sleep paralysis and sleep terrors, since his youth, and as an adult, he wanted to find a new solution to the parasomnias.

His answer was a company — **Beacon Sleep Solutions** — and he is developing the idea with a team of other students and support from the Lassonde Entrepreneur Institute.

"As a kid, I had always wished that there was a way that someone could wake me up," he said. "During my early years of college, I was in a physiology class where we were talking about biorhythms during sleep. I started thinking that if you could see the biorhythms of

somebody while they sleep, you could see what the biorhythms are when they have an episode, and then you could get something to intercede."

Arrington started preliminary research on the idea, but hit a major roadblock when the need for an engineer arose.

"I sat on the idea for a few years, and while I was doing my master's, I realized that there was really something here," Arrington said.

In 2017, Arrington met **Mica Sloan**, a BS/MS biomedical engineering candidate at the U, who had engineering and business skills proven in previous startups at the Lassonde Entrepreneur Institute. The team now has three members: Arrington, Sloan, and **Pace Cranney**, the lead developer and project manager for Beacon



and a recent graduate of a master's of biomedical engineering program at the U.

Together, the team is developing an app, called the **Dream Defender**, for use on Apple Watches and iPhones that could wake up an individual experiencing what Arrington calls an "episode," or parasomnia event, such as a sleep terror, sleep paralysis, or sleepwalking.

While the app can build a user profile and begin to track and respond to episodes, Beacon Sleep Solutions plans to offer even more.

Learn more about Beacon Sleep Solutions at beaconsleep.com.

3. GAMES & APPS



Indie Games Focused on Inclusivity and Culture

Spencer Wilson and **Morgan Lander**, University of Utah students and founders of **Little Wanderers Studios**, were so impacted by the entertainment and arts industry, they created a company and culture that aims to “uplift the world.”

Little Wanderers Studios is an indie game company that celebrates diversity of thought through the creation of fun and entertaining experiences that promote awareness and critical outlooks on the world. They do this through games that are created for everyone.

The company is currently

working on the demo of their first game called **Wandrian**, which translates to “wanderer” in old English. The goal of the game is a world that people can be fully immersed in and can be representative of any player.

“Being a woman in the gaming industry and as a gamer myself, I do not see myself recognized in this industry,” Lander said. “Going beyond that, Spencer and I began to think about how the other communities, such as LGBTQ, people of color, and those who do not fit inside the lines of a typical gamer, are very much underrepresented.”

Both founders are in the Entertainment Arts & Engineering program at the U. They are also part of the Lassonde 400 community, living at Lassonde Studios. Wilson said, “Lassonde is a think tank of creative people that live in one building.” Lander added, “As soon I stepped into the Studios, I knew exactly that this is the place where I needed to be. It all felt so right.”

Little Wanderers Studios is in the Company Launch program and have competed in a Get Seeded monthly grant round, receiving \$2,000 worth of funding that helped them continue

their marketing efforts.

They plan to release a portion of the game in 2020 to give people a little taste of what their world is going to look like. They plan to release on PC, Steam, Epic Game Store, and maybe Switch.

The team also consists of **Houston Fuller** as the sound designer, **Luke Schmidt** and **Ivan Lee** as artists, and **Crystal Huang** as their marketing and public relations director.

The Airbnb of Outdoor Recreation

For outdoor enthusiasts, it can be difficult to access necessary equipment. Gear can be prohibitively expensive, and people who do own equipment might not use it enough to make the cost worth it.

Tyler Sanford, Sam Tyler, and Cara MacDonald created **Rexchanger**, a startup to address this issue. MacDonald, a communications student with an emphasis in journalism at the U, described Rexchanger as “a peer-to-peer outdoor recreation marketplace.” The students developed an app and web platform where users can rent non-motorized boats, camping equipment and mountain bikes to other users. Rexchanger allows owners to make extra

money and “afford more expensive equipment than they otherwise would” and borrowers to “rent out equipment for 40 percent less cost than other rental services.”

All three students have been involved with the Lasonde Entrepreneur Institute from the beginning of their business. “Lasonde helped us find both of our developers, both our original developer and current developer,” MacDonald said. Rexchanger received a \$1,830 grant in the monthly Get Seeded program. They used the money to develop a new blocking feature on the app and to participate in Questival. At Questival, an event hosted by Cotopaxi, Rexchanger ad-



vertised their newly released app and encouraged users to sign up.

Rexchanger launched on the Android app store in early 2019 and started working to release one on Apple. In the future, they hope to offer rentals for a wider range of products, fine-tune

their app and website, and expand services to other states. “We want this to be the premier outdoor recreation service in all of the United States,” MacDonald said.

App for Renting Parking Spaces

Finding parking can be a major frustration on campus and anywhere with a lot of people. But, **William Pepper**, a second-year student studying computer science at the University of Utah, thinks he has the solution with **Parq**, an app for home and business owners to rent their parking spots to people.

Parq plans to launch in 2020. The company wants to change the way people think about parking and be the most popular parking app in Salt Lake City and beyond.

“Parking apps that allows people to rent out driveways already exist,” Pepper said. “But we’re adding an entirely new feature that no parking app has that ensures parking is cheaper and more efficient.”

It all started when Pepper decided not to purchase a parking permit on campus due to the cost. This resulted in many tickets that eventually costed more than an actual parking permit. But then he discovered an even bigger issue.

“I was shocked to find that even after I spent \$300 on a parking permit, I still couldn’t find a parking spot,” Pepper said. “I knew there had to be a better solution. I realized there were so many houses with empty driveways that could be rented out to people.”

Soon after, Parq was born.

The startup received a Get Seeded grant for \$2,500 from the Lasonde Entrepreneur Institute in October 2019. It already has people signing up to get the app before the launch.



Pepper is also working with the 7-Eleven near the U and plans to work with all the businesses around the campus.

Other Parq team members include **Juno Kim**, a developer and an alumnus of the U who studied computer science; **Brandon Howard**, a 3-D artist and a current film student at the U; and **Chris Le**, an advisor

and serial entrepreneur with multiple funded startups.

“We have a very talented team with people who are passionate about solving this age-old problem,” Pepper said.

Learn more about Parq on their website at parq.tech.

