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WATERLOO | **ENGINEERING** alumni letter

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Waterloo Engineering Alumni Letter

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On November 12, the shovel goes into the ground for Engineering 7. The new building is the third phase of the Faculty's construction plans to address the space shortage due to the rising demand for our undergraduate programs and greatly expanded research activities with industry. At a time when Canada requires more highly skilled engineers, Engineering 7's state-of-the-art facilities will support future needs for a different kind of engineer: one who is multi-skilled, able to work across traditional disciplines and equipped to tackle the truly difficult technical problems to drive innovation.

The 230,000-square-foot-building will have dedicated study and social spaces for students, lecture halls and areas for student teams to prototype their Capstone Design projects. It will provide space for our teaching innovation, the Engineering Ideas Clinic™, and more room for our new biomedical engineering undergraduate program, as well as the expansion of mechatronics engineering. Engineering 7 will also feature a new home for the Conrad Business, Entrepreneurship and Technology Centre, which is introducing a campus-wide minor in Entrepreneurship this month.

Engineering 7 is one of the priorities of the Faculty's \$70 million Educating the Engineer of the Future campaign. Launched this past spring, the campaign will solidify our strong reputation for academic leadership and uniquely preparing students for what lies ahead. It will ensure we leverage our remarkable success in co-op education and help propel Canadian engineering research to even higher levels.

Find out how you can support our Educating the Engineer of the Future initiative by reading more about it in this issue and on the campaign site: engineerthefuture.ca. While you're visiting the site, be sure to watch the campaign video featuring many of our outstanding faculty members, students and alumni.

As we continue to attract the brightest and best to our engineering programs, we also attract the same high calibre of students to the School of Architecture. This year, the school was ranked in the top 100 by UK firm Quacquarelli Symonds (QS) as its World University Rankings by Subject included architecture for the first time. Our engineering programs that also made the 2015 top 100 subject rankings were civil engineering, electrical engineering and mechanical engineering. QS evaluated a total of 3,551 universities and ranked more than 2,000 institutions in 36 subject areas.

July marked the 25th anniversary of our award-winning Engineering Science Quest program, co-founded by an engineering student. In this issue, you'll read about the incredible impact ESQ has made since 1990.

This summer also marked the retirement of Wayne Loucks, the associate dean of undergraduate studies for 17 years. Wayne, an electrical engineering alumnus and professor, was a passionate and tireless champion of our undergraduate students. On behalf of the Faculty, I'd like to thank Wayne for his commitment and contributions to Waterloo Engineering and for being a wonderful colleague.

I look forward to meeting many of you at the Waterloo Engineering Class Reunions in early October and at other events, including the ground breaking of Engineering 7.

Sincerely,

A handwritten signature in black ink that reads "Pearl Sullivan".

PEARL SULLIVAN
Dean, Faculty of Engineering

New research facility for intelligent green cars

Smarter and more environmentally friendly vehicles than current models could emerge from technology developed at a new Waterloo Engineering research facility.

The \$10 million Green and Intelligent Automotive (GAIA) research facility was established in June with \$1 million in initial funding from Toyota Motor Manufacturing Canada Inc. The federal and provincial governments also provided \$2.1 million each through the Canada Foundation for Innovation and the Ontario Research Fund Research Infrastructure program.

GAIA will consist of three labs: one focusing on powertrain efficiency, another on longer-lasting batteries for hybrid and electric cars, and a third for testing research-modified hybrid electric vehicles on rolling dynamometers.

As part of the Waterloo Centre for Automotive Research (WatCAR), which leads automotive-academic collaboration in North America, GAIA will support Canadian industry in providing new components and systems into a rapidly growing market.

“The GAIA facility will enable world-class multidisciplinary research with a strong collaborative approach,” said John McPhee, a Waterloo systems design engineering professor who heads the GAIA project.

Professors named to Order of Canada

Canada’s highest civilian honour was awarded to three Waterloo Engineering professors on July 1, 2015 by David Johnston, Governor General of Canada.

Linda Nazar is a new Officer of the Order of Canada for her contributions as a materials chemist who has developed advanced battery systems for clean-energy storage. Nazar is a cross-appointed professor in the departments of chemical engineering, electrical and computer engineering, and chemistry.

Carolyn Hansson, a cross-appointed professor in civil and environmental engineering, and mechanical and mechatronics engineering, is a Member of the Order of Canada for her contributions as a materials engineer whose efforts have reduced corrosion and improved the performance of reinforced concrete structures.

Garry Rempel, a chemical engineering professor, is also a new Member of the Order of Canada recognized for his contributions to the field of chemical engineering, notably for advancing research in rubber technology.

Engineer of the Future Trust becomes an endowed fund

The Engineer of the Future Trust, created to financially assist Waterloo Engineering student innovators and entrepreneurs during the critical startup phase, is so successful that it is now becoming an endowed fund. The transition to an endowment allows the fund to generate interest, which is then used to fund student initiatives such as Capstone Design projects or student teams. In an endowment, the principal remains intact, allowing the awards to be continued in perpetuity.

For now, the trust will operate in parallel with the endowment, with the intention to exhaust the trust while building the endowment to sustain the same level of funding. About 70 students have received funds from the Engineer of the Future Trust since it was launched in 2014 with a \$100,000 gift from Terry Cunningham (BASc '83, Mechanical). This spring, the seed funding required to establish the endowment was donated by Ray Tanguay (DEng, '12), former Chair of Toyota Motor Manufacturing Canada Inc. and a current member of the Engineering Dean’s Advisory Council.



Funding from the Engineer of the Future Trust helped launch Grasp, an award-winning Waterloo mechatronics engineering startup. Co-founders **Sarb Singh**, **Samson Berhane** and **Ryan Terpstra** created a bicycle lock that opens after reading thumbprints.

Hack the North Encore

36 Hours, 1,000 Plus Students, Limitless Ideas

Bouncy castle? Check. Bubble soccer balls? Check. Enough Red Bull® and poutine to fuel over 1,000 hackers throughout the weekend? Check and check. The University of Waterloo students organizing Hack the North 2015 know exactly what it takes to pull off Canada's largest international hackathon.

Last year, they attracted more than 1,000 students from around the world to the first Hack the North for 36 hours of coding, hardware development, plus a lot of fun. Now they're preparing for its encore taking place this month.

What third-year systems design student Jenny Wen remembers most as a 2014 participant is the atmosphere — from the electrifying opening speakers to the volunteers high-fiving participants in the wee hours of the morning.

This year, she signed up as an organizer, helping to attract hackathon veterans and newbies alike to the weekend event. "I think it's one of the best opportunities to learn a lot in a really short period of time," she says.

High-tech hotspot attracts top talent

Waterloo's reputation as a high-tech hotspot makes it easy to attract mentors and industry stars to the event. This year's judges include Alexis Ohanian, co-founder of Reddit; Kathrina Manalac and Qasar Younis, partners at Y Combinator; and Steven Woods, senior engineering director of Google. Sponsors have lined up to cover participants' travel costs. Meanwhile, 4,000 applications from students have poured in from as far away as Istanbul, Nigeria and Singapore.

For Kevin Lau, co-founder of Hack the North, the hundreds of hours required to organize the event pay off when he sees what participants create — from an app to control your toaster oven to one that turns the world around you into a real-life Pokémon game.

"You just say 'wow, look at what these university undergraduates are making,'" says the third-year systems design engineering student. "It's pretty powerful."



A



B



C

A | Students team up to develop an innovative app.

B | Hack the North is the largest international hackathon this side of the border.

C | The 2014 Hack the North team.

Technology Breakthroughs

From wires revolutionizing orthodontics to vision testing using smartphones, Waterloo Engineers are leading the way.



Waterloo Engineering alumni **Michael Kuntz** (BASc '01, PhD '06, Mechanical), **Shysta Ismaili** (BASc '15, Mechanical), **Ibraheem Khan** (MAsc '07, PhD '10, Mechanical) and the rest of the Smarter Alloys team are coming up with different ways to incorporate Multiple Memory Material™ in everything from medical devices to golf equipment.

At Waterloo Engineering, we know the future isn't going to look like the past or even closely resemble it. That's why one of the priorities of the Faculty's Educating the Engineer of the Future campaign launched this year is to establish research chairs in emerging and disruptive technologies — technologies that power economies, connect the digital universe, make manufacturing more intelligent and advance the human condition.

But game-changing breakthroughs are nothing new for Waterloo Engineering. Right now, students, faculty members and alumni are revolutionizing hardware development, tapping into unlimited sources of clean energy, working to save healthcare dollars spent on heart disease treatment and much more.

