

In a heartbeat

Improving care for cardiac patients



**DALHOUSIE
UNIVERSITY**

Inspiring Minds

*Faculty of
Computer Science*

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also in this issue:
Digging into Data · Apps challenge



Dean's Message

In mid-March, the Nova Scotia government took a huge step forward with funding for four sandboxes

across a number of our NS universities. Sandboxes are areas for students to “play”, i.e., to take their entrepreneurial ideas and try to develop them to the point where they may have a startup business. Sandboxes are pre-incubator spaces.

One of the sandboxes funded is the ICT Sandbox. Housed in the Goldberg Computer Science Building, its partners are Dalhousie, SMU, NSCAD, and Volta, an ICT Incubator located in downtown Halifax. Since the announcement, we have also added the Nova Scotia Community College to the partnership.

The provincial funding is for three years and will allow for programming support (no, not that kind) to bring in speakers, run seminars and workshops, etc., and to provide a small amount of support for the students.

Students will be asked to take the Innovation and Starting Lean courses from the Faculty of Management to ensure that they have some understanding of the business side of their startup ideas.

Once in the sandbox, those groups that look like they might have something with legs will transition to the Volta incubator where they will have access to more mentorship and potentially to some angel investor money.

Universities play a crucial role in ICT research and innovation in this province. The ICT Sandbox will connect our expertise and help catalyze this research, providing new opportunities for students and helping support graduates with opportunities to live, work and thrive here in Nova Scotia.

Any comments or suggestions, please drop me an email (shepherd@cs.dal.ca).



In a heartbeat

Developing innovative technology to improve care for cardiac patients

The NICHE Research Group in the Faculty of Computer Science has teamed up with Capital Health on an innovative research project that will enhance the quality of life for Nova Scotians living with Atrial Fibrillation (AF).

AF is the most common heart rhythm disorder affecting an estimated 20,000 Nova Scotians. People living with the disorder are five times more likely to suffer a stroke than those without AF.

The research project called “Integrated Management Program Advancing Community Treatment of Atrial Fibrillation (IMPACT-AF)” is supported by a research grant of over 5 million dollars sponsored by Bayer HealthCare.

IMPACT-AF aims to develop a province-wide patient-centered chronic disease management platform that has

two goals:

1. To assist frontline primary care providers to deliver specialized AF patient care in a community setting.
2. To empower AF patients to self-manage their condition in a home setting.

The NICHE research group is led by Computer Science professor Dr. Raza Abidi. The team also includes Dr. Samina Abidi from the Faculty of Medicine/Faculty of Computer Science and a group of postdocs and grad students. Together they will develop an interactive web based Clinical Decision Support System (CDSS) — called e-IMPACT.

e-IMPACT will proactively monitor the patient AF care needs by analyzing their medical history, performing risk assessments, auto-calculating risk scores and by predicting potential adverse events.

“e-IMPACT will proactively monitor the patient to detect adverse events or health risks that may impact their heart condition. It’s a matter of putting our knowledge into action in order to achieve better health outcomes for patients.”

Based on this integrated patient profile, e-IMPACT will generate patient-specific care guidelines that will include recommendations for care activities, specialist referrals, and medication changes. It will also generate alerts, notifications, and reminders to both physicians and patients.

“The project offers a unique opportunity to utilize the innovative knowledge management and health informatics technologies that have been developed at the NICHE Research Group to better meet the need of both health professionals and patients,” said Abidi.

These technologies include semantic web based decision support algorithms, ontologies for knowledge representation, reasoning strategies for generating knowledge-centric recommendations, health data analytics and delivery mechanisms using mobile devices and web services architecture.

Abidi and his team anticipate that e-IMPACT will improve the quality of life for AF patients and also reduce heart related hospital visits. Abidi says both physicians and patients will benefit from proactive and personalized point-of-care health informatics solutions.

“Such solutions do not yet exist at the point of care, but the technology and expertise exists to develop such solutions,” he says. “So it’s a matter of putting our knowledge into action in order to achieve better health outcomes for patients.”

How it will work:

When a patient with a heart related issue visits their physician for health tests, the e-IMPACT will scan their results and flag any potential issues.

