Head lab moderator Jennifer Lawhead and student Chris Ferro work on a woodcutting machine in the Idea Realization Lab. Learn more about this makerspace on page 2.
When you hold an iPhone in your hand or pick out a bookshelf at IKEA, you’re probably not thinking about how those objects were made. But this imaginative leap is exactly the kind of creative thinking endorsed by the maker movement. More than that, the maker movement combines thinking with actual doing.

“In order to understand the things around you, you can’t just be a passive learner,” says Instructor Jay Margalus. “When you work in a makerspace, you become a hands-on practitioner. These are places that encourage thinking through making.”

At CDM, this mindset is alive and well. A new makerspace, as well as a recent partnership with Caterpillar, showcase the college’s dedication to this dynamic form of learning. At CDM, this mindset is alive and well. A new makerspace, as well as a recent partnership with Caterpillar, showcase the college’s dedication to this dynamic form of learning.

IDEA REALIZATION LAB

It’s a Friday night, and the Idea Realization Lab (IRL) is hopping. Located on the third floor of the Richard M. and Maggie C. Daley Building on the Loop Campus, the IRL is DePaul’s 4,500-square-foot makerspace. Two months after the IRL opened in September, more than 1,000 people had already passed through its doors. A typical Friday evening draws a crowd of 60-70 students who converge on the space to tinker, hack and build using laser cutters, 3-D printers, sewing machines, button makers, vinyl cutters, power tools, CNC routers and more.

“Students, especially, feel like they have agency over this space,” Margalus, the IRL’s director, notes. “The creative possibilities inspired by the space are practically limitless. A lot of students built a table for the office of DePaul President A. Gabriel Esteban, PhD, while the women’s rugby team screenprinted their own jerseys. In October, several students came together for a project with Magic Wheelchair, a nonprofit organization that provides Halloween costumes for youth who use wheelchairs. The team colored and saved a gold Mario Kart car for a 13-year-old boy with muscular dystrophy.

“Anyone can throw a 3-D printer in a room and call it a makerspace, but not everyone can focus on the community like we do,” says Margalus. “We tell the students, ‘we trust you, you can do this,’ and then they take it from there.”

Makerspaces encourage creative thinking and building.

THINKING THROUGH MAKING

This past summer, Margalus taught a certificate course to Caterpillar employees at their facility in Moline, Ill. “Thinking Through Making” was offered through CDM’s Institute for Professional Development, which provides opportunities for working professionals to enhance their skills in a short time frame. Fourteen Caterpillar employees matriculated as non-degree-seeking students; each achieved a Certificate of Professional Achievement upon completion of the course.

Anjali Ammu, a manufacturing project engineer, signed up for the course because he was interested in learning more about digital manufacturing and makerspaces in general. Before the course, he hadn’t spent much time in the Caterpillar Innovation Accelerator Maker Space, but now he feels comfortable using the tools housed there. “I learned new skills that are directly impacting the way we manufacture products,” he says. “I also learned to think innovatively.”

Once the projects were completed, the students proudly shared their work with a group of Caterpillar executives from around the world. “They were super impressed,” Margalus asserts. He remembers one executive saying, “This would save us hundreds of thousands of dollars if we implemented it in the plant.”

Margalus is confident that the course will continue to benefit the students, even if their exact projects aren’t replicated throughout the company. “It’s not just about the machines,” he says. “It’s also about processes, ways of thinking and creativity.”

Ammu concurs, noting that the hands-on curriculum was his favorite part of the course. “We had opportunities to apply the concepts we learned,” he says. “It was a great program, and I’m glad I went through it.”
Feng Mengbo’s “Long March: Restart” offers players a spiritual awakening, games that challenge and edify us into making the connection between games and design. “There is so much happening in the world of games,” says Wagner, “but we did hope that they would learn or feel something new from each of them.”

Students were encouraged to come away from “Hey! Play!” with a greater understanding of games. “We didn’t expect everyone to like every game,” says Wagner, “but we did hope that they could learn or feel something new from each of them.”