Wired with dynamic memory

Take Multiple Memory Material™. Like many innovations, it came about through unintended consequences. As a doctoral candidate, Ibraheem Khan (MAsc '07, PhD '10, Mechanical) working with Norman Zhou, a Waterloo mechanical and mechatronics engineering professor, realized the lasers and electron beams used as welding tools were changing the properties of the materials he was joining.

However, the properties they gained were highly intriguing: the ability to remember more than one shape and apply specific amounts of force in specific locations. Inspired by Waterloo's inventor-owned intellectual property policy, Khan and Zhou launched Smarter Alloys to commercialize the discovery.

One of the company's latest ventures is developing wires for orthodontic braces that promise to cut treatment time dramatically. Anyone who has worn braces knows just how long the process can be. Because different teeth require different degrees of correction, dentists swap brace wires every few

months, increasing or decreasing the stiffness to target different teeth. Smarter Alloys' SmartArch™ wires change all that, providing a single wire that applies exactly the right force to each tooth at the same time.

The biomechanically optimized archwire was launched to great enthusiasm at May 2015's annual session of the American Association of Orthodontists in San Francisco. SmartArch has also caught the attention of someone closer to home — Khan's wife. The newly minted dentist is interested in bringing the technology to the Guelph dental clinic she recently joined.

But SmartArch is just one of the products that keep Khan's team of 20 engineers, co-op students and contractors coming up with different ways to incorporate Multiple Memory Material. Other applications from aerospace to golf to medicine include stents with variable stiffness and other cardiac devices. Additional ideas are scrawled by company employees, most of them Waterloo Engineers, on a whiteboard wall at Smarter Alloys' new 4,000-square-foot facility in Waterloo that has brought research, product development, manufacturing and quality assurance under one roof.

"It's one of those places that people come to work and forget to go home," says Khan, laughing.

More effective ways to harvest energy

Electromagnetic energy is all around us, from sunlight to radio waves to infrared radiation. And mostly, it goes to waste. As the world grapples with the increasingly serious consequences of burning fossil fuels, Omar Ramahi, a Waterloo electrical and computer engineering professor, and his doctoral student Thamer Almoneef set out to tap this clean and abundant energy source.

To collect this wasted energy, the researchers etched repeating patterns on to copper sheets. By adjusting the dimensions of those patterns and the distance between them, they were able to harvest up to 97 per cent of the energy hitting this “metamaterial.”

“It demonstrates for the first time it’s possible to collect almost all of the electromagnetic energy that falls onto a surface,” Ramahi explains. The ultra-efficiency of the process makes it far cheaper than current renewable energy systems such as solar panels and requires far less space.

With a prototype currently in the works, this ground-breaking technology could be used not only to harvest energy, but also to transfer it wirelessly from one location to another.

More potential for 3D printing

When Structur3D co-founder Andrew Finkle wants to demonstrate the potential of his company’s universal paste extruder, he pulls out a jar of Nutella®.

Structur3D’s Discov3ry expands 3D printing far beyond hard plastics. It can be attached to almost any printer model to print objects using silicone, latex, polyurethane and, yes, even chocolate-hazelnut spread.

While Nutella-based creations always draw a crowd at trade shows, the big-value applications for this device lie in bio-prosthetics such as hearing aids and printed orthotics. The Discov3ry extruder is also perfect for specialized, small-scale manufacturing, says Finkle, who is currently completing a doctoral degree in nanotechnology engineering at Waterloo.

A wildly successful Kickstarter campaign in 2014 raised the dollars Structur3D needed to begin production. Today, as orders pour in from around the globe, a team of nine employees produces 50 units a week in a converted shoe factory in Kitchener.

That business achievement is exciting, but Finkle’s biggest thrill comes from seeing the impact his extruders make. “We’re keeping a very close eye on what our customers are doing with the device,” he says. “Its applications have already blown our minds.”

Circuit board prototypes in minutes

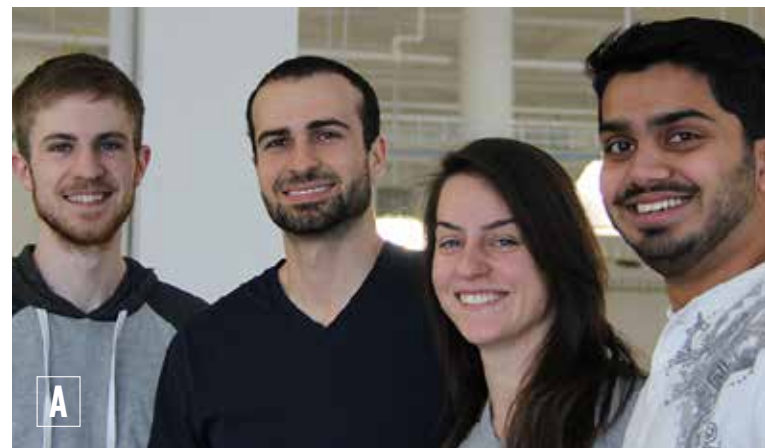
Although 3D printing is revolutionizing mechanical prototyping, electronics prototyping remains painfully slow: develop the first iteration of a circuit board, send the design to China and then wait several weeks for the FedEx truck to arrive with the sample. Spot a problem and refine the design. Repeat. Repeat again.

Voltera co-founders Alroy Almeida, Katarina Ilic, James Pickard and Jesús Zozaya — all 2013 Waterloo Engineering grads — set out to design a printer that could make a circuit board prototype right on a desktop, depositing layers of conductive ink onto fibreglass boards.

It was easier said than done. “It was one technical challenge after another,” says Ilic. The team spent two years improving the electrical properties of the conductive nano-silver ink, creating a compact electromechanical system to dispense the thick ink and developing a software algorithm to control it precisely. The end result — the Voltera V-One printer — earned instant praise.

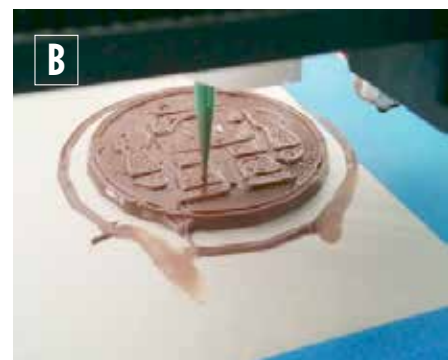
The V-One took the Hardware Battlefield award at the Las Vegas Consumer Electronics show in January of this year. *Popular Science* named it one of the 10 most brilliant inventions of 2015. And this year’s Kickstarter campaign raised half a million dollars for production.

Now the team is busy hiring more employees and getting ready to start shipping its first printers that will break down the barriers to electronic innovation. “When each revision takes an hour instead of three weeks, exciting things happen,” says Almeida.



A | James Pickard, Jesús Zozaya, Katarina Ilic and Alroy Almeida created the Voltera V-One printer, which was named one of the 10 most brilliant inventions of 2015 by *Popular Science*.

B | Structur3D’s Discov3ry has printed objects using everything from latex to Nutella®, as shown here.



Improving vision in the developing world

Ashutosh Syal (BASC '14, Systems Design) was on track to become a Toronto Bay Street trader when John Zelek presented his third-year class with an issue. Hundreds of millions of people in the developing world have uncorrected vision problems, said the Waterloo systems design engineering professor. The mobile eye camps that serve rural areas simply can't keep pace with demand. Meanwhile, many discarded smartphones end up overseas. Could they create vision-screening software for those phones?

Syal, Daxal Desai (BASC '14, Systems Design) and four of their classmates took up the challenge. They read papers, interviewed experts at Waterloo's School of Optometry and started designing a solution. Four months later, their hardware didn't work and their software performed little better than a 50/50 guess. But they were determined to persevere. "The ability to see clearly is something we believe everyone should have," Syal explains.

The next year Syal and Desai developed software that could detect short-sightedness and far-sightedness in a matter of seconds. The pair triumphed in the 2014 Velocity Fund Finals and made it to the top 20 list of global finalists for the 2015 James Dyson Award.

To commercialize their technology, they founded EyeCheck. Now with a third founder, Rachel Friesen, the startup is developing a hardware solution to provide highly accurate prescriptions, which gives healthcare workers everywhere portable and affordable tools to treat more patients more quickly.

Heart attack predictors


Here in Canada, heart attacks claim thousands of lives each year. If Patricia Nieva has her way, a palm-sized device could shrink those numbers considerably.

The Waterloo mechanical and mechatronics engineering professor heads an international team of experts developing a handheld monitor that could predict a heart attack before it happens, giving cardiac patients vital minutes — or even hours — to get to the hospital.