“This is an intelligent decision support system that has built-in clinical knowledge derived from the best clinical evidence for the management of AF,” said Abidi. “e-IMPACT is going to proactively monitor the patient to detect any adverse events or health risks that may impact their heart condition.”

If a problem is detected, e-IMPACT can notify both the patient and their doctor via text message or email notification to their smartphone device.

“Right now many patients may not be receiving the best possible care as recommended by these guidelines,” said Samina Abidi, who also worked as a medical doctor. “e-IMPACT will proactively prompt doctors about the care needs of their AF patients and therefore timely and standardized care can be provided.”

In addition, The IMPACT-AF project is also developing a ‘smart’ patient interface to engage and empower AF patients in the management of their condition in a home-based setting.

Patients will have access to an AF management mobile app that will embed a patient-specific version of the AF clinical guidelines (i.e. a mobile version of e-IMPACT). The app will offer patient-level interventions to help people better understand their condition and to proactively respond to AF events through alerts and reminders.

“An attractive feature of the patient AF mobile app is that it will incorporate behaviour modification strategies that will deliver personalized educational and motivational content to help patients change their lifestyle so that they can effectively self-manage their condition and reduce the risk of AF events,” says Abidi.



On the cover: Dr. Raza Abidi and Dr. Samina Abidi, with the NICHE group are developing technologies to improve cardiac care

[photo illustration: Nick Pearce, Jane Lombard]

Next Phase:

Abidi and his team anticipate that e-IMPACT will be ready by mid 2014. Once complete, it will be deployed in 200 primary care clinics across Nova Scotia, and over 2000 patients will receive the e-IMPACT mobile app. A follow up study will then be conducted to determine the effectiveness of the project.

The NICHE GROUP will also collect a large volume of health data for health-care analytics. The data will be applied to standardize and streamline AF care, better understand care delivery scenarios, reduce emergency visits, prevent strokes and help AF patients achieve a better quality of life.

Once e-IMPACT is proven effective, the technology can be expanded to manage a number of other chronic issues. The study is expected to continue over the next five years.

The project team includes researchers from Dalhousie, Capital Health and McMaster University. The project is supported and guided by a broad range of health system stakeholders, including Department of Health and Wellness, Doctors NS, Cardiovascular health Nova Scotia (CVHNS) and the Heart and Stroke Foundation.



Health Informatics finds its NICHE

They've established their niche on the fourth floor of the Goldberg Computer Science Building; a group of 20 researchers who are changing the face of health care. Led by Dr. Raza Abidi, the team is known as the NICHE group (kNowledge Intensive Computing for Healthcare Enterprises).

The group spends their day actively investigating and developing innovative health informatics technologies to support both healthcare providers and patients. They conduct research in four main areas: Healthcare Knowledge Management and Semantic Web; Health Data Analytics; Personalized Patient Support; and Mobile Health. Seven post-doctoral fellows, Seven PhD students, five masters students and two research associates form the core team.

Health informatics is an interdisciplinary area of research where computer

science meets healthcare. Research focuses on the acquisition, storage, retrieval, and use of information/knowledge to help deliver healthcare that is effective, economical, safe and patient-centered.

In Canada, the demand for skilled workers in health informatics is quickly growing along with the need to deliver less expensive and high quality health care. Today, advanced tools such as electronic medical records, decision support system and patient/provider portals are transforming the way infor-

mation and knowledge is being used.

With a variety of projects on the go, The NICHE group has extensive expertise in these areas and more. Their approach is to conduct research in knowledge management to develop

semantic web based technologies that are finally applied to specialized health informatics solutions.

The group has developed innovative knowledge management solutions to computerize paper-based healthcare knowledge (such as guidelines, assessment tools, pathways, etc.) and render them as point-of-care

Health informatics is interdisciplinary research where computer science meets healthcare. Research focuses on the acquisition, storage, retrieval, and use of information to help deliver healthcare that is effective, economical, safe and patient-centered.

decision support systems that assist healthcare providers to deliver evidence-based care.