4. FOOD

Serving Acai Directly from Brazil

Have you tried the acai? University of Utah finance students **Nate Berger** and **Seth Neeleman** opened **Simply Acai** in August 2019. During fall 2019 and beyond, you can find them in the mobile kitchen in the Miller Cafe at Lassonde Studios.

The inspiration started for Neeleman when he was living in Brazil. "I ate acai three to four times a week and loved it," he said. When he came back to the US, he wanted to see how he could bring this super fruit here. "After living as a first-year resident at Lassonde Studios, and after talking to individuals at the Lassonde Entrepreneur Institute, Simply Acai was shortly created," he said.

Simply Acai is focused on

premium organic acai imported directly from Brazil. "Acai is the only fruit in the world with no sugar in it," Neeleman said. Berger added, "Our acai is simply acai; there are no add-ins, sugar, or juice."

In addition, the blended acai is topped with fresh fruit, granola, and honey. The acai bowls are sold directly to students at the University of Utah.

Owners Berger and Neeleman met at the University of Utah. The two had similar ambitions and entrepreneurial backgrounds. "It was a natural thing we fell into," Berger said.

Simply Acai is student-owned and student-driven. "We are driven to meet the demands of students to create a better expe-



rience on campus," Berger said. Neeleman added, "Our employees have helped our business get off the ground. We are all equals in the company, and we value our employees' input. Our employees are heavily involved in everything we do."

Simply Acai strives to pro-

duce the best quality of service to their customers.

The company has plans in the pipeline to potentially expand into the catering and events industry.

Follow Simply Acai on Instagram [@simplyacaislc](https://www.instagram.com/simplyacaislc).

Feeding Hungry Students

"It would break my heart if someone couldn't study because they have to work more hours at their job just so they can afford food," said **Ben Chenot**, a sophomore at the U studying biology and nutrition.

As the new director of the **Feed U Pantry**, Chenot is tackling the problem of food insecurity head-on. The Feed U Pantry seeks to minimize hunger for individuals at the U by providing free, accessible, and nutritious food to students, faculty, and staff.

Chenot described food insecurity as "being unsure of where your next meal is coming from." In America, 11 percent of citizens are classified as food insecure. When looking at college students specifically, that number jumps to a staggering

30 percent. Many students are faced with situations where they have to choose between paying for food or bills. Chenot sympathizes with these individuals, no matter what situation they're in. "We all hit road bumps in our lives," he said. "As college students, income might not be so stable."

Chenot hopes to reach even more students through the Feed U Pantry, setting goals to scale up the use of the pantry by 500 percent. "There are a lot of populations we aren't reaching," he said. "I want everyone who might need this resource to be aware of it." It's clear that Chenot not only cares about quantity but quality as well, seeking to provide highly nutritious foods. "These are growing, creative, young minds that need a lot



of diverse and nutritious fuel," he said.

Chenot is fighting for his community, and his passion shows the moment you speak to him — "At the end of the day, we're all human beings. We need to be there for one another," he said.

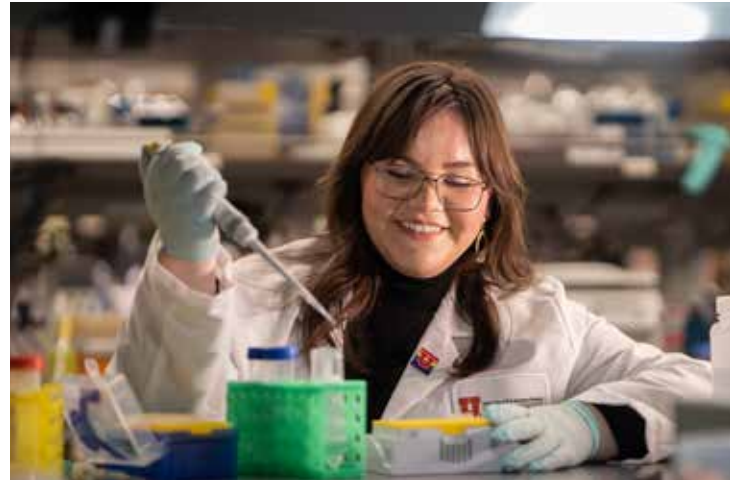
Connecting the LGBTQ+ Community and STEM

Only two years into her graduate degree in developmental biology at the U, **Andy Sposato** has not only become a stellar researcher but a champion for underrepresented groups in STEM. She and fellow grad student **Dylan Klure** founded the **LGBTQ+ STEM Interest Group** at the U, which is an organization of LGBTQ+ students and faculty dedicated to professional development and community advancement for LGBTQ+ individuals pursuing careers in STEM.

Sposato has been a force for not only the LGBTQ+ community but for greater diversity initiatives as well. Sposato

also founded the **Representation and Communications Committee** in the School of Biological Sciences, which seeks to improve the representation of individuals from diverse cultural, ethnic, and socioeconomic backgrounds at the graduate level.

Sposato recognizes the opportunities she's been given. "I come from a place of privilege," she said, but she wants to make the most of the platform she has. "Right now I have a seat at the table." Sposato recognizes just how critically important diversity in STEM is — "It can feel like there is no one else like you, doing the same things



as you," he said. With diversity comes a diverse set of ideas and thinking.

"For me, it's important that while I'm here, I want to get more voices around the table," she said.

Basic Needs Center

The **Basic Needs Center** aims to enhance student success at the University of Utah by providing resources for day-to-day needs like food, healthcare, financial counseling, and more.

Housed in the A. Ray Olpin University Union at the U, the center is planned as a pilot in spring 2020, with a satellite in Health Sciences Education Building. It is open to all students, and the purpose is to be as inclusive and accessible as possible.

Social work graduate student **Sarah Elizabeth Garza-Levitt** has been a major contributor to the planning and creation of the new center. "Coordinated basic need support is really important for college student persistence, retention, and completion, and that is why I am so passionate about it," Garza-Levitt said.

She knows firsthand what it's like being a student in need: she faced homelessness when she was 13, became a single parent at 15, and earned her GED at 16. Over a period of 23 years, she worked on her associate's degree and graduated with an AS in 2017. Throughout hard circumstances, Garza-Levitt stayed steadfast in her goal of attaining a college education, completed her bachelor's degree in 2019, and is now a master's student and full-time staff member at the U.