Nieva's blood test monitor looks at levels of a biomarker called cardiac troponin I. Instead of spending hours in a crowded emergency department or, worse, ignoring questionable symptoms, patients simply prick their finger at home. The device analyzes their blood and wirelessly relays the results to their doctor. If the troponin I levels are too high, a cardiologist would then decide if an ambulance should be called.

The monitor could be especially useful for women, whose heart attack symptoms tend to be more subtle than men's, says Nieva.

"The device will save the health industry a lot of money and will also give a sense of ease to those living with heart disease," predicts Nieva, who is ready to begin building a prototype.



Patricia Nieva heads an international team of experts developing a handheld blood testing monitor that could predict a heart attack before it happens.

Making file sharing safer

When Anton Kabanov (BASc '14, Mechanical) was a co-op student, his employers lacked file-sharing systems that would let him use his tablet at work. Although cloud technology existed, putting data online created security risks unacceptable to his employers.

So Kabanov began tinkering in his spare time, envisioning a highly portable, peer-to-peer file-sharing device that could work through the Internet, Wi-Fi or a local area network. Ambitious? Very. "I did not realize that at first, but I took on a very complex project," he says.

Over the course of the last two years, Kabanov succeeded in solving the challenges and launched MBLOK to bring his technology to market. Soon, he'll begin selling software that enables users to share files directly with another device.

Kabanov will use revenue from software sales to perfect hardware that takes things one step further, allowing the user to wirelessly store hundreds of gigs of encrypted data on a thumb-sized cube and transfer that information between multiple devices. While MBLOK isn't the first device of its kind, it is one of the smallest and most unique options.

Ultimately, his goal is to give businesses and individuals convenient file-sharing solutions that don't involve the cloud. "I really want to show that there is huge potential for something more secure," he says.

Protecting online reputations

Cat Coode (BASc '01, Electrical) worries about security as well. In her case, however, her focus is social media.

More and more job seekers and university applicants are losing out on opportunities because of a party photo they thought only their friends could see, a thoughtless comment on Twitter or even gaffes committed by someone who shares their name. "All it takes to ruin your reputation could be one inappropriate comment or ill-advised party photo," Coode says.

That's why she founded Binary Tattoo. While Coode has been educating parents and students about safe social media practices for several years, a Communitech women's bootcamp last fall helped transform her knowledge into a commercial product.

Currently in beta tests, her Binary Tattoo app provides regular reports on an individual's online presence and the online presence of any children registered by that person. Clients also receive updates on new social media platforms or changes to the privacy policies or features of existing platforms. Although it won't magically erase online mistakes, it does provide the knowledge required to navigate the social media universe more safely.

"This is not a software problem to fix," Coode explains. "I'm using software to help, but ultimately maintaining an online reputation is like teaching kids to drive a car. You can't just put GPS software in it and expect people to know how to drive. You have to teach them to drive defensively."



A | Anton Kabanov is the inventor of a smart memory device that allows the user to wirelessly store encrypted data on a thumb-sized cube and transfer that information between multiple devices.

B | Cat Coode founded Binary Tattoo to protect online reputations.

Teaming Up

Student teams powered by ingenuity, driven by passion

Want hands-on engineering experience, challenging real-world problems and even the opportunity to work with some of the best in the industry?

Join a student design team.

That's advice Jennifer Bauman (BASc '04, PhD '08, Electrical) would give any engineering student. She would know. Back in 2004, she poured her passion into the position of electrical lead of Waterloo's Alternative Fuels Team, creating a hydrogen fuel-cell vehicle that would go on to score multiple top awards in Challenge X, an American green car competition.

Today, Bauman is director of vehicle modelling for Waterloo-based CrossChasm Technologies Inc., which helps manufacturers build hybrid, electric and plug-in vehicles. It's a company that literally started on the team's floor by fellow teammates, Matt Stevens (BASc '04, PhD '09, Chemical) and Christopher Mendes (BASc '04, MASc '07 Mechanical) early one morning at 2 a.m. A few years later, after she had finished her PhD, Stevens and Mendes asked Bauman to join the company.

"Really, it was like a two- to three-year-long job interview," she says, laughing. "They never would have hired me if I had been sitting in my graduate office working on theoretical stuff and hadn't been a member of the team."

Gaining practical experience

There's a reason CrossChasm seeks out co-op students and grads who have been part of one of the 28-plus Waterloo Engineering-based teams. "It's about practical experience," says Stevens. "Co-op is useful for applying class-taught theory, but on a team, you could be in charge of an entire powertrain. Student teams are basically co-op on steroids."

Both Stevens and Bauman emphasize that team members need to be willing to push innovation to the limit. For instance, when Bauman discovered there was no such thing as an off-the-shelf 65-kilowatt DC-DC converter, she designed and built one.

Record-breaking success

Armed with a manufacturing background, Cameron Bruce joined the Midnight Sun Solar Rayce Car Team during his first year of mechanical engineering in 2002. He started out helping with the construction of the Midnight Sun VII and rose through the team's ranks to become project manager of Midnight Sun IX in his final years of engineering.

His tenure with the team included the World Solar Challenge and the North American Tour during which Midnight VII broke the Guinness World Record for the "longest journey by a solar electric vehicle" after travelling over 15,000 km in 40 days during 2004.

"The tour was 40 days straight of travelling with the team and the car all around North America," he recalls. "The top three moments would have to be seeing the solar car drive through the mountains in BC, capturing the Guinness World Record in New York State and experiencing the generosity of complete strangers everywhere throughout North America."

Although he made many important connections while a member of the team, the most important one was solidified when Bruce worked with his future wife Jessica Whitney, a Waterloo civil engineering student at the time.

"Jessica still jokes that joining the team was the only sure-fire way to see me because the car and team took up so much time," says Bruce, now a mechanical design project lead at ATS Automation in Cambridge.

Fantastic career base

Greg Thompson, who Bruce describes as his Midnight Sun team mentor, also met his future spouse, Silvia, while both were on the team. An applied health science ergonomics specialist, Silvia helped design the driver compartment. Thompson is still involved in solar car events as the regulations manager and head technical inspector for the American Solar Challenge. He also recently headed to Abu Dhabi to organize the first-ever Abu Dhabi Solar Challenge, a week-long event with teams from around the world.

Not surprisingly, his time on the Midnight Sun team as well as the University's Free Flight Glider Team helped him land a job. Today he's a senior project manager with Rowan Williams Davies & Irwin Inc. in Guelph, ON.

"The project management role that I had with the Midnight Sun team gave me a fantastic base to work from as a project manager at RWDI," he says.

Going above and well beyond

Peter Teertstra, director of the Sedra Student Design Centre, says each year approximately 1,000 students join teams — one in seven undergrads. "Teams attract a certain type of student who has the will or desire to do more than just go to class and do their homework," Teertstra points out.

That sentiment is true of this year's Waterloo Formula Hybrid Team that launched four years ago.

A | Waterloo's Formula Hybrid race car members take first in the 2015 Formula Hybrid International Competition defeating universities, including Princeton and Carnegie Mellon.

B | Waterloo's Alternative Fuels Team — the only Canadian team participating — triumphs over 16 U.S. universities in 2005 to win first place at Challenge X, an American green car competition.



C | The first Midnight Sun solar car was unveiled in 1990. In 2004, the Midnight Sun VII team breaks the Guinness World Record for the longest journey by a solar powered car.



This past spring, the hybrid race car with its custom battery system and lightweight materials took first place overall at the Formula Hybrid International Competition, racing against teams from as far away as India and Turkey and defeating universities including Princeton and Carnegie Mellon. Besides taking the top award, Waterloo came first in the competition's autocross event and the endurance category by setting a new all-time record of 33 laps.

What propelled Waterloo's race car to victory? Rishi Chatterjee says it was the hard work and dedication of the team members. "We knew how to go about sourcing solutions to new and existing problems," says Chatterjee, the team's business lead and a second-year mechanical engineering student at the time.

New team, new challenges

Andrew Easton (BASC '15, Civil) knows all about dedication and building from scratch. Now a structural engineering intern for J.L. Richards & Associates, he was the lead for Waterloo's new American Institute of Steel Construction and American Society of Civil Engineers Steel Bridge Team in 2014/15.

With help and inspiration from Scott Walbridge, a Waterloo civil and environmental engineering professor, and others, Easton built a team of more than 50 students in one year. Despite placing eighth out of 12 teams, Easton says the experience is one of which he's extraordinarily proud, especially since it was the team's first competition experience.

"We were still fabricating in the middle of exams. My hands would be dirty with metal grease from working on the bridge and I'd get soot all over my exam," he says. "It was worth it. I helped build something practical — the team — for future students."