Wagner and Schrank both hoped that students and museum visitors would come away from “Hey! Play!” with a greater understanding of games. “We didn’t expect everyone to like every game,” says Wagner, “but we did hope that they would learn or feel something new from each of them.”
A MODEL APPROACH TO TESTING WATER QUALITY

Data scientists team with DePaul students to improve water quality prediction and reporting.

N
othing is more inviting on a hot summer day than taking a dip in a nearby pool or swimming hole. Chicago is fortunate to have the vast waters of Lake Michigan and its miles of beaches for relaxing, playing and beating the heat. Unfortunately, E. coli, a naturally occurring pathogen, sometimes reaches high enough levels to pose a health risk to swimmers. To help prevent illness, the City of Chicago regularly monitors the water quality at its public beaches.

Monitoring, however, is not without its challenges. According to Tom Schenk, chief data officer in the city’s Department of Innovation and Technology, “Traditional testing methods take 18+ hours to get results, and historically, E. coli fluctuates often enough that the delay is too long to provide accurate public notifications. Rapid testing is available, but prohibitively expensive.”

In November 2015, Schenk attended Chi Hack Night, a weekly meetup where Chicagoans in the data, design and technology communities exchange ideas and work on problems. Callin Osborn (CSH MS ’17), then working on his master’s degree in computational methods, cold-emailed the City of Chicago looking for an internship in data science, “and Tom decided to put me onto this project.”

Osborn teamed with two data scientists in Schenk’s department, developed a hybrid method that combines rapid sample testing with predictive modeling. A HYBRID PREDICTIVE MODEL

Osborn teamed with two data scientists in Schenk’s department, Nick Lucis (CDM MS ’06, JD ’06) and Gene Lynes, to develop a better predictive model. The team found that they could not use environmental factors to predict E. coli levels. Instead, they developed a hybrid method that combines rapid sample testing with predictive modeling.

Schenk says, “The model works under the assumption that a significant amount of variation in beach water quality can be explained at the regional level, rather than a beach-specific level. That assumption is supported in the scientific literature and in the data.”

“One of the key takeaways from my work was that the model works by taking measurements at five or six beaches and extrapolating the data to predict what the E. coli levels will be at the other beaches.” The model uses clustering analysis to choose which beaches to test and a supervised machine learning algorithm to make predictions given the selected beaches’ test results.

COMMUNICATING THE DATA

The next challenge was to communicate the data to the public to help them make an informed decision about swimming that day. Osborn recruited Renel Chesak, a master’s degree student in environmental chemistry and computational methods who was in his data visualization class, to work on the problem. Chesak taught himself to use Shiny to create a web app (bit.ly/chesakapp) with easy-to-understand interactive visualizations.

Each day during the 2017 swimming season, water samples were rapid-tested and posted to the city’s public data portal around noon. Within five minutes after posting, the model automatically detected the test results, generated predictions and posted them to the public portal (bit.ly/chicagobeaches). The pilot model’s accuracy rate was 12 percent, three times higher than the prior model’s accuracy rate under similar conditions.

FOUNDATION FOR THE FUTURE

The work done to create the hybrid model has been written up for submission to a peer-reviewed publication. Osborn and Chesak are excited to be listed as co-authors.

Osborn says, “The most important thing I learned was how a team of data scientists can work together to solve a big problem. Much thought and work goes into every step of the process. It’s important to make big data projects like this easy for the public to understand, and this internship gave me the skills to do that.”

“For me, it was a fantastic learning experience,” Chesak says. “This kind of work definitely connected with what I want to do—data for social good. I think that all of it will continue to be immensely useful in my career going forward as I create data visualization dashboards for decision makers.”

COMMUNICATING THE DATA

The next challenge was to communicate the data to the public to help them make an informed decision about swimming that day. Osborn recruited Renel Chesak, a master’s degree student in environmental chemistry and computational methods who was in his data visualization class, to work on the problem. Chesak taught himself to use Shiny to create a web app (bit.ly/chesakapp) with easy-to-understand interactive visualizations.