Empowering and educating patients to self-manage their conditions is another area of focus for the group. Their research involves behavior modeling and long-term care planning through a combination of information personalization and mobile technologies. Given the large amounts of data being generated by healthcare processes and the need for data-driven decision support for patient care, the NICHE group has an active research program in healthcare data management and data analytics. The group is currently developing a dedicated health data analytics infrastructure called **H-DRIVE** (Healthcare Data Retrieval, Inferencing and Visualization Environment) that will allow end-users to perform complex healthcare analytics to help improve healthcare safety, quality and efficiency. H-DRIVE is being applied to analyze an assortment of large health datasets for clinical decision support and process optimization purposes.

Another large-scale project currently under way is **IMPACT-AF**, which aims to develop interactive web-based decision support tools for transferring knowledge from leading cardiologists to care providers and patients in the management of Atrial Fibrillation. More on IMPACT-AF can be found elsewhere in this magazine.

The NICHE group has established extensive collaborations with health care professionals and organizations for both physicians and patients, and they jointly investigate and develop innovative health informatics solutions. Some of the innovative health informatics projects are:

ADVICE - Can develop an innovative healthcare knowledge management infrastructure that integrates

knowledge- and data-centric decision support services for both physicians and patients.

COMET - Can bring together clinical guidelines for different disease conditions to handle co-morbid conditions

PULSE - Can develop personalized patient education packages based on relevant cardiovascular health information and the patient's readiness to adapt lifestyle changes.

D-WISE - Can assist diabetes patients to modify their behavior towards healthy lifestyles by empowering them with personalized behavior modification strategies patients through a mobile app.

Prostate Cancer Management Pathways

- Can create standardized prostate cancer management pathways across multiple institutions by aligning institution-specific clinical pathways

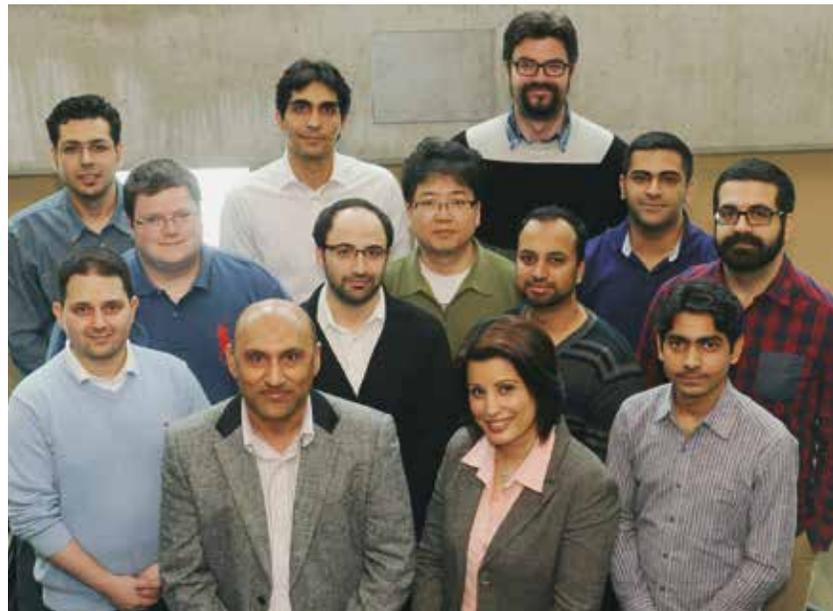
Breast Cancer Follow-up Decision Support System - Can support family physicians to perform breast cancer

follow based on Canadian guidelines for the follow-up care of breast cancer.

YouCan - Can address the educational, communication and care management aspects of youth cancer care programs for youth cancer survivors aged 12-29.

While most projects are in the field of healthcare, the NICHE group has applied their expertise in other areas. Recently the group completed work on the POKM project, which created a platform to provide ocean scientists with a range of data management services. The project was conducted in collaboration with the Ocean Tracking Network, based at Dalhousie.

And while it's always nice to lend a helping hand wherever they can be of service, their pride and passion will always lie in the delivery of efficient healthcare for patients.