A lasting legacy

In the end, perhaps the teams' most enduring legacy is something harder to quantify. Timo Nielsen (BASC '12 Systems Design), is a powertrain development engineer for McLaren Automotive, a British manufacturer of high-performance vehicles. His powertrain team co-leader status on Waterloo's Formula Motorsports Team gave him more than applicable theories, skills that helped him restore his own Audi S4 and a speed ramp to a successful career. "I will always remember my time as a member of the team," he says. "I made great friends and memories that will be with me for the rest of my life."



D | Members of Waterloo's 2015 steel bridge team prepare for competition.

ESQ Milestone

Sparking imaginations for 25 years

For some, it's building a wind turbine to harness enough energy to race a car. For others, it's creating a boat out of cardboard and duct tape. For six-year-old Max Griffiths, there wasn't just one highlight of his first camp experience, there were many at Engineering Science Quest. Topping Max's list? Designing a flute out of plastic pipes that actually plays music.

Celebrating its 25th anniversary this year, Engineering Science Quest, better known to most campers as ESQ, was founded in the fall of 1990 by a University of Waterloo science student and an engineering student as their fourth-year project.

It was Michelle Miller, a chemistry student at the time, who came up with the idea of starting the camp after attending a teaching pilot program at Queen's University and noticing kids on the Kingston campus wearing engineering and science camp T-shirts. When Miller arrived back at Waterloo, she received approval from the dean of science to work on founding a similar camp. She was joined by an engineering student recommended by Bill Lennox, the dean of engineering in 1990.

"We weren't prepared for the massive amount of work that needed to be done to get ESQ off the ground," recalls Miller, now a secondary school teacher in Waterloo.

That work included everything from fundraising to preparing budgets to setting up activities — all while going to school full time. But once the two camps for

kids in Grades 5 and 6 launched the following summer, Miller says it was all worthwhile for her and the three other counsellors, one of whom was Laura Matthews, an engineering student.

"We especially loved the aha moments the kids experienced," Miller remembers.

More variety, greater diversity

A quarter of a century later, the outreach program has filled over 41,000 spots and employed 1,100 staff members, including volunteers. It also offers March break, Winter break, after school and weekend programs, as well as various in-school and community initiatives. Satellite programming is provided in various rural and aboriginal locations throughout Ontario.

At the end of Grade 9, Caitlin Idziak participated in the University's Catalyst Summer Leadership Program that engages high school students in science and engineering and includes a volunteer placement at ESQ. Since that summer, Idziak has worked as a high school leader in ESQ's Banting camp for five-and-six-year-old kids.

"They all have their own interests," says Idziak who entered Waterloo's mechatronics engineering program this month. "I had a camper last year who, after discovering I built robots as part of my high school's FIRST Robotics team, followed me around asking questions. By the end of the week he was sold on becoming an engineer!"

Develops problem-solving skills

Like Idziak, Eric Gemnay also started Waterloo's mechatronics engineering program this term. He knew his way around campus from participating in the Catalyst program and working at ESQ as a high school volunteer and leader for the summer, March break and after school programs.

"It was really cool to see kids starting to enjoy technology and engineering," he says. "Towards the end of the nine weeks of the after school program kids were solving their own technology problems instead of asking us how to go about it."

Scott Hicks' parents both graduated as engineers from Waterloo, so it was likely that he would follow the same path. But the second-year Waterloo mechanical engineering student says attending ESQ as a camper and then working as a high school leader made him realize he'd made the right decision.

He describes his first year as a leader of the Newton camp for kids ages five and six as an important learning experience.

"You had to find a way to communicate an idea that's complex like climate change and then bring it down to a level that campers could understand," he says. "I've found that's been really useful in the co-op workplace, especially when you're trying to present concepts others may not fully comprehend."

Stepping stone to startups

Ali Asaria worked as an ESQ high school intern as part of the Shad Valley program and later as a high school leader. He attributes his ESQ experience as the turning point for him when it came to deciding to come to Waterloo for computer engineering and for his career afterwards.

"ESQ was my first real job and I was given the tools and the trust to build things that I'd never been able to before," he explains. "As well, being able to design the webpage for the program in the early days of the web was amazing."

Since leaving Waterloo Engineering, Asaria has started two successful tech companies: Well.ca and Tulip Retail. "ESQ gave me the confidence to keep pursuing learning, engineering and computers, which directly connect to my career now."



Max Griffiths' first camp experience was ESQ where he built a flute, among other things.

Hands-on activities are ESQ's hallmark

Mary Wells has the advantage of viewing ESQ through the lens of the Waterloo Engineering's associate dean of outreach who has overall responsibility for the program and also as a parent. Her son and two daughters have attended ESQ camps for a number of years.

"Seeing the camp through their eyes really showed me how valuable it is," she says. "And, to a certain degree, it made me believe more strongly in the program."

Wells points out that the 2015 summer camp registration was filled by May of this year, which, she says, is a direct reflection of the quality of the program and the desire of parents and their kids to have hands-on science and engineering activities.

Martin Scherer, manager of Waterloo Engineering's outreach operations, adds that ESQ demystifies STEM, which stands

for Science, Technology, Engineering and Mathematics. "It gets kids interested in STEM," he says. "It also ignites their curiosity, their passion and their imaginations."

Honoured for engaging youth

The impact of the program was recognized with the 2013 Actua & GE Canada Award for Leadership and Innovation in science and technology education. The award recognizes ESQ's dedication to high-impact quality programs, ongoing leadership and supportive engagement of Canada's most underserved youth.

This past summer, ESQ was featured at the Pan Am Games — the only initiative of its kind to be part of the Toronto event. Staff members were onsite for a day engaging children in engineering and science activities.

Looking to the future

Wells, chair of the Ontario Network of Women in Engineering, says over the past few years staff members have worked at increasing the number of girls in ESQ programs, especially in the technology camps. Plans for the future include engaging more aboriginal youth, particularly girls, in ESQ.

When it comes to the success of ESQ, Wells attributes it to energetic and hard-working staff members, along with the commitment of the University to the program. Much to the delight of ESQ staff now located in an older portable outside of Engineering 2, a big part of that commitment includes a new home for the outreach department in Engineering 7, which begins construction this fall.



A



C



B



D

A | Eric Gemnay, right, helps a camper in ESQ's technology camp. Gemnay started Waterloo's mechatronics engineering program this month.

B | Campers put their structural skills to the test while attempting to support a marshmallow.

C | The fine art of soldering is an ESQ activity.

D | Hundreds of children took part in ESQ activities at this summer's Pan Am Games held in Toronto.

Class Notes

1963

GORD EDGAR (EngPhys '63) has been enjoying retirement since September 2010.



BILL SCHNEIDER (Mech '63) reports that his 'Generosity of Spirit Roadshow' is launching as a social enterprise to help kids of Generation Z build life-navigation skills.

1965

Class Reunion | 50 years

October 3-4, 2015

CLINT NEWMAN (Elect '65) and his wife Anneke live in Easter, ON. Mainly retired, they are involved in some church work and running a micro-business called Artist Woodwork Specialties, which ties in with Anneke's oil painting.

annekenew@hotmail.com

1967

MIKE GIRDWOOD (Elect '67) lives in Kingston where he works with Bombardier Transportation and enjoys his six grandchildren.

girdwood96@gmail.com

HENRY HOGG (Mech '67) was re-elected for a fifth term as Reeve of Addington Highlands Township in Lennox & Addington County.

1969



BRUCE BODDEN (Civil '69) has been appointed to the Board of Infrastructure Ontario (IO) for a three-year term. Prior to his retirement in 2013, Bruce served as president and CEO of MMM Group Limited. In 2010, he was a

recipient of Waterloo Engineering's Alumni Achievement Award for Professional Achievement.

TONIS (TONY) OTS (Mech '69) retired in 2007 as President of Raypak, Inc. that has manufacturing plants in California, Mississauga and Melbourne, Australia. He now lives in California with his wife Melanie and two sons.

tonyots@verizon.net

1970

Class Reunion | 45 years

October 3-4, 2015



OJ EVERS (Elect '70), who retired in 2007, lives in Taipei, Taiwan. He's still involved in aviation accident investigation and safety.

jimev@aol.com



BRIAN ROSS (Elect '70) chairs a sub-committee of Professional Engineers Ontario that is developing a practice guideline for the Structural Condition Assessments of Existing Buildings and Designated Structures. The

guideline is being produced, in part, in response to the recommendations of the Bélanger Commission report on the Algoma Mall collapse in Elliot Lake. Brian is also involved in project management for an expansion of the Honda Canada Manufacturing facilities in Alliston, ON.

l.b.ross@sympatico.ca

1971



WILLIAM (WILL) ACAR (MSci '71) earned a PhD from the Wharton School of U-Pennsylvania in 1983 after completing his Waterloo Engineering degree. He is retiring as Professor Emeritus of Management from teaching

and researching strategic management at Kent State University in Ohio.