Each day during the 2017 swimming season, water samples were rapid-tested and posted to the city’s public data portal around noon. Within five minutes after posting, the model automatically detected the test results, generated predictions and posted them to the public portal (bit.ly/chicagobeaches). The pilot model’s accuracy rate was 12 percent, three times higher than the prior model’s accuracy rate under similar conditions.

FOUNDATION FOR THE FUTURE

The work done to create the hybrid model has been written up for submission to a peer-reviewed publication. Osborn and Chesak are excited to be listed as co-authors.

Osborn says, “The most important thing I learned was how a team of data scientists can work together to solve a big problem. Much thought and work goes into every step of the process. It’s important to make big data projects like this easy for the public to understand, and this internship gave me the skills to do that.”

“For me, it was a fantastic learning experience,” Chesak says. “This kind of work definitely connected with what I want to do—data for social good. I think that all of it will continue to be immensely useful in my career going forward as I create data visualization dashboards for decision makers.”

A HYBRID PREDICTIVE MODEL

Osborn teamed with two data scientists in Schenk’s department, Nick Lucis (CDM MS ’06, JD ’06) and Gene Lynes, to develop a better predictive model. The team found that they could not use environmental factors to predict E. coli levels. Instead, they developed a hybrid method that combines rapid sample testing with predictive modeling.

Schenk says, “The model works under the assumption that a significant amount of variation in beach water quality can be explained at the regional level, rather than a beach-specific level. That assumption is supported in the scientific literature and in the data.”

“To cut down on the expense of running [the rapid sample test] at all 20 beaches,” Osborn explains, “our model works by taking measurements at five or six beaches and extrapolating the data to predict what the E. coli levels will be at the other beaches.” The model uses clustering analysis to choose which beaches to test and a supervised machine learning algorithm to make predictions given the selected beaches’ test results.

COMMUNICATING THE DATA

The next challenge was to communicate the data to the public to help them make an informed decision about swimming that day. Osborn recruited Renel Chesak, a master’s degree student in environmental chemistry and computational methods who was in his data visualization class, to work on the problem. Chesak taught himself to use Shiny to create a web app (bit.ly/chesakapp) with easy-to-understand interactive visualizations.

Each day during the 2017 swimming season, water samples were rapid-tested and posted to the city’s public data portal around noon. Within five minutes after posting, the model automatically detected the test results, generated predictions and posted them to the public portal (bit.ly/chicagobeaches). The pilot model’s accuracy rate was 12 percent, three times higher than the prior model’s accuracy rate under similar conditions.

FOUNDATION FOR THE FUTURE

The work done to create the hybrid model has been written up for submission to a peer-reviewed publication. Osborn and Chesak are excited to be listed as co-authors.

Osborn says, “The most important thing I learned was how a team of data scientists can work together to solve a big problem. Much thought and work goes into every step of the process. It’s important to make big data projects like this easy for the public to understand, and this internship gave me the skills to do that.”

“For me, it was a fantastic learning experience,” Chesak says. “This kind of work definitely connected with what I want to do—data for social good. I think that all of it will continue to be immensely useful in my career going forward as I create data visualization dashboards for decision makers.”
**Women at Work**

In October, the PhD Student Council and Upsilon Pi Epsilon, the international honor society for the computing and information disciplines, hosted a Women in Technology Workshop for more than 100 attendees. Kimberly Brown, global head of marketing for GE Renewable Energy Digital at General Electric, gave a keynote address, and a roundtable discussion featured female professionals from Civis, Cook County Government, Sprout Social and Grubhub.

**Moving On Up**

Congratulations to recently promoted and tenured faculty! Savvas Paritsis, Doris Rusch and Brian Schrank were all promoted to associate professor with tenure, while Amber Settle (pictured) was promoted to full professor.

**Girls Who Code**

CDM is partnering with the nationally recognized Girls Who Code to host four two-week summer programs called Girls Who Code Campus for middle and high school girls. Campus offers a research-based curriculum designed to prepare girls to consider careers in technology and expose them to role models and a network of Girls Who Code alumni. Alumni parents who use the promo code DEPAUL will receive $200 off Campus registration. Learn more at bit.ly/GWCDePaul.