There aren't any college student basic need centers in Utah, and Garza-Levitt is working with other local institutions, such as Utah Valley University to inspire comprehensive basic need centers for students across the state.

Garza-Levitt is passionate



about destigmatizing college student hunger and homelessness. She hopes to reconstruct the starving student narrative. "It is a really big social justice issue, and we need to work on destigmatizing the use of these resources and see it, and use it as a student empowerment initiative," Garza-Levitt said.

"Resiliency isn't given," she said. "Resiliency is built, it is

forged through adversity and challenge. If we can offer coordinated basic needs support than we can help build student resiliency through that support."

For more information, visit the Basic Needs Center website: union.utah.edu/resources-spaces/basic-needs-center.

6. ART & DESIGN



Sustainable and Collapsible Utensils

Rachyll Faeth, a marketing and entrepreneurship student at the University of Utah, and her brother **Jonny Faeth**, a design student at the U, are “helping the Earth in every way they can” through their startup company, **PureWare**.

As they were sitting in the Miller Cafe at Lassonde Studios one day, they watched as people grabbed plastic utensils, and then shortly after they were done eating, they threw them away. This really began to bother them, seeing how much plastic was thrown away, they knew there had to be a solution.

After doing some research and collaborating their ideas, PureWare was born.

PureWare offers a portable utensil with interchangeable heads that can conveniently collapse into your pocket yet extends to a full size when in use. The utensil is made of stainless steel making it 100 percent recyclable and dishwasher safe. It comes in a compact case with a keychain on it, so it is easily attachable to your water bottle, key ring, or anything you see fit. This product is perfect for any adventure and everyday use. PureWare will eliminate the

need for plastic utensils making this product sustainable and eco-friendly.

PureWare received two grants worth \$3,495 from the monthly Get Seeded program provided by the Lassonde Entrepreneur Institute. The money has allowed them to create their prototype, and patent.

They hope to sell the product to outdoor enthusiasts, ages 18-35.

Throughout the process Rachyll Faeth mentioned how great it has been to work with the Lassonde Entrepreneur Institute. “Lassonde is full of so many

resources, so many connections, and so many people eager to help,” she said.

As many people know, being an entrepreneur can be challenging at times. Jonny Faeth acknowledged the successes and challenges in business. His advice for young rising entrepreneurs is to “fail early often and to write down every single idea you have, good or bad.” His sister added: “I agree with Jonny one thousand percent. Whether you think you can or you can’t you will always be right.”

Modern, Customizable Caskets

Matt Henke and **Tanner Curtis**, master's of architecture students at the University of Utah, are bringing a unique industry into the modern era — caskets — with help from the Lassonde Entrepreneur Institute.

"In almost all industries, contemporary design takes a portion of the market — whether it's cars, phones, or even into the more carpentry-based industries of cabinetry and furniture," Curtis said. "This has happened almost everywhere except in the casket world. It's about 99 percent design of a traditional nature. If you search for a more contemporary or modern design, it's almost on the whole other side of the spectrum, in the sense that it becomes almost experimental art. We've taken the classic

silhouette of a casket and tried to create it with no gaudy woodwork or metal detailing and boiled it down to a simple and clean silhouette. This is an idea that I think fills a void, but also is trying to leverage a lot of trends."

Curtis had the idea for a new, sleek casket design to take advantage of the gap in the market, but didn't have the carpentry or woodworking skills to pursue it. Henke had over 15 years of custom woodwork experience, including designing an original casket, but hadn't considered the market for it. When Henke and Curtis met during a meet-and-greet portion of one of their classes in the master's of architecture program, **Craft Casket Co.** was kickstarted.



"I always thought the way that we started was interesting, because it was something that came out of a series of unfortunate events," Henke said. "In December of 2017, my dad passed away from pancreatic cancer, and one of his personal requests for me was always to build his casket. I love woodworking and wanted to honor

him in that way. I built his casket even though I had never done one before. Later, I included his casket in my portfolio for applying for the graduate program, and when Tanner saw that I had completed a casket of my own, he approached me with the idea."

Wall Printing Tech from Artciel

When **Aaron Dobron** entered the Master of Business Creation (MBC) program at the University of Utah's David Eccles School of Business, he knew that he had a great business idea. Dobron is the co-founder of **ArtCiel**, which he describes as a "brand-new, state-of-the-art technology." ArtCiel uses vertical wall printing to allow consumers to apply images and graphics directly onto wall surfaces, whether its drywall, glass, brick, or cement. As an undergraduate at the U, Dobron studied material science engineering and multidisciplinary design. He used this background to develop ArtCiel, and he also was involved in the Company Launch program, Rush to Revenue and GetSeeded Program

at the Lassonde Entrepreneur Institute. Entering the MBC program, Dobron wanted to make his company more marketable. "We have an amazing technology but need an effective way to showcase that to the world," he explained.

The Lassonde Entrepreneur Institute is one of Artciel's clients. It has installed three murals at Lassonde Studios. The murals are illustrations designed by students in the Lassonde community. One is of team of small robots building a large robot, one is an outdoor landscape, and one is a reproduction of an exceptional whiteboard drawing the institute wanted to place permanently on the wall.

Dobron is working hard to take his business to the next



level. "One major goal is getting a marketing team together to showcase what this technology is capable of," he said. He also wants to increase key resources, like the printers used to create the images and vans to transport products. Right now, the company is running on limited resources — one printer,

one van, and partial operators. Dobron said the resources in the MBC program are "phenomenal," and he wants to use this degree to grow his company.

Learn more about ArtCiel at artciel.com.



Todd Collins

Creating Monsters

The theater department's recent play, "She Kills Monsters," featured an assortment of puppets based on monsters found in the game "Dungeons and Dragons." Bugbears, gelatinous cubes, Beholders, and even a dragon named Tiamat were constructed for the show by an 11 student team under the tutelage of **Matt Sorensen**.

The puppets were mostly constructed using Ethafoam

and PVC pipes, with additional usage of metal supports, fur, yarn, and fabrics in varying amounts for each construct. Ethafoam was pivotal to the project because it could be melded with other pieces using a heat gun, giving a single, sturdy construct rather than gluing components together. Additionally, the Beholder puppet, at 6 feet tall, used a large 3 foot balloon for its eye while the

five-headed dragon, Tiamat, had metal frames inside each head for support. Theater student **Heather Rogers** said, "Most of the challenges we encountered had to do with scale — a lot of trial and error, going back to the drawing board and finding another way to make it work."