William.Acar@gmail.com



BOB WHEATLEY (Mech '71, MSci '73) is a retired business coach who would like to work part time in business improvement research.

Bob@RobertWheatley.com



A novel kind of retirement

Forty years after graduating from Waterloo Engineering, **Geoffrey Tigg (Mech '75)** fills his days with gambling, corporate corruption and murder — at least on paper. After hanging up his hat as a process engineer and accountant, Geoffrey now writes detective mystery novels. And no, he laughs, he's not drawing on his 23-year career at BC Hydro for material, but instead from places and events that have touched his life in an impressionable way.

Geoffrey draws parallels between writing and engineering. Today, the White Rock, BC author uses the same creativity to develop plots that he once applied to technical problems. "Writing is no different than designing a manufacturing plant," he explains. In both cases, you need to get from A to B and make sure the steps line up in the correct order.

Over the past decade, he's learned everything from book design principles to the correct title for Canadian prosecutors. He loves hooking readers with fast-paced stories, as well as showcasing Canada's West Coast. "It's a phenomenal adventure I've been on," he says.

Geoffrey has completed six novels, all self-published through his own Rushing Tide Media. His latest books, featuring either Detective Kelly O'Brian or Detective Jamie Steele, are available on Amazon.ca, where they're earning four and five-star reviews.

www.rushingtidemedia.com

1972



LAURI GREGG (Elect '72) retired from Falconbridge Ltd. in July 2007 after 39 years of service. He is now the principal of LCG Energy Management Group

focusing on the implementation of the ISO 50001 EnMS standard.

Lauri.Gregg@sympatico.ca

DAVE WINLOW (Elect '72) and Lynne (BA '68) have been retired for 10 years and live in Gravenhurst on Lake Muskoka. With extremely fond memories of Waterloo, they plan to move closer to their children and grandkids, which will also bring them closer to their Alma Mater.

dave.winlow@vianet.ca

1973

GEORGE BEZAIRE (Mech '73) retired this year after a 42-year career that included working at Imperial Oil with some time spent at ExxonMobil.

georgebezaire@shaw.ca

1974

NORM GRANT (Civil '74) started the Rope Store in 2010 as a retirement project. The Rope Store is now a small manufacturer and retailer of marine ropes for the pleasure boating industry and ships rope all over the world.

norm_grant2005@yahoo.com



MIKE GURSKI (Arch '74) spent time in Bishkek, Kyrgyzstan, advising central Asian countries on cybersecurity. He is currently consulting on

anti-money laundering and writing a book on his time in a monastery in Sarrance, France as well as helping pilgrims on the Camino de Santiago.

BRIAN HYODO (SD '74) has spent the last year and a half apprenticing as a farrier. The work Brian describes as physical, but amazingly cerebral, combines forging, equine anatomy, horsemanship, and working under horses trimming and shoeing them.

1975

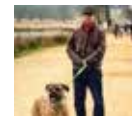
Class Reunion | 40 years
October 3-4, 2015

1976



ERIC JELINSKI (Mech '76) retired from Ontario Power Generation after 31 years. For the past six years, he's been teaching nuclear engineering and other

engineering courses at the University of Toronto and nuclear engineering at the University of Ontario Institute of Technology.



JOHN SAMUEL (SD '76) retired in 2012 followed by his wife Heather in 2014. www.gramachree.co.uk



BERNIE SANDER (MSci '76) developed and owns PiT-Stop, a registered trademark that stands for problem finding and

solving in teams. It is used annually with Fortune 500 customers worldwide and most recently with the nuclear sector's AREVA Installed Base group.

bsander@innovationtransfer.com

1977

MICHAEL MCCARTNEY (Chem '77) was a mechanical (HVAC) equipment salesman for a few years after graduation before working in mechanical contracting. He's now an independent consulting engineer.

MMcceng77@aol.com

BRUCE TIMMS (Civil '77) lives in St. Catharines where he was re-elected as regional councillor representing St. Catharines on the Council of the Regional Municipality of Niagara. He was also re-elected as chair of the Niagara Peninsula Conservation Authority.

CARL WEISSER (Elect '77) is the principal engineer at Honeywell Aerospace in Mississauga, ON.
carl.weisser@honeywell.com

1978

PAUL BUCKMAN (Civil '78) reports he is working in Tianjin, China as the resident engineering manager building modules for Chevron's Wheatstone LNG plant in Western Australia.
pfbuckha@bechtel.com



RAYMOND KEITH (Civil '78) is semi-retired from his one-person engineering firm and is currently doing contract civil, structural, transportation work for large energy companies.
rkeith7573@shaw.ca

IAN SMITH (Civil '78) is part of the Civil Engineering Institute in the School of Architecture, Civil and Environmental Engineering at EPFL. He's involved in research, teaching, collaboration with industry, looking for funding, sitting on committees and running a lab.



BRENT WALTERHOUSE (Mech '78) retired in 2008. He now enjoys spending time working out and on his automotive hobbies.

1980

Class Reunion | 35 years

October 3-4, 2015



JIM ESTILL (SD '80) reports that after spending five years in New York, he moved back to Canada. In December 2014, he opened DDE Medi, a search engine optimization company. The company currently has 14 employees.



AKBAR MANOUSSI (MSci '80) is a retired professor from the School of Business at the University of Ottawa and Carleton University. Recently, he presented research papers at Harvard University, University of Toronto and in Prague.

1981



MARCIUS CAIRNCROSS (Mech '81) is working for a small national oil company called PETROSA in South Africa as an oil and gas reservoir engineer specializing in well test analysis and numerical simulation.



PETER SEVILLE (Chem '81) retired in 2011 from a career in process troubleshooting in Holland. After touring Europe and the U.K. with friends, he moved to the Algarve for year-round mountain biking and surfing.



ROB SHAVE (SD '81) is retired and living "sustainably" with his wife, family and critters on 2.5 acres in Southamton, ON. His credo is "life is good — restore our environment and ecosphere."

1982

TOM DUEVER (Chem '82, '83, '87) reports that after a 24-year career as a faculty member at the University of Waterloo, he joined Ryerson University in Toronto as dean of its Faculty of Engineering and Architectural Science.

1983



STEVE MCINNIS (Chem '83, '85) has been retired since 2011. His volunteer activities include the Canadian Foodgrains Bank, literacy tutoring, a community choir and Habitat for Humanity.

1984



ANTHONY GREEN (Mech '84) was elected in 2011 as Americas Chair for the Institution of Mechanical Engineers covering Canada, the U.S., the Caribbean and South America. He was also elected as a committee member in July 2014 to

the American Institute of Aeronautics and Astronautics Space Automation and Robotics Technical Committee.

NEAL THOMAS (Mech '84) recently retired from the nuclear industry at CRL.
nthom@vianet.ca

1985

Class Reunion | 30 years

October 3-4, 2015

R. GLENN GIVENS (Chem '85) celebrated 23 years in 2015 as the owner of Givens Control Engineering Inc. He provides process control services, mainly to the paper industry.
www.givenscontrol.com



ROBERT PRAVATO (Elect '85) is a local asset manager at Ericsson in Ottawa taking care of finances and managing millions of dollars' worth of equipment.
Robert.pravato@ericsson.com

1987



DAVID SCOTT (Civil '87) is the founding partner and president of The Municipal Infrastructure Group Ltd, with its head office in Vaughan, ON. TMIG is a privately owned Canadian civil engineering consulting practice that

supports both the public and private sectors in the growth and well-being of the communities in which their people live and work.

dscott@tmig.ca

1988



JONATHAN MATTHEWS (Geo '88) joined Canada's Oil Sands Innovation Alliance in October 2014 as the director of the Tailings Environmental Priority Area. He leads a strong industry collaboration effort focused on continuous

improvement of oil sands tailings performance.

Jonathan.gregg.matthews@gmail.com



YURI QUINTANA (Elect '88, SD '90, '95) is a faculty member at Harvard Medical School and director of Global Health Informatics in the Division of Clinical Informatics, Beth Israel Deaconess Medical Center in Boston, MA. He is

working on global programs in diabetes and cancer.

yuriquintana@alumni.uwaterloo.ca

1989

JOHN COLEMAN (Elect '89) and **KATHY LANZA** (Civil '89) live in Manhattan. John started his consulting practice seven years ago and provides services to the power industry focusing on co-generation projects in the 0-10 MW. Now empty nesters, John and Kathy enjoying skiing in Vermont, golfing in Burlington, ON, and everything that NYC offers.

kathy@jacolemanllc.com

john@jacolemanllc.com



ALLAN ESSER (SD '89) is a full-time professor at George Brown College in the school of business where he is responsible for creating consulting projects for his students to help them gain real-world experience.