Dr. Raza Abidi and Dr. Samina Abidi with members of the NICHE group (not as pictured): Ahmad Ahmad, Sangwhan Cha, Ali Daniyal, Nima Hashemian, Hossein Hassanzadeh, Borna Jafarpour, Ehsan Moghsoudlou, Hani Mufti, Patrice Roy, Abhinav Singh, William Van Woensal

Natural history for the digital age

Dal team works to transform Biodiversity Heritage Library into a next-generation resource

A Dalhousie research team is helping bring the world's most authoritative resource on our planet's species into the 21st century.

The Biodiversity Heritage Library (BHL), a consortium of natural history and botanical libraries from around the world, has a collection of over 40 million pages of text describing and organizing life on earth. It's currently the only freely available, authoritative information source for the majority of species we know about on our planet.

The problem: most of it isn't all that accessible digitally.

"BHL search capabilities available on the site are currently limited, and are only useful for finding information about a small number of known species," says Evangelos Milios of Dal's Faculty of Computer Science. "These manuscripts are important for biologists because they capture the state of life on earth in history and are the only sources we have about species from 200 or 300 years ago."

Together with Anatoliy Gruzd, director of Dal's Social Media Lab, Dr. Milios is co-lead of a Dalhousie team that's helping re-build this history of biodiversity for the digital age.

The project is called "Mining Biodiversity" (MiBio), and Dal's team is one of 14 from around the world who have been named the winners of the third Digging into Data Challenge, a competition to develop new insights and tools on how big data is changing research in the areas of humanities and social science. Each team represents collaborations among scholars, scientists, and information professionals from leading universities and libraries.

Extracting the next generation of information

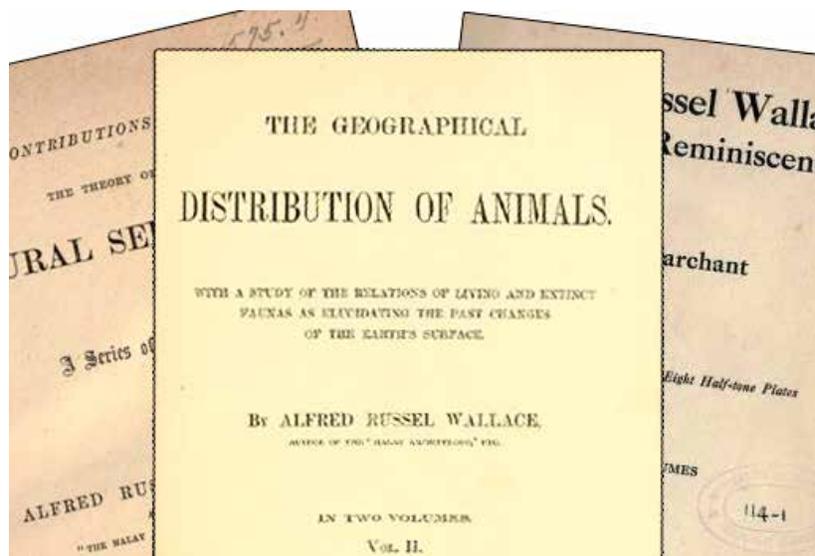
In collaboration with the National Centre for Text Mining at the University of Man-

chester and the Biodiversity Heritage Library (BHL), MiBio will aim to transform the BHL into a next-generation social digital library resource. It'll also provide the online library with a semantic search system to help researchers and the public study scientific documents on biodiversity.

Dr. Milios says the team will work together to enrich a large-scale digital library, improve access to biodiversity-related written artifacts via an enhanced search engine, and stimulate increased

Other members of the Dal team include faculty members Stan Matwin, Vlado Keselj and Stephen Brooks, all from the Faculty of Computer Science.

A key challenge of the project will be the dynamic and ever-changing evolution of biodiversity as recorded in old natural history books. This brings terminology issues to the fore, as scientists over time have changed the meaning of taxonomic names. For example, the word "reptile" originally included both what we think of today as reptiles (e.g. turtles,



The Biodiversity Heritage Library has a collection of over 40 million pages of text. The Mining Biodiversity project aims to transform the resource into an online library.

collaboration and exchange of information amongst BHL users via a social media environment. It will integrate text mining, visualization, crowdsourcing and social media into the BHL.