One of the most impressive puppets was Tiamat, the five-headed dragon. Each head was a different color, and each

ranged from 2-3 feet tall and 3-4.5 feet in length. Tiamat was the end of the play and having been mentioned several times prior as part of the main character's quest was the grand reveal of the show. Rogers noted, "Audience reaction made it all surreal — the cheering, the gasps you didn't see a lot from the other puppets."

Serving the Plus-Sized Community

Before starting the Master of Business Creation program at the University of Utah's David Eccles School of Business, **Julia Perry** already had plenty of experience in the fashion world. She earned a BFA from the Fashion Institute of Technology in New York City and had worked with big-name companies like Ralph Lauren.

But even as she found success in her career, Perry recognized major gaps in the fashion industry. "I noticed there weren't a lot of clothing options for plus-sized women, which I'm passionate about because I am one," she said.

This need inspired Perry to create **Wyetta**. She describes Wyetta as a "plus-sized women's jean company that sells jeans

not only by waist size but by body shape." Perry's unique designs provide comfortable and fashionable jeans for body types that are rarely served in the marketplace.

For Perry, this project is both a personal passion and a savvy business opportunity. Perry said that 67 percent of US women were plus-sized in 2018, and for many of these women, finding clothes that fit is a daily challenge. "I talked to women who hadn't worn jeans for 10 years," she said. Perry wants to fill that need in the market with Wyetta.

Perry came into the MBC program with three degrees, but she quickly realized that this program was different. "The amount of resources and tools for students to be successful en-



trepreneurs just blew me away," she said. Her goal is to sharpen the skills necessary to start a business from scratch.

This will be the first cohort to graduate from the MBC, and Perry said that the students are motivated to create a positive culture and design their own educational experience. "We get

the opportunity to define what this program is, how we help each other, and how we help founders in the future," she said. "I'm proud to be one of the first founders of the Master of Business Creation at the University of Utah."

Learn more about Wyetta at wyetta.com.

A Jewelry Company with a Cause

Camryn Polansky, a sophomore studying entrepreneurship at the University of Utah and a resident at Lassonde Studios, is growing her jewelry company **Campfire** with the goal to raise awareness for mental health and suicide. Each piece is handmade and serves as a reminder of positivity.

"I hope to inspire and educate individuals with my jewelry," she said. By doing this, Polansky hopes these serious issues will be an easier topic to talk about, and let people know they are never alone.

Campfire jewelry can be purchased on the company website now. Polansky also sold product at the University of Utah Campus Store.

The company offers chain-work necklaces. It has plans to

offer a wide variety of products, such as hats, decor, cards, and apparel. They will be matched with collections for causes including LGBTQ and suicide awareness.

Polansky said, "When people and customers understand my message, it is so rewarding." She added that the most important thing about a company is its message.

Campfire began three years ago as a coping skill during Polansky's high school years. Each bead she added to a bracelet was something she liked about herself or something she was grateful for.

Polansky was noticed for her jewelry in a story by a news reporter from her hometown in Colorado. Shortly after, she had some unique opportunities



to speak to high schools about bullying and self-confidence. Polansky did this to make a difference and inspire those who struggled like she did.

Since enrolling at the University of Utah, Polansky joined the Company Launch program at the Lassonde Entrepreneur Institute. The company has received office space as well as

in-kind resources. "The physical office space for my company has allowed me and motivated me to work on Campfire since I've been in college," she said.

Learn more about Campfire at campfirejewelry.com.

8. RESEARCH



Bringing Honeybees to the U

Did you know you can visit honeybees at three locations on the University of Utah's campus? **Bridget Dorsey** and **Paul Baskin**, both seniors in biology and leaders of the **Honors Beekeeping Initiative**, have worked hard to bring two auto-flow beehives to the honors college, the first of their kind at the U.

The Beekeeping Initiative started out as an effort supported by the Sustainable Campus Initiative Fund and were awarded funding, sponsorships from Flow Hive, and support

from many other programs on and off campus in fall of 2018. Shortly after they built the hives in February 2019, they installed them on the south side of the Marriott Honors Community in April 2019.

But these aren't just any beehives: they contribute largely to non-invasive honey extraction. The flow technology uses "taps" that release honey from specially designed flow frames, allowing beekeepers to remove honey without even opening the hive. This newer technology makes the process more

efficient and is a huge avenue for exploration and research. They've extracted many pounds of honey from the hives, and next year they plan to sell it.

"I am interested in the idea that campus is a living laboratory," Dorsey said. The Beekeeping Initiative has created a space where students could think critically about their relationship with the environment and have discussions about food justice and urban ecology. As well as educate and get students more familiar with bees. There is even a viewing window on the hives

that allow people to look without disturbing them. "The more students we can get involved the more understanding there will be about bees," Baskin said.

The Beekeeping Initiative wants to change the idea that beekeepers aren't just farmers — they can also be anyone. They want to instill confidence in students to bee-keep. The Beekeeping Initiative welcomes all students to get involved or to stop by the Marriott Honors Community and see the bees!

Advancing the Science of Music

There are thousands of scales and tunings that are hardly explored in Western music composition, largely due to the steep learning curve for playing the microtones on instruments as they are.

Ashkan Tabatabaie was born in Iran and has been writing music since his teenage years. As a Ph.D. candidate in music composition at the University of Utah, he began to discover elements in his writing with which he can transition seamlessly from a Western to a Persian tuning system using psycho-acoustic concepts.

"I want to emphasize this part of my background in my compositions," he said.

But, Persian music, like many

other cultures across the world, included tones and intonations that are unfamiliar to Western artists and instruments.

"In order to be able to play other music accurately, you have to go through training of being able to find those small intervals that are slightly different than what we hear in classical music," Tabatabaie said. "Instead, I try to help the performers find these small intervals with technology."

Tabatabaie created a real-time tuning system that links up to a phone application. This is the first time that such a system has been employed during the process of composition. The vibration sensor can be connected to instruments and



shows the performer the frequency and pitch of the notes in an isolated way while playing in an ensemble.

