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Since 2004, the annual Queen's School of Computing Newsletter has been a wonderful vehicle for highlighting the achievements by members of the QSC family, its students, staff, faculty, alumni, and friends. In it we celebrate successes, distinctions, and milestones. This issue is no exception. I invite you to read it and visit the School’s web page cs.queensu.ca in order to learn even more.

You will read about our brilliant undergraduates whose excellence goes beyond the classroom, from running Summer Coding Camps to shining at the Microsoft Imagine Cup competition.

You will discover how our graduate students and faculty are breaking new ground in various areas of research, from inventing a foldable smartphone to developing algorithms for the diagnosis and treatment of a number of diseases.

You will find out about the new courses offered by our faculty members, such as Fuzzy Logic and Deep Analytics Using Watson.

This year, the QSC received a record number of applications from high school students (close to 1,500) who competed to fill 150 first-year positions. In September, we welcome the undergraduate class of 2020. What marvelous future awaits its members! Upon their graduation four years from now, the careers that these students will embark on have yet to be invented. Computers are changing the world in which we live in profound and astonishing ways. It really is an exciting time to be a computer scientist!

This is my last View from Goodwin Hall. My term as Director of the QSC, which began in July 2007, ends in June 2017. It has been a tremendous honor and a truly distinct privilege to serve the students, staff, and faculty of our beloved School. Working every day with such an exceptional group of individuals has enriched my life a great deal. I wish you all the best of everything.
On behalf of GCS, it is with great pleasure that I say HELLO!
The Queen’s Graduate Computing Society (GCS) just wrapped up another busy year of events, from our edge-of-your-seat game nights, relaxing pub nights, to pumpkin carving with the Women in the School of Computing (WISC), and our most anticipated Queen’s Graduate Computing Society Conference (QGCSC). This was the 7th installment of our annual conference featuring graduate students and various guest speakers. This conference is a great opportunity for students to share their work and to discover what exciting things our peers have been up to! QGCSC is entirely run by volunteers and members of the GCS Society’s 175 Years of Service Initiative, for which Queen’s students will aim to complete a collective 175 years’ worth of hours volunteering throughout the 2016-2017 year.

Our website (compsa.queensu.ca) has been redesigned, so be sure to check it out! We will be selling plenty of Computing-themed merchandise on our new online store, available through our website, which you can pick up during Homecoming.

This year, COMPSA is focusing on transparency, representation, and student life. Some of our plans to do this are to revamp our website, create a newsletter, summarize General Assembly minutes, hire first year interns, bring back COMPSA intramural sports teams, and provide travel bursaries for hackathon attendees.

This year, we welcome the Computing Class of 2020. Our Tech Committee worked tirelessly over the summer and prepared yet another fantastic Orientation Week. Classic activities like the Summerhill barbecue integrated these new students into our community while building lasting friendships between them.

New this year, first years volunteered their time to RKY Camp, a non-profit organization that provides summer camp programming to children from all backgrounds, as part of a charity event during Orientation Week. This charitable aspect fits well with the Alma Mater Society’s 175 Years of Service Initiative, for which Queen’s students will aim to complete a collective 175 years’ worth of hours volunteering throughout the 2016-2017 year.

To celebrate the incredible accomplishments of our graduates, we are hoping to run a Queen’s School of Computing Summit which will be attended by current students, alumni, professors, and more. There will be panel sessions made up of QSC alumni, a showcase of current students’ research and projects, and a social afterwards. If you are interested in participating, please contact us at summit@compsa.queensu.ca.

I am honoured to be working alongside such dedicated, incredible individuals to collectively serve the Queen’s Computing community. Here’s to yet another great year! I’ll see you at Homecoming at the QSC Summit.

Aniqah Mair
COMPSA President

Emese Somogyvari
GCS VP - Operations

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In addition to providing resources and representation, GCS exists to make student life within the School a wonderful experience, and we continually welcome input, suggestions, and questions regarding our events, how to get involved with GCS, and graduate life in the School.

We are especially looking forward to welcoming our new graduate students and hope to meet you all during our upcoming festivities.
In 2010, the Women in the School of Computing held the first Ontario Celebration of Women in Computing (ONCWIC) event in Kingston. In January, 80 members of the School were bussed to Ottawa to attend the inaugural Canadian Celebration of Women in Computing (CAN-CWiC) conference. This national conference represents an amalgamation of three past ACM-W Celebration events: the Ontario Celebration of Women in Computing, the Atlantic Celebration of Women in Computing (held in 2012 and organized by Dr. Laurie Ricker, a School of Computing grad) and the Pacific Northwest Celebration of Women in Computing (held in 2014 by UBC).