**Screen Time**

CDM was well represented at the 2017 ChicagoMade Shorts at the Millennium Park Summer Film Series with films from Nolan Downs (CDM '16) (“Shmevolution”), Instructor James Choi (“Artie’s Vida”), MFA student Jonathan Leach (“Go Big”), Gavin Wright (CDM ’15) (“A Fresh Cut”) and Professional Lecturer Brian Zahn (“Marquere”). Choi’s film also screened at the Chicago International Film Festival, as did Assistant Professor Alireza Khatami’s film “Oblivion Verses” (see page 7). “Conditioner” from Shane Beam (CDM ’17) and “Solo” from MFA student Terrien Williams.

**Lab Life**

Assistant Professor Isuru Godage launched a new cyber-physical systems lab this fall. The goal of the lab is to bring together computer and engineering experts to tackle real-life societal challenges in health care, disaster response, space exploration and other areas. Outfitted with state-of-the-art measurement tools and instrumentation systems, the lab will also focus on next-generation surgical robotics.

**Sleepless Nights**

The first-ever DemonHacks hackathon took place over a 36-hour period at the end of October. A total of 115 college students from across the country collaborated on inventive software and hardware hacks, with many participants hunkering down in CDM for the duration of the event. DemonHacks secured six sponsors and awarded more than $4,000 in prizes.

**Alumni Connections**

In March, faculty and alumni came together at The Berghoff in Chicago for a CDM Alumni Reception. Dean David Miller shared updates on the college, and guests enjoyed a pleasant evening of reminiscing and networking over cocktails and hors d’oeuvres.

**BRAVO! BRAVO!**

- Adjunct faculty James Foster, who has taught at the college for more than 10 years, received the CDM Adjunct Faculty Teaching Award for the 2016-17 academic year.
- CDM was included in MovieMaker’s 2017 list of the Best Film Schools in the U.S. and Canada.
- MFA student Will Schneider (CDM ’14) won the 2017 BlueCat Screenplay Competition in the Shorts category for “Ageusa.”
- Seven faculty members were cited in Newcity Film’s list of Chicago’s 50 Screen Gems: adjunct faculty Angie Gaffney (CDM ’13), Producer in Residence Steven A. Jones, adjunct faculty Anthony Kaufman, Professional Lecturer Dana Kupper, Assistant Professor Anuradha Rana, Professional Lecturer Wendy Roderweiss and Professional Lecturer Susanne Suffredin.
- Associate Professor Doris Rusch received the Audience Choice Award for her pitch of the virtual reality game Soteria VR at the Stanford Brainstorm Virtual and Augmented Reality Innovation Lab at Stanford University School of Medicine.
- Professor Amber Settle was named chair of the Special Interest Group on Computer Science Education, a national organization dedicated to providing a global forum for educators in computing.
Alumna Profile

IN THE LOOP

Tech Trailblazer
Alumna leads engineering team at fashion-forward Trunk Club

From the first moment Candice Savino (COM ‘03) discovered programming in a computer science class in high school, she was a self-described “girl on a mission.” Savino delighted in programming’s problem-solving challenges, whipping through course modules and experimenting on a ramshackle desktop computer at home. When it came time to apply for college, Savino researched top computer science programs in the Chicagoland area, which led her to DePaul.

“I definitely think that getting my undergraduate degree from DePaul set me up for success in my career,” Savino says. “The curriculum focused on fundamentals but also real-world experience.”

Hands-on assignments—such as diagramming the entire database structure for eBay for one class—served Savino well as she was hired as a software engineer at their suburban Chicago office. “It was right after the dot-com bust, so the industry wasn’t as alluring as it is now,” Savino remembers. “My classmates and I were worried we wouldn’t find jobs despite loving what we were doing.”

Savino has remained grounded throughout her impressive career, which has also included positions at Encyclopaedia Britannica, WMS Gaming, Groupon and now Trunk Club. As vice president of engineering, Savino oversees a team of 55 dedicated to improving the efficiency and effectiveness of the company’s internal and external web applications.