"Now, when I write something, I can list the exact frequency of the intonations that I want," he said. "I can ask for a specific G that's a little

higher or lower than what one would expect and make the piece sound the way I wanted instantaneously. I am currently bringing various types of music into classical music with this technology, including more explicit psycho-acoustic concepts that weren't possible before."

Improving Academic and Industrial Collaboration

University of Utah bioengineering Ph.D. student **Kyle Isaacson** is making big strides growing his startup company **Ike Scientific**, which provides technical consulting services and a bridge between industrial and academic research.

In only a few months since founding the company, Ike Scientific achieved both profitability and positive cash flow, and in recognition of his success, Utah Business Magazine recognized Isaacson as one of their "20 in their 20s." The award recognizes "top Utah 20-somethings that are not only raising the bar, but schooling everyone on the future of business."

Ike Scientific was also accepted into the Company Launch program at the Lassonde Entre-

preneur Institute in fall 2019.

"Currently, my expertise is very niche," Isaacson said. "Mainly, I've been able to help small companies with nanotechnology, chemical formulations, and surface coatings. While Ike Scientific is unable to help everybody right now, we can definitely help a few people and companies with their specific needs."

He started Ike Scientific on a whim after responding to requests online by small businesses looking for freelance formulation scientists. Before he even had a company name, he had more potential clients requesting his services than he knew how to handle.

Isaacson works hard to keep a very personal feel to his



consulting services. "Honestly, I spend far more time listening to my clients' concerns than actually providing any advice or consultation," he said. The technique has worked well thus far, as Ike Scientific has received positive reviews.

He's looking to bring on some more experts and expand

into nearly all areas of scientific need. Despite the current small scientific focus, Isaacson said Ike Scientific has already served clients in many industries, including food science, cosmetics, pharmaceuticals, nutraceuticals, mining, textiles, and medicine.

Learn more about Ike Scientific at ikescientific.com.



Discovering a New Dinosaur

Thanks to research by students like **Savannah Carpenter**, supported by professor **Mark Loewen**, a paleontology scholar, a “new” dinosaur will soon be recognized as a species.

Carpenter, a third-year geology major, didn’t expect to be part of such a big discovery. When she started at the U, she decided to volunteer with the Natural History Museum of Utah, where she spent a lot of time as a kid. After her volunteer work, she was offered an internship and eventually invited by Loewen to join in his research

on ceratopsian dinosaurs, like triceratops.

“In my research, I do everything from looking at bones and describing them in papers to traveling to museums in other states and countries to present the research to children and other researchers,” Carpenter said.

This specific dinosaur was discovered nearly a decade ago, but was sitting in the collections department of the Natural History Museum. Loewen began to study the bones and realized that the dinosaur wasn’t

like ones he’d seen before. He passed the bones on to Carpenter, who worked for over a year analyzing each piece.

“We plugged all of those physical traits that I found into a coding system called TNT parsimony,” Carpenter said. “That system comes up with the simplest family tree based on the traits that you coded for. We used more traits than had ever been used in coding ceratopsian dinosaurs, and it created an entirely new family tree.”

The research will culminate in a published paper, which is

currently in the peer review process. The paper was presented at the annual Society of Vertebrate Paleontology Conference as a valid new species. It’s currently named “UMNH VP 20600,” but will be assigned a new name at the end of the peer review process.

“Anyone interested in paleontology, stick it out,” Carpenter said. “Put the work in, and good things will come. I started as a volunteer, and all of this happened in just a couple of years. When you like what you do, it’s worth it.”

Campaign Against Distracted Driving

In October 2019, a giant phone with text animations appeared in the center of the University of Utah's campus. The display was the centerpiece of a marketing campaign born out of partnership between the U and Zero Fatalities, which shared the goal of making texting and driving a social taboo.

It wasn't the university, government agencies, or interest groups or organizations behind the campaign: it was students.

The U hosts a Student Media department, which includes various forms of student-led teams like the Daily Utah Chronicle, K-UTE, and AdThing.

"At AdThing, we have people from all facets: designers, copywriters, strategists, accountants,"

said **Kyra Ott**, creative director of AdThing, an art student and major player in the implementation of the **Distracted Driving Campaign**. "From logos to advertisements to consultancy work, we do it all here."

The AdThing team was approached by a local agency who was teamed with Zero Fatalities, both looking for help advertising on campus.

"They wanted the campaign to get into students' heads and feel like it was coming from one of their peers," said Sam Groves, director of strategy at AdThing and writing and rhetoric studies major.

Together, the student staff researched similar campaigns, advertisements and visuals,



and brainstormed for weeks to narrow down their ideas. Eventually, the team decided on "You text... I'll drive."

The AdThing team wanted to garner student's attentions. This inspired the giant phone.

"We see people stop by and look at it all the time. It's

certainly started conversations," Ott said. "After the press event, we would all get coffee, hang out, and watch people see the phone and listen to the responses. That in itself we'd deem successful: we got people talking."

Podcast Highlighting Student Research

Have you listened to an episode from **OUR Pod**?

The Office of Undergraduate Research (OUR) at the U has its very own podcast called OUR Pod. OUR Pod produces monthly podcast episodes hosted by undergraduate research leaders highlighting the research or creative work of undergrad students and faculty mentors engaged in OUR programs.

Bennett Johnson, a senior in political science and communication, is a researcher with OUR and the creator and producer of OUR Pod. The podcast launched in October 2019 and was overseen by **Leslie Cepeda Echeverria**, an undergraduate research advisor.

Johnson is self-taught audio

producer and has been creating podcasts since his freshman year. OUR Pod was created to inform, educate, and inspire others about research. "Research is so important to me. I created OUR Pod to spread the message that research can help you figure out what your passions are," Johnson said.

Topics vary from student-related research to information about OUR. In a recent episode, anthropology students **Ellie Goodrich** and **Sally Matthews** discussed primate research. The podcast can be listened to on Spotify, Apple Podcasts, SoundCloud, and many other platforms.

"The University of Utah is a tier-one research university, and



there are a ton of opportunities," Johnson said. "Everyone should leave here getting experience in research, because it's one of the coolest things you can do in college, and it can get you into graduate school and help you with your career."

Learn more about the OUR

Podcast and undergraduate research on the Office of Undergraduate Research website: our.utah.edu.