CAN-CWiC was attended by more than 500 delegates from nine Canadian provinces. In addition to the QSC students, there were numerous QSC alumni present representing the various companies and universities where they now work. The Queen's presence was clearly visible (and audible). Dr. Amber Simpson, a QSC graduate (now at Memorial Sloan Kettering Cancer Center in NYC) gave an interesting talk on Medical Computing.

Alumna Dr. Kelly Lyons (now a professor at U of T) inspired attendees as a panelist on the concluding panel entitled “A Day in the Life of Women in Computing.” Wendy Powley, the conference founder, was a key organizer along with the Conference Chair, Dr. Catherine Mavriplis from the University of Ottawa. Debby Robertson was on hand to speak with potential graduate students at the career fair. Suchita Ganesan presented her research work in the Graduate Forum and tied for second prize. Congratulations, Suchita!

CAN-CWiC 2017 will be held in Montreal in fall 2017. If you or your company would like to be involved, please contact us at can-cwic.ca! A huge thank you to all of our enthusiastic participants and to the QSC for sponsoring the conference in order to make it possible for so many of us to attend!
Do you remember your first exposure to computer science? The time you realized that computing isn’t just for data-miners or super-nerds? The moment you coded your first program? For the dozens of kids that attended computer science workshops at Queen’s this summer, we hope that we nailed that first exposure.

In April of 2016, Professor Wendy Powley of the School of Computing made a call for students interested in a mentorship opportunity. Powley had heard of the Google IgniteCS program, and didn’t want to miss such a fantastic opportunity for computer science outreach. The IgniteCS program provides funding and resources for groups of post-secondary students to plan and execute a mentorship program. A minimum of five undergraduate students must apply, and can be granted up to $10,000 to run a local, ongoing mentorship program. Led by graduate student Suchita Ganesan, seven eager Queen’s students applied for the program and received $7,000 to implement their ideas.

The group decided to run a series of free workshops in July for youth ages 12-17. This age bracket is especially ideal for outreach, as many of these students are in a position to choose computer science as an elective in high school, or to pursue it in post-secondary. Of the seven students, undergraduate students Diana Balant and Diana Dumitrascu took their program to their hometown of Newmarket and ran a week-long workshop for nine students. The remaining five students (Suchita Ganesa, Lydia Noureldin, Daisy Barrette, Mary Hoekstra, and Kyle Delaney) planned and executed two weeks of workshops in Queen’s Walter Light Hall with over 40 students. The workshops were designed to introduce students to a variety of programming topics, including game design, web design, app invention, creative computing, and text-based programming. The final two days gave the students an opportunity to choose the topic they liked best and create a project. Finished projects included Python adventure games, sellable apps, and professional-looking websites.

The feedback from students was overwhelmingly positive, with students noting that they feel more informed on the topic of computer science, and that “it could be a great topic to study later in life.” We planted the seed and we really hope it grows.
The Human Media Lab was in the news this year with several of their projects, including BitDrones, ReFlex, and HoloFlex.

BitDrones are a swarm of nano quadcopters that allow users to interact with a virtual reality. Described as the first step in interactive self-levitating programmable matter, BitDrones come in 3 forms: PixelDrones consist of an LED light and small display; ShapeDrones (seen below) consist of an LED surrounded by a mesh cube; and DisplayDrones feature an Android smartphone base with a touch-sensitive curved display and front-facing camera.

The group demonstrated a number of potential applications for BitDrones. In one scenario, PixelDrones were used to browse a file system. Another scenario shows ShapeDrones being used for 3D modeling. The model can be resized and rotated by dragging two of the drones together. The rest of the drones will follow to maintain the shape of the model. DisplayDrones can be used for collaborating on the model through video conferencing. The remote user can even manipulate the model remotely and have it be reflected by the BitDrones.

Of course, the lab’s work with flexible smartphones continues with ReFlex. ReFlex is a flexible wireless smartphone that uses bend input for various interactions. Using bend sensors behind the display, the phone can be bent back to simulate flipping the pages of a book. Haptic feedback and sound cues give users the sensation of the pages flipping through their fingers. Another demonstration shows how the popular game Angry Birds can use the device. Bending the phone backwards stretches the slingshot, making the sound of an elastic band.

Building on the ReFlex, the group unveiled the HoloFlex, another flexible smartphone that uses motion parallax and stereoscopy to display 3D images for multiple simultaneous users without glasses. In this iteration, they demonstrated how bending interactions could be used to control objects in 3D space. While touch gestures can move objects left, right, up, and down, bending the phone allows the user to move objects in and out along the z-axis.