"Dalhousie has capacities in supporting technologies of this project," says Dr. Milios. "Our expertise in text mining and visualization is complementary to that of our partner, the National Centre of Text Mining (NaCTeM) in the UK."

lizards, snakes) and also what we now call amphibians (e.g. frogs, toads, salamanders).

"In a digital archive such as BHL, tracking terminology evolution over time is crucial for search," says Dr. Milios. "Another aspect of the project will include the correction of the text we obtain from the digitization and optical character recognition of the old books and how to link the terminology extracted from the text with standard taxonomic resources in the field."

CS alumni help guide the way to success

Faculty launches new Mentorship Program

Social sharing

A key component of the project is the development of a social media environment, to allow BHL users to discuss, link and share digital artifacts posted to social media sites linked to the BHL search portal. The outcome would transform the BHL from a traditional digital library into a social digital library.

“The exciting part for my students and I at the Social Media Lab [is] to try and figure out how to turn legacy science documents into ‘social’ digital objects that can be easily shared among researchers and the public via social media,” says Dr. Gruzd. “Our expectation is that this will help make these earlier biodiversity documents and artifacts more accessible and will help raise the public awareness of how our planet’s biodiversity has changed over time.”

Before the social media environment is launched, Drs. Gruzd and Milios and the rest of their team will spend the next eighteen months analyzing thousands and thousand of pieces of digitized literature.

“This project really demonstrates the strength and advanced research at Dalhousie in the areas of social media, text mining and visualization,” says Dr. Gruzd. “It also demonstrates that our research is being recognized internationally.”

The 14 teams who prevailed in the Digging into Data competition have received a total of \$5.1 million in grants from a group of 10 international research-funding agencies from Canada, the Netherlands, the United Kingdom and the United States. The Mining Biodiversity project will receive approximately \$125 thousand in funding from the Social Science and Humanities Research Council of Canada, and \$125 thousand from the Natural Sciences and Engineering Research Council of Canada.

Learning in the classroom is only the beginning. Computer Science students hoping to gain a better understanding of life in the ICT world now have a new well of information to draw from. They’re being encouraged to pick the brains of experienced professionals in their field.

How?

The Faculty of Computer Science has just launched a new FCS Mentorship Program which will connect students with Dal alumni working in the industry. Volunteer alumni will share their experiences in the working world, and provide one-on-one support and advice to undergrad and graduate students.

“I didn’t recognize the importance of a mentor until I was a number of years into my career,” says Ian Bezanson, President and Founder of BITS Interactive, a local web design and development company in Halifax.

“Having the ear of someone who has traveled a similar path to the one which you’re about to embark on is invaluable. A mentor can offer advice and often a reality check, based on their experience. This can often help to avoid costly mistakes and navigate some of the tougher waters of your chosen career.”

Bezanson is one of over 20 alumni who have volunteered to participate in the program. Coming from larger companies such as IBM, Microsoft and Amazon, to local companies here in the Maritimes, alumni mentors say they feel the mentorship initiative will not only help students gain a better understanding of the working world, but also open their eyes to the many career options available.

“While my former classmates and I all graduated with the same degree, we all work in different parts of our field,” says volunteer alumni Marc Comeau. “I think it’s very valuable for students to learn about the different kinds of jobs we all do and also learn about how we made the transition from our degree to our current roles.”

Comeau is the Director of Dal’s Library Information Technology Services. “I see the Mentorship Program as a great chance to help those who are in the position I was in some time ago,” he says. “I know I would have benefited greatly from speaking to someone early on.”

Jason Cross is another CS alumni volunteering in this year’s Mentorship Program. Cross, who now works as a software engineer in Seattle, says the program will help motivate students in their studies.

“If students can see other graduates with successful careers, it will help them realize how attainable having a successful software career is,” he says. “The core aspect of motivation is that specific skills learned in school actually are applicable and valuable in the workforce.”