10. SPORTS & FITNESS



Growing an Online Martial Arts Community

For **Samery Moras**, the founder of **Live Martial Arts**, martial arts aren't just a hobby — they're a part of who she is. "I was literally born into the world of martial arts," she said. Her family owned a martial arts studio, and from a young age, Moras was inundated with martial arts. "I learned how to kick before I could even walk," she said.

Soon, Moras traveled the world as a competitive martial artist, and was a member of Team USA for six years. Moras began using the internet to

share her experiences. "While competing, I would film videos and post content online," she said. "I started to see this opportunity to teach people all over the world just from my YouTube channel."

Moras has gained a dedicated audience for her content. She has thousands of subscribers and followers on social media. Moras came to the Master of Business Creation program at the University of Utah's David Eccles School of Business to make her content more profitable and expand the scope

of her business. That program allows founders to spend nine months building their companies with extensive resources while also earning a master's degree.

"When I first heard of the Master of Business Creation program, I knew it was the program for me," Moras said. She wanted a different path than a typical nine-to-five-job and was looking for an opportunity to launch Live Martial Arts. After only a few weeks into the program, Moras already saw the benefits. "I'm getting lots of

good feedback and mentorship. I think I have a better direction of where I want to go," she said.

Moras is working with mentors to monetize her follower base and is developing online courses for martial arts and merchandise associated with her brand. She says that the skills she's learning, and the positive environment of the MBC program, are helping her launch Live Martial Arts.

Learn more about Live Martial Arts at samerymoras.com.

A Smarter Way to Exercise

Chris Bright and **Kyle Poulin** founded their company **True Adherence** to make exercise safer and more effective. When he worked as a personal trainer, Poulin saw too many people risk injury or stunt their progress because they were exercising incorrectly. True Adherence's technology provides real-time feedback and data to help people exercise smarter. Now, Bright and Poulin are both part of the first cohort of the Master of Business Creation program at the University of Utah's David Eccles School of Business, and they hope to make crucial fitness information available to everyone — even without a personal trainer.

True Adherence is a real-time

biomechanic feedback platform that takes metrics and measures data about a person's workout history. "We can help athletes, or anyone working out, understand how to do exercises," Poulin said. "If there's something wrong with their form, they can get real-time correction to get safer and more effective in the movements that they're doing." The technology can also count reps, measure times, and collect relevant statistics to a person's individual goals.

The service uses an infrared camera to create a dot map, which then tracks the movements of joints and body parts. This information is compared to evidence-based standards of weightlifting patterns. True



Adherence then quickly calculates a form score and provides feedback on ways to improve technique.

Bright and Poulin hope to expand their service to a wide variety of fitness activities, from yoga to team sports to running. For Poulin, it's rewarding when

people see improvement and progress over time. "I want people to take joy in knowing that they're actually doing better with the help of unbiased feedback from our platform," he said.

Learn more about True Adherence at trueadherence.com.

Handcrafted Skating Gear

Exploring the culture and advancement of the fastest sport on ice, **NALZA** is dedicated to the production of premium handcrafted skating gear. With the combination of functionality, durability, and premium design, NALZA is modernizing and changing the speed skating market.

The co-founders of NALZA are **J.R. Celski**, an Olympic medalist and entrepreneur student at the University of Utah, and **Jae Jae Yoo**, a national short track team skater.

The inspiration started in 2017, when they realized it was time make a change in the skating industry. For protective purposes, many athletes would simply cover their skates with a towel rag. Yoo found this wasn't

effective and good enough, so he began making his own skate covers. "There were not products in the market that could cover equipment for protective purposes," Yoo said. "They also weren't advanced enough and didn't look cool."

With hard work, determination, and collaborating their talents, NALZA took flight.

The word NALZA is originated from Korea, translating to the English language as to "take flight." And that is exactly what NALZA has done. Their products are taking flight in 40 different countries around the world by the highest level of athletes in the sport.

NALZA is a growing brand throughout the world. Offering many products, such as protec-



tive covers for ice skates, gloves, and apparel. All that can be customized with variations of colors, and flags making them unique to the user and teams.

NALZA's next step will be branching into more established sports, including figure skating and hockey.

NALZA has received grants

and awards from Lassonde Entrepreneur Institute's monthly GetSeeded program and by scoring into the top 20 of the Utah Entrepreneur Challenge. "Getting into the top 20 was a huge step for us," Celski said.

Learn more about them here: nalza.us.

11. SOFTWARE

App for Managing High School Dances

Say goodbye to the cash box and the physical waivers for your upcoming prom! **My School Dance** is bringing an era of new technology and ease to over 350 high schools with their online event management platform.

Taylor Buckley is the brains behind My School Dance. She is also the co-founder and in the Master of Business Creation program at the University of Utah's David Eccles School of Business. The MBC program is designed for student entrepreneurs launching their startup and has helped the company "tremendously," Buckley said.

Among other successes since My School Dance began in 2018, it was selected out of 100 companies to be included

in the 2019 cohort at StartEd, New York's premier EdTech accelerator.

"We are a combination of EventBrite and theKnot but for high school dances," Buckley said. "My School Dance is an end-to-end dance and event management platform that saves teachers and school administrators hours of managing complex school events."

My School Dance's company mission is to enhance the social and emotional wellbeing of students through flawlessly executed school events. Overall, their services assist high schools with online ticket sales, digital form collection, student eligibility management, out-of-school guest management, and a critical safety feature — a check-in



system that text alerts parents when their child arrives and leaves dances.

This platform is free to all high schools. There is a small ticket processing fee for users, typically around \$1-3.

Many competitors in high school event management have focused on all events. Whereas,

My School Dance is unique in their focus on dances. In doing so, they build features that will ultimately save users time.

Learn more about the company on their website here: myschooldance.com.

Marketing Automation Platform

In this day and age, we are always busy and constantly searching for ways to make life a little bit easier. For businesses, sometimes it is a challenge to communicate with people interested in their product or stakeholders wanting to invest in the company. **Cinch** aims to better connect businesses with their consumers.