More information on these projects and more can be found at www.hml.queensu.ca.
Once again, two teams from Queen's Computing made it to the semifinals of Microsoft’s Imagine Cup competition: Team Dabo made up of Ali Khokhar (Commerce), Alex Adusei (Software Design), Enoch Tam (Software Design), and Steve Emmanuel (Software Design); and Team FuelE.co made up of Scott Killeen (Software Design) and Will Thompson (Computing, Physics).

Dabo is an online platform to crowdsourcemarketing for small charities. Charities post about the work they’re doing, and Dabo amplifies work being done in certain areas through geo-mapping. Their goal is to “create a global community that ignites, supports, and broadcasts social change to ultimately pave a road for the new generation of action-takers who are energized by the idea of helping others.”

FuelE.co is a Windows app that uses your car’s onboard sensors to track and display fuel efficiency data in real time. The app calculates a score based on speed and fuel consumption and sets personal goals based on your usage and the car’s manufacturer. The group hopes to release the app in September.
Kingston and the Islands MPP Sophie Kiwala visited Queen's in August to announce $2.8 million in funding for the university from the Ontario Research Fund. Among the 15 awards announced were two Small Infrastructure Awards for the School’s own Qingling Duan and Gabor Fichtinger. The announcement was made in the 6th floor lobby of Goodwin Hall.

The Small Infrastructure Award is awarded to research institutions to help support infrastructure needs like new lab equipment. They are awarded based on the quality of the research, the ability to attract high quality researchers, and the potential benefits to Ontario. The award comes from two places: 40% from the province, and 40% from the Canada Foundation for Innovation. (The remaining 20% must be funded through grants.)

The announcement was followed by a tour of the Perk Lab where students had the opportunity to show Ms. Kiwala the projects they are working on. One of these students was Eden Bibic, a high school student working in the lab for the summer.

“We are proud to invest in the ground-breaking, world-class research being conducted at Queen's University,” Kiwala said. “Our researchers are pivotal to building a knowledge-driven economy in Ontario, one that will draw investment and strengthen our province’s competitive edge.”

Dr. Fichtinger’s award will be used to fund an intelligent knife (or iKnife) - a medical tool invented at Imperial College (UK) that tests the tissue it comes in contact with for cancer cells. As brilliant as it is, the iKnife has a basic limitation: it has no spatial awareness. The Perk Lab will attempt to eliminate this weakness by using a method they invented that can significantly reduce surgical failures while minimizing the amount of healthy tissue resected. In essence, it is a miniature GPS that uses real-time electromagnetic spatial localization to navigate the surgical tool relative to the tumor, using ultrasound imagery as a roadmap.

Dr. Duan’s award will aid in the establishment of the Queen's Computational Genomics Laboratory (QCGL) and equip it with high-throughput genomics equipment for quantifying nucleic acids and proteins, molecular biology essentials for processing biological samples and culturing cell lines, and a data analytics core for high-performance, biomedical computing. The primary objective of the QCGL is to identify novel biological networks that regulate variable response to drug therapies or determine risk of multifactorial diseases (e.g., asthma, chronic obstructive pulmonary disease, hypertension). The potential impact of this research is to facilitate the development of clinical assays for improved disease diagnosis and replace the current trial-and-error paradigm of drug treatment.
From punch cards to mainframes to Unix systems, Janice Glasgow has seen first-hand how computing has changed exponentially over the last 45 years.

The change that pleases her the most, however, is seeing the strides that have been made to get more women into the field of computing. She points to the School of Computing’s record in attracting increasing numbers of female undergraduate and graduate students over the years, due in large part to the work of Mary McCollam and Wendy Powley.

Dr. Glasgow, who retired June 30, arrived at what was known then as the Department of Computing and Information Science in 1981. At the time, she was the only female faculty member – and the second ever – in the department. As an undergraduate at the University of Alberta in the 1970s, she was frequently the only female in classes taught exclusively by male professors. Later at the University of Waterloo, she was the only female PhD student in the field of computing. “There was no such thing as female-to-female mentorship back then,” she recalls with a smile.

In addition to her teaching and research, primarily in the area of artificial intelligence, Dr. Glasgow took on a number of leadership roles that women had not taken on before. These include serving as department head, president of the Canadian Society for Computational Studies of Intelligence, and chair of the grant selection committee for computer science of NSERC. Over her career, she supervised 40 graduate students.

The role of computing has also changed radically. “When I was an undergrad, computing was in its formative years,” she explains. By the time she and her classmates had graduated, they had learned basically all there was to know about computing. Over the years, computing has become a lot more specialized, and now carries over into every other discipline.

The focus of her own research has also changed over time. From artificial intelligence and computational programming, she turned her focus to the field of crystallography in the early 1990s, collaborating with Suzanne Fortier of the Department of Chemistry. “We were good friends as well as coworkers,” she recalls. “We took each other’s courses to learn about each other’s research areas, and we had a great group of students from chemistry and computing who also had an opportunity to interact as well.”