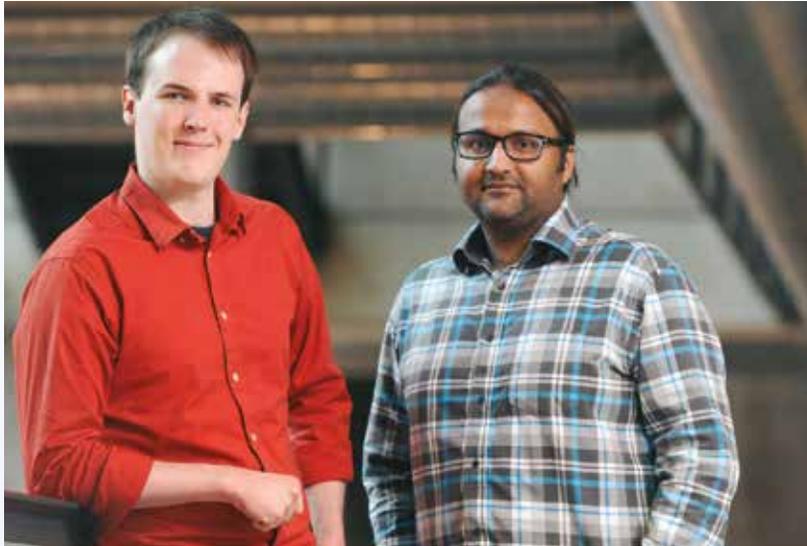
Cross says that although he did well in the Computer Science program at Dal, he wasn’t sure he had the necessary skills required for a successful career in the ICT industry.

“Srini had an alumnus come speak to my class and it really opened my eyes and made me realize that the gap between being a computer science student and a computer science professional was much smaller than I thought,” he says. “I see the mentorship program less about opening doors through creating connections and more about learning from someone else’s experiences.”

Alumni wishing to sign up for the 2014-2015 FCS Mentorship Program can do so by contacting Theresa Anne Salah (tasalah@cs.dal.ca).

Meet The Future

Although they haven't graduated from their programs yet, Dalhousie Computer Science students are already changing the world. To them, success means more than just aiming for straight A's. Instead they're combining their academics, creativity and passion and looking beyond the walls of their classroom.



Innovate UI

Colin Conrad and Farrukh Momin

Colin Conrad and Farrukh Momin, both Master of Electronic Commerce students, are not afraid of taking risks. In fact, they say they welcome the opportunity.

Their partnership began last fall when they competed in *Startup Weekend Halifax 2013*, a global grassroots movement of entrepreneurs who learn the basics of founding startups and launching successful ventures.

Young entrepreneurs were invited to pitch their startup ideas and then had 54-hours to build their business models and code and design their web applications.

Colin and Farrukh teamed up with five other student entrepreneurs to develop a computer plug-in called "Nudge-It." The plug-in, which prompts users to get away from their screen if they've been at it too long, placed first at the competition.

Despite this success, The Nudge-It team chose not to participate in the next

phase of the global startup completion. They parted ways, leaving Colin and Farrukh to set their sights on a bigger project; taking Nudge-It to the next level.

With the money won at *Startup Weekend Halifax*, Colin and Farrukh started their own web development company called Innovate UI.

"We want to integrate good user interface with data mining. That was the whole goal of Nudge-It in the first place," says Colin. "We want to make web applications that look really good, that are really easy to use, and that also provide companies with lots and lots of useful information."

Colin says there's no better team to make this happen than him and Farrukh. He admits starting a new company while still pursuing a degree is risky, but risk is nothing new to his partner Farrukh.

Once a successful business owner and software developer in Pakistan, Farrukh

left his wife, his home and his life, to move to Halifax to pursue his MEC. His ultimate goal; to one day develop a better life for his family.

He says despite having already owned his own company in Pakistan, he wants to learn how to build a company from scratch in North America.

"Starting a company in Pakistan is relatively easy," he says. "Before creating my first company there, I knew a lot of guys in the states who gave me jobs on a regular basis. So when I eventually decided to start my own company, it was easy."

Despite his connections in the United States, Farrukh admits he chose to come to Halifax to pursue his degree because... he loves our cold weather.

"I don't own a winter jacket and I hate snow shoes," he says dressed in a hoodie and sneakers in -20°C weather.