A student in the new Master of Business Creation program at the University of Utah, **Justin Rae** founded Cinch in 2017. The company is an online, data science and marketing automation platform. It helps businesses build a better relationship with its consumers. The company is comprised of 15 individuals who monitor the site. Cinch allows businesses to automatically communicate with individuals by sending automatic emails

and responses. The program is fully autonomous, and no previous knowledge of the process is needed to use the service. Cinch has an option to integrate telecom systems and possesses an omni-channel capacity. Some of Cinch's current customers include Oxi Fresh, Jiffy Lube, and several golf courses. Rae explained, "What makes Cinch different from other analytics companies is that opposed to somebody giving you the insights from the data in the analysis, we actually say, 'Here it is, and use the software to do something with it right now.' It's very actionable."

Rae said the Master of Business Creation program has helped him immensely. He said, "The networking opportunities have been really great, but also the classes have been



very beneficial." He is currently looking for funding for the project and hopes to one day have it become an integral part of business management. Cinch is the seventh business Rae has founded. His other business ventures include a home automation system, a streaming service, an ad service, and a custom shoe company.



Online Training for Motivational Interviewing

Motivational interviewing is an evidence-based approach used by counselors, educators, medical professionals, correctional officers, and others to change patient or client behavior. It can help people smoke less, exercise more, follow through with recommendations, keep commitments, and more.

A team of faculty, professionals, and students at the University of Utah hope to make motivational interviewing training more common and accessible through a new online training platform and company.

They launched their product, **Enhanced Motivational Interviewing**, and their company, **eSym**, in 2019 and already have clients.

The development and launch of the company was supported during the 2018-19 academic year through the Lassonde New Venture Development Center, which matches graduate students with faculty inventors and industry partners to develop business ideas. The team included **Michelle King**, an MBA student; **Esabelle Khaosanga**, a law student; and **Ky-Phuong Luong** and **Siyu Chen**, who are

both biology Ph.D. students.

"We did market research, but our most in-depth research had to do with delivery of the final product," King said. "We provided information on multiple learning management systems and mass open online classes to help the company decide which route would be the most cost effective, scalable, and adoptive approach to launch their product."

Brian Connors, president of eSym, used concepts from motivational interviewing while earning his Ph.D. in rehabilitation science from the U in 2018.

After graduation, he teamed with **Brad Lundahl**, a faculty member in the College of Social Work, to develop a flipped classroom style of learning that increases efficiency by allowing students to learn at their own pace and practice before receiving live coaching and feedback. **Cassia Connors**, vice president of business development, is also on the team and a 2017 graduate of the U's MBA program.

Learn more about Enhanced Motivational Interviewing by eSym at esympro.com.

12. AIR QUALITY

Wearable Pollution Sensor

Those who live in the Salt Lake Valley usually rely on the news to find important air quality warnings, but one student asked why we couldn't just rely on ourselves instead.

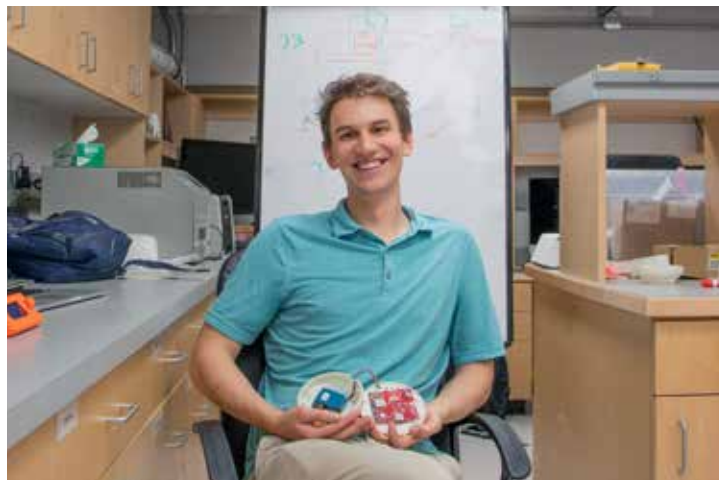
Tom Becnel is a Ph.D. student studying electric engineering with a passion for pollution. Tom Becnel and his team created a custom-made board with environmental, gas (VOC) and particulate matter (PM) sensors that collect and send data through Wi-Fi.

AQ&U, Becnel's research project that distributed boards all through Salt Lake City, is creating an online map for pollution patterns and zones in real time. Citizen scientists have access to

the database that is created by the dispersed boards to pursue their own research goals.

The board is called **AirU** and will soon be commercially available from Becnel's company: **Tetrad**. The wearable sensor collects pollution data in real time on an app that can be accessed through an individual's phone to display personalized exposure data. Already, the School of Medicine at the U is buying the devices to learn about air quality sensitive patients' asthmatic episodes and the type of pollution exposure he or she is exposed to.

Becnel thanks his advisors, **Pierre-Emmanuel Gaillardon** and **Kerry Kelly**. He also attri-



butes his project's success to his team members **Henry Gilbert**, **Quang Nguyen**, and **Scott Gale** as well as his joy in pursuing complex engineering projects.

Analyzing Inversions

Chris Rapp is a senior in atmospheric sciences at the University of Utah who developed a diagram explaining the relationships between meteorological variables, size of particles, and various pollutants that make up the inversion. The warm colored intersections on the diagram are positively correlated and the cool colors are negatively correlated with crosses representing no correlation, though this is rare.

The chart draws relationships between many different types of pollution causing factors and common particulates. Rapp created the chart by compiling data from the 2017 Utah Winter Fine Particulate Study,

which had six major ground sites from northern Utah to Provo, allowing the analysis of size and chemical change in particles over time. The information makes it easier to assume what types of particles are present when only some are being measured specifically, furthering our understanding of air quality. PM_{2.5} is concerning as it is linked to poor respiratory and cardiovascular health. Rapp was the first individual to create a linear and visual relationship of this extent, with this data.

Rapp has always had a passion for the environment and climate change. Before he entered college, he knew he wanted to pursue research



toward climate change. Rapp hopes to attend graduate school to further pursue his passion for atmospheric chemistry with climate implications.