ZOUBIR LOUNIS (Civil '89, '93) has been working at the National Research Council of Canada in Ottawa for the last 18 years where he is the senior research officer.

Zoubir.Lounis@nrc-cnrc.gc.ca

1990

Class Reunion | 25 years

October 3-4, 2015



WILLIAM CHIANG (Comp '90) has been running an executive search firm specializing in high-tech professionals based in Hong Kong since 2005. He is currently working on a project to help high-tech startups create their presence in Asia.

hk.linkedin.com/in/williammkchiang

DIRK KROLL (Mech '90) lives in Toronto with his wife Susan. They represent W&H Germany, a world leader in film extrusion machinery and printing for flexible packaging markets, across Canada.

PAUL MARTIN (Chem '90, '91) is celebrating 19 years at Zeton this year, designing and building pilot plants in Burlington.



JAMES MOREHEAD (Comp '90) says thanks in part to his Waterloo computer engineering degree, he is now working as a product manager for Google News in Mountain View, CA.

morehead@google.com



SARAH WELLS (Civil '90, '94) was recently appointed executive director of the Transportation Association of Canada. Sarah is enthusiastic about leading the association into its second century.

swells@tac-atc.ca

1991



GREG COOK (Civil '91) is a senior engineer, project manager with C.C. Tatham and Associates Ltd. in ON. gcook100@hotmail.com

MICHAEL GRASLEY (SD '91) has worked at Callisto Integration for 22 years. Recently, he became responsible for the company's business development activities in addition to his role as director of consulting.

Mike.Grasley@CallistoIntegration.com



RAY JENNE (Geo '91) has worked as a petroleum engineer drilling, testing and completing wells for HKN Energy in Erbil, Kurdistan Region of Iraq

for the past three years.

rjenne@msn.com



DAVID ROSS (Comp '91) reports he's been the CEO of Ross Video since he graduated 24 years ago. The company, which produces and distributes video and audio signals, employs about 600 people.

dross@rossvideo.com

1992

ROB GORBET (Elect '92, '94, '97) is the chair of the University of Waterloo's Department of Knowledge Integration. KI (ki.uwaterloo.ca) provides students with an interdisciplinary education, an opportunity to specialize in an area of their choice, and design as a framework for solving big interdisciplinary problems.

rbgorbet@uwaterloo.ca



STEVE HOLLIS (Mech '92) reports he is now full-time CEO at Korner, an inexpensive and easy-to-use home security system based on a patent-pending sensor approach.

stevehollis@kornersafe.com

1994



OMID AFNAN (Comp '94) is working as a principal PM developing distributed computation systems powering big data analytics services on Azure. He is based in Microsoft's Beijing, China R&D Center.

omafnan@microsoft.com



MARCELO S. ALENCAR (Elect '94) has just published his 17th book entitled *Information Theory*. He reports that a co-operation has been established between his institute, Institute of Advanced Studies in Communication — Iecom in Campina Grande, Brazil, and the University of Washington, Tacoma.



BRIAN WHITE (Comp '94) reports he is back from spending five years in Switzerland and is currently a developer for Chrome (desktop and Android) working out of Google Montreal.

1995

Class Reunion | 20 years

October 3-4, 2015



DINAR SOMANI (Elect '95) and **NISHAD ALANI** (SD '95) moved to Tokyo from Hong Kong in 2013. The impetus for the move was Nishad deciding to leave Starbucks for the Japanese restaurant group Skylark Co. They still have a home in Seattle and maintain strong ties to both Canada and the U.S.



Local history inspires logo design

Sandrina Dumitrascu (BAS (Hons) '06, MARCH '09) is adding her own twist to the growing hard cider industry as part-time creative director for KW Craft Cider, a new startup that uses local apples harvested in the Waterloo Region.

It's a turn that has even Sandrina surprised.

As an OAA intern architect, urban and landscape designer with Toronto-based firm regionalArchitects planningAlliance, she's more accustomed to envisioning public spaces and buildings than logos. But when the cider company's founder (and her life partner) Michael Kramar, asked Sandrina to develop the design, she gave it a shot.

She studied Waterloo Region's manufacturing to high-tech history to create the industrial yet modern look, taking inspiration from old, local factories, such as the Lang Tanning building signage. It was a research process she learned as a Waterloo School of Architecture undergraduate and master's student.

"At Waterloo, we were always encouraged to understand the history and culture of a place. So creating this logo was very similar to working on an architecture project and understanding how a building fits into a physical and cultural context," she says.

Even so, there was one major difference to contend with: tight timelines.

"I started designing the logo in the fall of 2014 and then in February 2015 it was printed on 3,300 bottles." she says. "Seeing my ideas turn into a product that quickly was definitely rewarding!"

<http://kwcraftcider.com/>



Grad's career takes flight

Those flying into Iqaluit, Nunavut will notice big changes when they touch down in 2017. Think new taxiways, expanded aprons, as well as a new and larger air terminal building.

They'll have **Leslie Merrithew (Civil '11)**, in part, to thank for it.

The Waterloo Engineering graduate is a main civil designer on the massive, \$300-million airport reconstruction project that started in 2012. Leslie, a Stantec employee, provided the primary civil drafting and design to the project team and co-ordinated with architects and engineers across North America.

She's happy to be working on her home turf. Born and raised in Yellowknife, she attended Waterloo after spending a year at an Alberta university and in France. In the end, she chose Waterloo, calling it "the best school in Canada."

Leslie says she's able to draw a straight line between her education — plus her time on the 2011 Waterloo Concrete Toboggan Team — and her successes today, which include the Stantec One Team Award of Excellence. She's also recently been nominated as a councillor for the Northwest Territories & Nunavut Association of Professional Engineers & Geoscientists.

"All of that comes from relationship and interpersonal skills, the way I perform my work, and my integrity," she explains. "A lot of that comes from my time at Waterloo."

1996

KARIM K. HIRJI (MSci '96) is an executive principal for IBM Software — Analytics Group, focusing on the North American Region. He lives in Toronto with his wife and two kids. karimhirji@alumni.uwaterloo.ca

1997



LEIF BLOQUIST (SD '97) is a senior software systems engineer at MDA Space Missions, makers of the Canadarm. He also produces electronic dance music and consults in interactive and wearable technology and its application to performance art. leif@schemafactor.com



MICHELLE COULOMBE (nee Stinson) (Civil '97) reports she is spending a year with her family living in the south of France and enjoying life in a different culture.

2000

Class Reunion | 15 years
October 3-4, 2015

2001



ALIM SOMANI (Elect '01) was named as one of Canada's Most Admired CEOs for 2014 by Waterstone Human Capital. Alim continues to lead his company, Infusion, through a period of substantial growth and record-breaking revenue. Infusion has more than 700 employees throughout the world, a 25 per cent increase from 2014.

2002



POUYAN "LEON" FARASATI (Comp '02) is director of product management at Qualcomm Technologies, Inc. where he is responsible for enabling

and scaling Qualcomm® Snapdragon™ processors into new markets such as robots and drones, medical devices, media applications and more.

2003



STEFANO DI GIULIO (Arch '03), of sgd design, is celebrating over 11 years of business. sgd design is an architectural consulting firm of custom homes and additions, providing full design and building permit services.

2005

Class Reunion | 10 years
October 3-4, 2015

2006

MICHELE BRISTOW (nee Heng) (SD '06), a Waterloo systems design engineering lecturer, invites her classmates to become mentors to systems design engineering undergrads. She encourages anyone who is interested to contact her for more information. mtheng@uwaterloo.ca

ROBIN R. CHAUHAN (Comp '06) reports he is a SaaS founder in the transportation software space. He lives in a forested village near Vancouver, BC with his wife and sons. robin@pathwayi.com

VICTOR LAM (SD '06) co-founded Innopage Ltd, a mobile application development startup. He is now focused on building the app Ticker (www.getticker.com), a stocks portfolio manager for investors on the move. victor.lam@innopage.com



HOWARD LI (Elect '06) is currently working on an underwater robot for environment monitoring at EPFL in Switzerland.



ERICK MATTHIESEN (Elect '06) finished managing the construction of a 99.1 MW wind farm, changing roles from site manager of a 270 MW wind farm. Erick would like to expand public understanding of wind farms as

a low-cost energy source for the future.

ematthiesen@gmail.com

2007



CHRISTINA KLEIN (Enviro '07) has a new position with the MTO Eastern Region as head of traffic. She welcomed her second child, Edward, in February 2015.