Of course, he says the cold weather wasn't really the only reason he came to Canada.

"I have this entrepreneurial brain and in Pakistan we don't have the resources in place to share new ideas," he says. "We don't have opportunities like Startup Weekend Halifax."

"In Canada you can work your ideas. No one will stop you. Everyone will support you if your idea is good."

With their well-balanced blend of skills, Colin says the team has a lot more going for them than just "Nudge-It."

"Farrukh is a fantastic software developer. He's amazing at making things look good that are also very intuitive," says Colin. "In class, while the rest of the students are building Wordpress websites, Farrukh is building complex web apps from scratch."

continued



Presenter's Podium

Anuj Shah and Nilofer Mehta

Masters of Applied Computer Science students, Nilofer Mehta and Anuj Shah are no strangers to success.

Last fall the two, along with three other students at Dal, placed second at *Startup Weekend Halifax 2013*. The group developed a nifty mobile app that alerts shoppers when the price of their recent purchase has dropped.

Now Nilofer and Anuj are on to their next successful project. They've teamed up with Matthew Fanning, a Bachelor of Commerce graduate from Saint Mary's University, to develop an eLearning platform that will help University students improve their oral communication skills.

Fanning had noticed that with large class sizes, professors were unable to give students enough one-on-one attention to help them improve their oral delivery skills when making presentations. Recognizing that presentation skills are key to success in the work place, Fanning came up with the idea of Presenter's Podium and turned to Nilofer and Anuj to develop the technology.

The tool is a cloud-based program that lets professors assign subjects that need to be researched, turned into presentations, and then practiced and recorded. Once recorded, students can receive constructive feedback from their peers.

Innovate UI, continued

As for Colin, his strong entrepreneurial skills and expertise in social science will be key in Innovate UI's success. He's also motivated by his passion for the Maritimes and is determined to build the company in Halifax.

"One thing that Farrukh and I have in common is that we both have very strong goals for wanting to be entrepreneurs in Halifax," he says. "People are more open here, and good ideas have more opportunities to flourish. We really want to try hard to do something for this region."

Colin says there's still a lot of groundwork to be done in getting Innovate UI off the ground, but once school winds down this spring, it's all hands on deck. The team has already begun working with many clients and startup companies around Halifax, and plan to contact clients in the States who worked with Farrukh in the past.

"I know that we can make it work," says Colin. "This is the first time I feel comfortable about taking risks in business and I know it'll pay off."

The presentations can be recorded using a computer, cellphone or a device using the Presenter's Podium's built in media server.

"The first reaction from students was that they were terrified of presenting in front of a camera and they were intimidated by the technology. But as they got familiar with the technology they felt it was quite useful," says Nilofer.

While many Canadian students have said that they've seen improvements in their presentations, Nilofer says international students especially felt the platform helped them get over the nervousness of speaking in a second language.

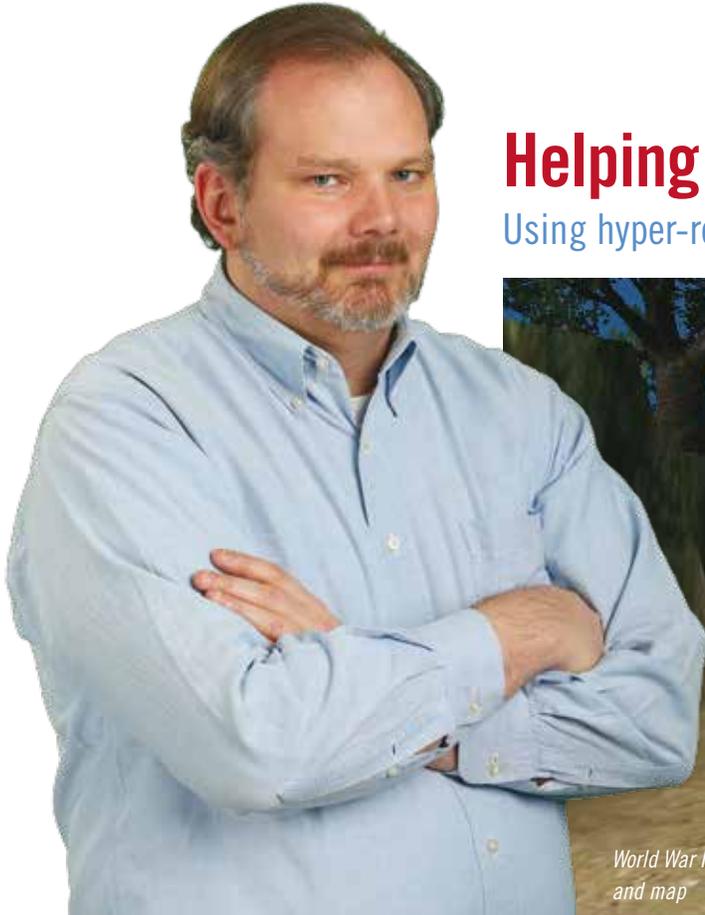
"It's really great to know that students are using our platform and really improving their communication and presentations skills. I can definitely relate to some of the online testimonials," says Anuj.