PROGRAM DIRECTORY

ArtsBridge: An interdisciplinary arts education outreach program. artsbridge.utah.edu

ArtsForce: A two-day conference for art students to learn about how to share their creative work. artsforceutah.com

Arts Entrepreneur: Connect with your peers, learn the value of your skills, and explore connections between the arts and entrepreneurship. lassonde.utah.edu/art

Bench-2-Bedside: A competition for medical, engineering, and business students to collaborate to develop or improve a medical device. bit.ly/UUb2b

Bennion Center: Program with a mission to mobilize people to strengthen communities through learning, scholarship, and advocacy. bennioncenter.org

bioDesign: Teams of engineering students work with clinicians to develop prototypes and test medical devices. biodesign.utah.edu

bioInnovate: Graduate program providing a comprehensive biomedical, device-design training program. bioinnovate.utah.edu

bioWorld: A two-semester course enabling students to develop a business plan for a medical-device in a developing country. bioworld.utah.edu

BlockU Program: Take full advantage of your time at the U by enrolling in courses organized thematically to maximize your learning. blocku.utah.edu

Business Scholars: An experiential program for high-achieving students offered by the David Eccles School of Business. eccles.utah.edu/scholars

Center for Research on Migration and Refugee Integration: Students connect as refugees, immigrants, or volunteers. CRMRI encourages research, academics, and outreach. bit.ly/crmriu

Company Launch: Apply for dedicated space at Lassonde Studios through the Company Launch program. lassonde.utah.edu/launch

Cowork: Take advantage of the many opportunities and areas in Lassonde Studios to work together and collaborate. lassonde.utah.edu/cowork

DesignBuildBLUFF: A year-long program for graduate students in architecture who design and build homes in southern Utah. designbuildbluff.org

Campus Founders Fund: Apply for an investment from this unique fund or apply to be a student leader. campusfounders.com

Entertainment Arts & Engineering: Interdisciplinary program where students design and develop video games. eae.utah.edu

Food Entrepreneur: Learn about food entrepreneurship, what it takes to open a restaurant, and more. lassonde.utah.edu/food

The Gapp Lab: A student game-development center for health-related video games and apps. library.med.utah.edu/synapse/gapp

Get Seeded: Pitch your business idea to your peers to receive seed funding for your venture. lassonde.utah.edu/getseeded

Global Entrepreneurship Program: Travel the world while taking classes in entrepreneurship and completing internships in this program from the David Eccles School of Business. eccles.utah.edu/global-entp

Global Public Health: Promotes health and medical development, leading to measurable improvements. globalhealth.utah.edu

Global Health Scholars: Students get exposed to a variety of perspectives on global-health practices. bit.ly/globalscholars

High School Utah Entrepreneur Challenge: A statewide business idea competition for all students ages 14-18. More than \$30,000 in prizes available. lassonde.utah.edu/hsuec

Hinckley Internship Programs: Internship opportunities are available to students interested in politics. hinckley.utah.edu

Honors Praxis Labs: Students work together to find original solutions to problems our society faces, while a faculty mentor guides the work of each group. honors.utah.edu/praxis-labs

Hours with Experts: Sign up to meet with an expert in fields including law, business, design, and engineering. lassonde.utah.edu/exporthours

International Leadership Academy: Students examine global leadership in business, government, and non-profit organizations. Community mentors assigned. Email: lehman@poli-sci.utah.edu

Lassonde Entrepreneur Institute: The hub for student entrepreneurs and innovators at the University of Utah. Many programs and opportunities open to all students. lassonde.utah.edu

Lassonde Founders: A select community of active undergraduate entrepreneurs who live, create, and launch together while receiving generous support, mentorship, and scholarships lassonde.utah.edu/founders

Program Directory (continued)

Lassonde New Venture Development Center: Graduate students are paired with inventors and entrepreneur for fall and spring semester preparing a business plan. lassonde.utah.edu/new-venture-development

Lassonde Studios: The home for student entrepreneurs and innovators. All students welcome to live, create, and launch here. lassonde.utah.edu/studios

Lassonde+X: An introductory program for undergraduate students from all majors (X) to learn the entrepreneurial mindset, explore and practice entrepreneurship, and build skills to succeed in the future. eccles.utah.edu/lassondex

Learning Abroad/Global Engagement: Students participate in hundreds of programs all over the world based on their interests and career goals. learningabroad.utah.edu

Legal Scholars: Students interested in law school learn about current legal issues and how to prepare for law school. bit.ly/legalscholars

Make Program: Learn how to use prototyping tools and see your idea come to life at Lassonde Studios. lassonde.utah.edu/make

Meetups: Join the Lassonde Institute at a meetup event to find teammates and learn about the community. lassonde.utah.edu/meetups

My U Signature Experience (MUSE): A database of research, leadership, community engagement, scholarships, and internship opportunities across campus. muse.utah.edu

Opportunity Quest: A business-model executive summary competition for students across the state, addressing the executive-summary stage of business development. lassonde.utah.edu/oq

RoboUtes: Students interested in robotics participate in competitions. roboutes.utah.edu

Sorenson Impact Center: Marshals capital for social good, empowers data-driven programs, breaks down silos across sectors, and equips the next generation of leaders with social purpose. sorensonimpact.com

SPARK: An online community all about ideas — inspiring students to collect, sort, and finally implement them. spark.utah.edu

Student Investment Fund: Get hands-on investment experience in this unique program from the David Eccles School of Business. eccles.utah.edu/student-investment-fund

Sustainable Campus Initiative Fund Program (SCIF): Innovative and motivated students are awarded grants to team up with a faculty or staff member to bring about sustainable changes for the campus. sustainability.utah.edu/scif

Office of Undergraduate Research (OUR): Students are paired with faculty members and work closely with them in research experiences. our.utah.edu

University Venture Fund: Students work with entrepreneurs and investors to learn about investments and see how successful companies are managed. uventurefund.com

Urban Ecology and Sustainability Scholars: Students work across disciplines to research, imagine, create, and implement strategies that will positively affect sustainability practices at the U. bit.ly/sustainabilityscholars

Utah Center for Financial Services: Help innovate financial services, guide regulatory issues, and examine and support the deployment of new financial products and services. lassonde.utah.edu/ucfs

Utah Entrepreneur Challenge: One of the largest business-model competitions in the nation. Students across Utah develop full, comprehensive business models. More than \$100,000 in prizes available. lassonde.utah.edu/uec

Utah Real Estate Challenge: Real-estate development competition for undergraduate and graduate students throughout Utah. bit.ly/realestatechallenge

Workshops: Attend regular workshops at the Lassonde Institute to learn new skills. lassonde.utah.edu/workshops

Something Missing? Do you want to add something to this list? We want to hear from you. Email us at lassonde@utah.edu.

2020
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