ARTHUR KONG (SD '07) is pursuing a Master of Public Administration degree at the London School of Economics and Political Science specializing in public policy and management. After graduating from Waterloo, Arthur spent

seven years as a public infrastructure engineer and international development consultant with Engineers Without Borders Canada in Zambia.

ackong@gmail.com

2008



OMID AMINFAR (Mech '08) is the CEO of Inoventive, a network and marketplace for hardware startups. Before starting Inoventive, he worked for five years in the aerospace industry both as an engineer and a project manager.

omid.aminfar@gmail.com



LUC GALLANT (Comp '08) has worked for six years at Syncrude Canada Limited as a generator engineer in the utilities department helping make oil from oil sands.

lucgallant@gmail.com



HANIF KHALILI-POOYA (Comp '08) is now in corporate/software sales where he is experiencing great success with his engineering, consulting and entrepreneurial backgrounds.

hanifkp@gmail.com



ANDREW LEE (Civil '08) reports he quit his engineering job to travel through India and Nepal for five months. He's currently in Europe enjoying the culture and visiting friends.



HASSAN NASIR (Civil '08, '13) is working as an assistant professor in the department of civil engineering at King Abdulaziz University in Jeddah, Saudi Arabia.

hnasir1@kau.edu.sa

MD. SAFIUDDIN (Civil '08) has been a faculty member in the School of Architectural Studies and Angelo del Zotto School of Construction Management at George Brown College since 2013. He teaches in the Bachelor of Technology (construction management) and Civil Engineering Technology programs.

2009



JAMSHID ABOUEI (Elect '09) is an assistant professor in the ECE department of Yazd University in Iran.



SHAWN GEORGE (Chem '09) is working at HTS Engineering in Kitchener. Shawn and **EDWIN LIOU** (Mech '10) have started a service to help students with career planning.

<http://coopinterview.com/>



JOHN HEXAN (Comp '09) has been employed since graduation at Sandvine Inc., Waterloo, working as a developer on the internet traffic simulation team.

john.hexan@gmail.com



JASON JIANZHONG LI (SD '09) reports that 365 prints from his 'GO! GO! GO!' series are being exhibited at Emerging Young Artist 2015. 'GO! GO! GO!' captures Jason's daily commuting experience on GO Transit.

<http://lijzlab.com/>



ALEX SCOTT (Elect '09) will be joining Amazon's commercial leadership program after completing his MBA at London Business School.

afscott@gmail.com



CLAIRE ZHAO (SD '09) is completing her PhD in biomedical engineering at Johns Hopkins University in Baltimore, MD. She's looking forward to using computational modeling, statistical analysis and engineering approaches

to provide innovative solutions.

clairezhao1@gmail.com



Spinning music innovation

It's an understatement to say Vancouver-based Monstercat has a strong fan base. In March 2015, the startup that promotes independent musicians online, hit the three million YouTube subscriber mark. And more than a dozen fans sport Monstercat tattoos — the permanent kind.

How does the company create such extraordinary loyalty? According to **Ari Paunonen (MGMT '12)**, co-founder and chief operating officer, having a young audience helps.

"I think our transparent, authentic approach to the music industry really resonates with them," he says. Unlike traditional labels that offer artists long-term ironclad contracts and lackluster royalty payment schedules, Monstercat pays monthly and signs artists for single releases only.

Ari, a graduate of the first Waterloo management engineering class, launched Monstercat with fellow Waterloo graduate Mike Darlington in 2011. In their last term at Waterloo, they moved to the Accelerator Centre to take advantage of the business incubator's services and mentors.

Ari says it's his engineering education that gave him the foundation to grow the startup. Originally created to share music with friends, it's now a 27-employee business.

"Waterloo is where I learned to solve extremely challenging problems," he says. "It gave me what I need to help run an efficient business and turn Monstercat into a global brand."

www.monstercat.com

2010

Class Reunion | 5 years

October 3-4, 2015



HUSAM AL-ANKAR

(MSci '10) is a senior project manager at TD bank. He says looking back at the past few years since landing in Canada as an

immigrant, he realizes joining Waterloo's management sciences master's program was the right strategic decision and a door opener to the Canadian market.



RAZA AZIM (Chem '10)

is working as a process engineer with Tenneco and is registered as a PEng with PEO. He is working on a

master of environment and business degree part time at Waterloo.



BRENDEEN GOMEZ (Elect '10)

joined Telus' technology strategy team for mobile devices and applications in 2014 after completing an MBA at

the Rotman School of Management.

brندن.gomez@gmail.com



EDWIN LIOU (Mech '10)

is working at Spartan Controls in Calgary.

Together with **SHAWN GEORGE (Chem '09)**, they've started a service

to help students with career planning.

<http://coopinterview.com/>



JOHNNY LOH (Mtron '10)

founded a video production agency based in Toronto called Morning Owl. The company is looking to work with engineering

startups to elevate their brand. Past clients include Coke, Kobo and Deloitte.

www.morning-owl.com

2011

ARI LAOR (Elect '11) reports that he still has a desk within Waterloo Engineering. He's now working on a master's degree in mechanical engineering.



DANIEL LEWIS (Nano '11)

is at the University of Cambridge studying technology policy to learn how to address complex social challenges involving

science and technology, and enhancing entrepreneurship infrastructure.



ROLAND LI (Elect '11)

has been working as a software engineer at Wind River System since September 2014. Previously, he was a software engineer at Plexus

Controls Inc., a startup company.



BEHRAD MEHRAIE (MSci '11)

is a PMP certified senior project/program manager (contractor), managing IT infrastructure projects. His latest contract was with

Cisco Systems Canada, where he managed the migration of telephony and call centre infrastructure of the Air Canada Centre to the latest Cisco Collaboration technology.



FAIZAN SHEIKH (Mtron '11)

founded Avidbots with **PABLO MOLINA (Mtron '11)**. Avidbots makes commercial floor cleaning robots to clean large

commercial spaces.

<http://www.avidbots.com/>



JONATHAN THOMAS

(Comp '11) has been working since graduation as a hardware engineer at Ciena Ottawa on the next generation of optical

transport technologies.

jthomas@alumni.uwaterloo.ca

2012

GREG GAMBINO (Geo '12) recently completed a MAsc in civil engineering at the University of Toronto and is continuing his studies as a PhD student. He is researching how to apply reliability-based design to rock engineering problems.



ALJOSA KRAJISNIK (Mech '12) has accepted an offer of admission to Wilfrid Laurier University's MBA program. General Motors has given him an educational leave to complete the program before returning to the company for a promotion in Texas.

DAVID NGUYEN (Mtron '12), who is engaged to be married, says his cosmetic soap startup is starting to get some traction.



BRYAN PARATIAN (Elect '12) is the lead hardware developer at Prodigy, designing wireless biometric sensors and toys for its growing user base. bryan.paratian@prodigygame.com



AAREET SHERMON (Nano '12) is working on a project called Webscience to help non-profits and social impact organizations with their software quality assurance needs. aareet@webscience.ca

2013



ILIA BARANOV (Elect '13) works at Clearpath Robotics as the lead engineer on the PR2 team, which allows him to use the skills taught at Waterloo. Ilia is also partially responsible for technical marketing at the company. ibaranov@clearpathrobotics.com

BRANDON VAN ASSELDONK (Mech '13) reports that after working for Apple in California as a process engineering for one year post graduation, he's returned to Toronto to study medicine at the University of Toronto. bvanasseldonk@gmail.com

2014



MINA ABDELMALEK (Nano '14) works as a technical marketing engineer at Mentor Graphics. Mina_abdelmalek@mentor.com

JELANI BAPTISTE (Chem '14) is a production supervisor at Nestlé Waters in Guelph. He works on projects to improve the operation of the bottling plant and to ensure it meets 5S criteria.



RACHEL BARTHOLOMEW (BET '14) recently started CyberNorth Ventures Inc., a Waterloo-based private venture capital fund that invests in local technology startups and assists the aspiring entrepreneur in building the next big innovative idea. rachel@cybernorthventures.com



MACK BHATIA (MMSc '14) reports that after working with BlackBerry, he's now a digital marketing and strategy lead at Orion Travel Insurance, a new business venture of two CAA clubs.

DMITRY BLOTSKY (SWE '14) works at Microsoft and is a part-time graduate student at Waterloo. dplotsky@uwaterloo.ca



JAN KULINSKI (SD '14) works as VP of Engineering at MetricWire, a startup in the Velocity Garage. He says his company is building a platform for researchers of every persuasion to use for collecting and analyzing data. jan.t.kulinski@gmail.com

JACK LIAO (SWE '14) is a TA and a candidate for a master of science in computer science degree at Carnegie Mellon University in Pittsburgh.