Dr. Glasgow is proud of the creation of the biomedical computing program in the School of Computing and the plans to establish a graduate program. If the program is approved, Dr. Glasgow will be back in the office to help get it up and running.

She also looks forward to spending more time focusing on music and playing her piano as well as travelling. When asked what she’ll miss the most, Dr. Glasgow says, “The people – because you can’t just stay in touch the same way as when you are in the office every day.”
School Awards

Lauren Abramsky
Film and Media Medal
Lauren just completed Computing and the Creative Arts with a specialization in Film and Digital Media. Inspired by beautiful and innovative user experiences, Lauren aims to explore ways in which these digital interactions can be crafted to enrich our lives. While pursuing her interests at Queen’s, Lauren was the Head Manager of Studio Q, a student-run creative agency on campus offering design, photography, video, and livestream services for students and the Kingston community. Lauren’s role was to oversee Studio Q as a whole, directly supporting five assistant managers in working with the service’s staff and volunteers. Looking to explore her interests in technology, design, and business, Lauren hopes to begin her career in an environment where she can develop these skills and learn from successful mentors. In the fall, Lauren will be starting at Deloitte as a Business Technology Analyst.

Ray (Ruiyin) Wen
Mathematics Medal
Ray completed Computing and Mathematics this year. After coming to Queen’s as an international student 3 years ago, he had no idea what to study. Of all the 100-level courses he took, those in computing and math gave him the most pleasure. COMA enabled Ray to pursue a degree in both directions with a flexible course selection. He encourages anyone with some love of math to try this specialization.
Governor General’s Academic Gold Medal

The Governor General’s Academic Gold Medals are awarded annually to two graduate students who achieve the highest academic standing in their graduate degree program. This year, our own Shane McIntosh received the honour.

Shane is an Assistant Professor in the Department of Electrical and Computer Engineering at McGill University. He received his Bachelor’s degree from the University of Guelph and his MSc and PhD degrees here at Queen’s School of Computing, where he held an NSERC Vanier Scholarship. In his research, Shane uses empirical software engineering techniques to study software build systems, release engineering, and software quality. His research has been published at several top-tier software engineering venues, such as the International Conference on Software Engineering (ICSE), the International Symposium on the Foundations of Software Engineering (FSE), and the Springer Journal of Empirical Software Engineering (EMSE). Shane actively collaborates with academics in Canada, the Netherlands, Singapore, Brazil, and Japan, as well as industrial practitioners in Germany and the USA.

CIPS Accreditation

The School of Computing is delighted to announce that both Computer Science (CSCI) and Software Design (SODE) programs reviewed by the Canadian Information Processing Society (CIPS) have received accreditation for six years from 2014 to 2020. Many thanks to everyone who contributed to the review. Special thanks to David Lamb who coordinated the entire process.
Many thanks to our Alumni and Friends

We appreciate the following alumni, faculty, staff, and friends who directed their Queen's University gifts to the School of Computing. Listed below are our benefactors over the past ten months. These donations are making a difference! Annual Giving can help us attract outstanding students and continue our outreach program.

To make your gift today, please visit www.givetoqueens.ca/computing

We are very grateful to have supportive alumni and friends who are inspired to make a difference at Queen’s. Your support is instrumental in upholding our long-standing tradition of excellence.

The School of Computing delivers an outstanding university experience, both inside and outside the classroom. We continue to attract exemplary students and world-class faculty and researchers. Thank you for making a difference through your generosity and support.

Roger Browse Commemorative Bench

It’s been more than a year since Roger Browse so tragically passed away, and students, faculty, and staff at the School (both former and current) are still mourning the loss. In an effort to seek closure and honour Roger’s life and many contributions to the School, money has been raised for a commemorative bench in his name. Students collected $345 in donations through an online Tilt campaign, initiated by Zac Baum, a 4th year BMCO student. COMPSA (Computing Students’ Association) donated another $500. Together with faculty, staff, and alumni, we have raised $5000 and, with the School of Computing’s generous $2500 donation, we will be able to make the bench a reality. Thank you for your support and stay tuned for more information on the dedication ceremony.

Join us at the following upcoming events:

- **Fall Preview** - Nov 5, Nov 19, Biosciences Atrium
- **March Break Open House** - Mar 11
- **Creative Computing** - Apr 6, Biosciences Atrium

For more events, go to: www.cs.queensu.ca/calendar

School of Computing Distinguished Seminar Series:

Want to keep in the seminar loop? Please send your request to inquiries@cs.queensu.ca

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You may send address changes to records@queensu.ca

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