“I’m fascinated by how Trunk Club is disrupting the retail industry,” Savino says. The Trunk Club model pairs customers with individual stylists who create personalized collections of clothes. Customers receive trunks at their home, where they can try on each item, keep what they like and send back the rest.

This process is simple in theory, but it raises a challenging question, as Savino notes: “How do you scale a personalized, human service?”

The answer requires striking a careful balance. “We’ve tried to figure out how many of our customers would prefer a very automated process versus how many want the ‘high-touch’ service,” Savino explains. In 2017, Savino and her team rolled out a number of tools to help the stylists provide better service to both types of customers. “Initially, stylists were doing a lot of manual tasks that could be automated,” Savino says. “We redesigned their internal tools to help manage their tasks more efficiently so they could spend time on the most high-value work.” For example, the engineering team gathers data from customers’ onboarding questions to narrow down their preferences in a way that’s more personalized and efficient for the stylists.

Other innovations have made it possible for customers to schedule their truck delivery frequency online and for stylists to email their clients within an internal system, instead of switching over to an email provider. “There’s still a lot to do, but we’re on the right track,” Savino asserts. This drive isn’t surprising for someone named to Crain’s Chicago Business “Tech 50” list for 2017. “Trunk Club has been a different challenge and a great learning experience,” Savino says. “It’s an exciting ride for sure!”

Ivonne Garcia, a sophomore majoring in interactive and social media, is accustomed to being in programming courses full of men. But this past fall, she found herself in the gender majority at the Grace Hopper Celebration, a massive gathering of women in technology sponsored by AnitaB.org. “The conference helped me realize there are many other women trying to accomplish the same goals as me,” Garcia says. “I saw that I am not alone.”

More than 18,000 participants, including six undergraduates from CDM, attended workshops, career fairs, networking events and presentations during the three-day festival in Orlando, Fla. Associate Dean Therese Steinbach, who accompanied the young women, notes that the college received 55 applications for six available slots. DePaul provided scholarship support to cover the registration fee, airfare, hotel accommodations, and transportation to and from the hotel.

“I would not have been able to attend the conference without the scholarship,” asserts Alicja Fisher, a junior majoring in computer science. “I am thankful to everyone who gave me the opportunity to meet with such inspiring women.”

Fisher says the conference was motivating and helped her develop confidence. Another direct result? She was offered an internship with Mastercard.

The conference also impacted Fiona Baenziger’s future path. “I realized the major track I was on was not right for me,” she explains. “I took all the information I gathered from the conference and did additional research, and then I switched my major to data science.” Baenziger is “super psyched” about this change and feels newly empowered. “There is so much space in the technology field to grow outward to fit your specific interests,” she enthuses. “We really can do anything.”

Support talented and motivated students like Ivonne Garcia, Alicja Fisher and Fiona Baenziger by making a gift to one of the funds below.

Support DePaul UNIVERSITY

College of Computing and Digital Media
Support leading scholars, campus facilities and resources, and scholarships for students in the College of Computing and Digital Media.

General Scholarship Fund
Continue DePaul’s commitment to being accessible to all students by helping fund need-based scholarships.

Fund for DePaul
Make an immediate impact through an unrestricted gift applied to DePaul’s areas of greatest need, ranging from scholarships to programs.

Visit alumni.depaul.edu/newsletter to make your gift now.
IN THE LOOP

Office of Alumni Relations
alumni.depaul.edu
(800) 437-1898

College of Computing and Digital Media
cdm.depaul.edu
intheloop@cdm.depaul.edu

Editor
Kelsey Schagemann

Contributing Editor
Marilyn Ferdinand

Designer
Francis Paola Lea

Stay connected to DePaul through our online communities, including Facebook, LinkedIn, Twitter, Instagram, Flickr and YouTube. Visit alumni.depaul.edu to sign up today.

Connect with fellow CDM alumni
Join our LinkedIn community at bit.ly/LinkedInCDM.

Don’t forget to follow us as well on Facebook and Twitter @CDMDePaul.