ALEKS POLDMA (Mech '14) runs the startup Hydrated World with fellow classmate **SPENCER KELLY** (Mech '14). With every purchase of Hydrated World's apparel, the company provides clean drinking water to people in need. www.hydratedworld.com



BRENDON SIMON (Civil '14) is a project engineer intern for the Region of Waterloo's ION Rapid Transit Project. He is currently working on the construction phase of the project. basimon@uwaterloo.ca

In Memoriam

The Faculty of Engineering expresses its deepest condolences to the family and friends of the following graduates:

- | | |
|---------------------------------|--------------------------------------|
| Charles Ashley (Mech '70) | Hal Lippert (Arch '76) |
| Grant Barker (Chem '89) | Jim MacKeracher (Mech '72) |
| John Bennett (Arch '71) | Grant Malinsky (Civil '66) |
| Kevin Bergevin (Chem '81) | John Martin (Mech '68) |
| Eric Bierman (Elect '72) | Craig McEwen (Mech '82) |
| Keith Brooks (Mech '83) | Gordon Miller (Mech '75, '77) |
| Dave Burrows (Elect '83) | John Monkman (Civil '70) |
| Don Carr (Civil '88) | Scott Moss (MSci '75) |
| David Chan (Civil '80) | Ron Moulton (Civil '72) |
| Jaisal Chauhan (Elect '08) | Frank Nightingale (MSci '73) |
| Uldis Cirulis (Elect '70) | Chukuma Nwachuku (Civil '66, SD '69) |
| Roman (George) | Dave Pounder (Civil '62) |
| Daszkowski (Mech '73) | Brian Prescott (Mech '65) |
| Christopher Dawkins (Civil '75) | Terry Rahmer (Elect '66) |
| Michael Doyle (Elect '65) | Jackie Rehkopf (Civil '88, '94) |
| Bruce Dykes (Civil '74, '79) | Richard Rhodes (Elect '84) |
| Hedley Dykes (MSci '67) | Jeffrey Rothermel (Arch '75) |
| Bruce Field (Mech '90) | Hans Schmah (Elect '66) |
| Jack Henderson (Elect '78) | Howard Schneiderman (Elect '73) |
| Richard Hue (Civil '75) | Jag Tandon (Elect '69, '72) |
| Radu Iorgulescu (Elect '94) | Geza Tormasi (Arch '90) |
| Erl Jansson (Civil '70) | Robert Tribe (Civil '66, MSci '69) |
| APJ Abdul Kalam (DEng '10) | Ken Vince (Mech '82) |
| Sasha Kasapinovic (SD '99) | Ken Wilkins (MMSci '88) |
| Vir Khanna (Civil '76) | Geoff Willard (Elect '75) |
| Jim Knight (Mech '70, '72) | Brian Wing (Chem '70) |
| Bill Kung (Elect '90, '92) | |



Greetings Alumni

You may have noticed that WEAL has a new look that closely resembles the design of our new Educating the Engineer of the Future campaign. One of the priorities of the campaign is Engineering 7, an outstanding facility that will help us advance our unique educational experience. I hope you'll join us at the groundbreaking of our newest building on November 12.

To find out about other significant events, developments and news follow us on social media. It's an easy way to stay connected and take part in the Waterloo Engineering conversation. You can like our Facebook page, join your classmates in a group of alumni on LinkedIn, subscribe to our YouTube channel and follow us on Twitter. Feel free to share your Waterloo experiences and photos as well.

As always, I'm looking for volunteers to become mentors for our students, reunion class representatives, as well as guest speakers in our classrooms or to be profiled in our publications. If you know of a deserving classmate, please consider nominating that individual for one of our Alumni Achievement Medals.

I look forward to seeing you at one of our many upcoming events. If you're ever on campus, please stop by my office to say hello — I'll be happy to treat you to a cup of coffee and show you around our newest buildings.

Sincerely,

Gosia Brestovacki

gosia.brestovacki@uwaterloo.ca

Senior Alumni Officer

Faculty of Engineering

uwaterloo.ca/engineering/social-media

Upcoming Events

OCTOBER
3/4
2015

50-Year Reunion, Class of 1965 and 25-Year Reunion, Class of 1990

Time: Various, all day

Locations: University of Waterloo and Waterloo Inn

Feel like you're a student again by attending a lecture from the Back-to-the-Classroom lecture series, the Dean's lecture or the Reunion Keynote lecture. Explore the campus by attending the Open House and joining one of the tours. Then, celebrate your 25th or 50th anniversary in style with a special Iron Ring Ceremony (obligation renewal) sanctioned by the Iron Ring Wardens of Camp 15 Waterloo and followed by the Reunion Dinner at the Waterloo Inn. The next day, the reunion festivities will conclude with a brunch on Sunday.

Reunion for the Classes of 1970, 1975, 1980, 1985, 1995, 2000, 2005 and 2010

Time: Various, all day

Locations: University of Waterloo and Waterloo Inn

This is your chance to learn something new — attend a lecture from the Back-to-the-Classroom lecture series, the Dean's lecture or the Reunion Keynote lecture. Explore the campus by attending the Open House and one of the tours. Join your classmates at the Bomber for an Oktoberfest dinner and an after-party. Reunion festivities wrap up with a brunch on Sunday.

Register for reunion events at:

uwaterloo.ca/engineering/alumni/reunions

For the latest Waterloo Engineering alumni events, visit uwaterloo.ca/engineering/alumni

NOVEMBER
12
2015

Engineering 7 Building Groundbreaking

Time: 2 p.m.

Location: University of Waterloo

Join classmates, professors and students as dignitaries break the ground to start the construction of Engineering 7, the newest Waterloo Engineering building.

NOVEMBER
20
2015

Annual Alumni Dinner in Hong Kong

Time: Evening

Location: Hong Kong, China

Meet up with your University of Waterloo classmates at this annual alumni event in Hong Kong.

JANUARY
22
2016

Waterloo Engineering Alumni Ski Day

Time: 8:30 a.m. – 5:30 p.m.

Location: Osler Bluff Ski Club,

Town of the Blue Mountains (near Collingwood), ON

Join classmates at this breathtaking private ski resort to ski and snowboard for the day followed by an après ski.

OCTOBER
1/2
2016

Waterloo Engineering Class Reunions in 2016

Time: Various, all day

Location: University of Waterloo

and Waterloo Inn

The Classes of 1961, 1966, 1971, 1976, 1981, 1986, 1991, 1996, 2001, 2006 and 2011 are invited back to campus to celebrate your reunion. Mark your calendar!

Reunion Class Reps Wanted!

Volunteer to be a Reunion Class Rep for your upcoming class reunion and be part of the action! Register today by emailing engineering_alumni@uwaterloo.ca or calling the Alumni Officer at 519-888-4567, ext. 36838.



Organic Launch

Growing a Healthy Startup

When Emily Peat was a second-year engineering student, she was as likely to be found with a carload of organic veggies as an armload of textbooks. But unlike the books, the greens weren't for Peat — they were for her startup's clients.

"There were days when I would literally drive out to a farm in the morning, pack the car and go to class," Peat says. The new Waterloo civil engineering alumna is the first to graduate with engineering's option in entrepreneurship launched in September 2014 by the Conrad Business, Entrepreneurship and Technology Centre.

Peat founded London, Ontario-based EcoPlace Organics in 2012 during an Enterprise Co-op (E Co-op) term. Run through the Conrad Centre, E Co-op allows students to start a business instead of working a traditional co-op job.

She began her business as a response to visiting farms with her parents who owned a vegetable share. Peat loved small-scale farming, but realized how difficult it was for farmers to make it pay off. To help them, she removed the burden of marketing and distribution by taking orders online, packaging the organic produce and delivering it herself.

Not only was the food natural, Peat was a natural at business too, placing first in the University of Waterloo's Nicol Entrepreneurial Award Competition, winning the national award, earning a Nigel Stokes E-Launch Scholarship, and capturing a \$20,000 prize in the Ontario Centres of Excellence Social Enterprise Student Competition.

A greener way of doing business

In 2014, she merged her company with Eat Green Organics, also located in London. Peat says the move means fewer trucks on the road, a smaller carbon footprint and a larger grocery selection.

Although some might question how a civil engineering degree translates to organic product distribution, Peat points out the connections, including understanding soil mechanics, water quality and even transportation logistics.

"I appreciate aspects of organic farming from the perspective of a civil engineer," she says. "And with my entrepreneurship education I know any business has to constantly evolve."

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WATERLOO | ENGINEERING

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