Presenter's Podium has garnered so much popularity, the team is now beginning to sell it to universities in the region. SMU's Sobey School of Business has already begun using the application, and the team is in discussion with Mount Saint Vincent University and the Nova Scotia Community College.

"We see schools from all over the world using this platform in the future. It really helps build student confidence," says Nilofer. "This is an age for educational technology and this tool will be valued by teachers and students alike."

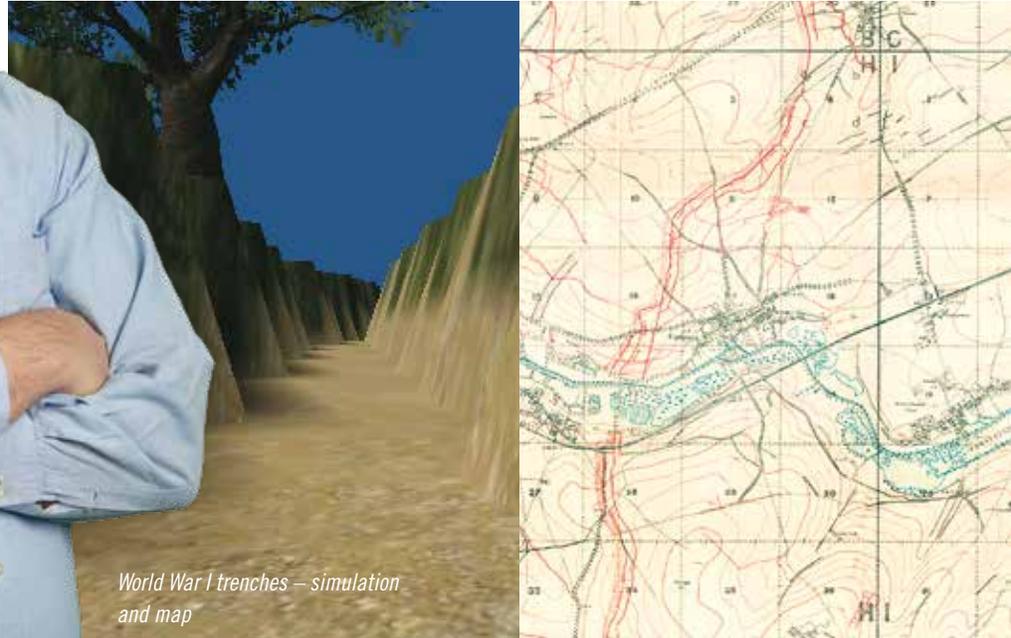
Nilofer and Anuj say working with Fanning on the project has been a great experience and the opportunity has set the stage for future partnerships together.

"We thank Matthew for presenting us with this opportunity . . . It is really heartwarming when we see something that we have built being used and appreciated by others," says Nilofer. "We are just coming out of school and already have an opportunity to see people use what we have built from the ground up."



Helping to visualize the past

Using hyper-realistic simulations to present data



World War I trenches – simulation and map

“So you’ve created a database, now what?”

This question is repeated over and over again in projects that generate data as part of their research. These projects expend extensive amounts of time and other resources in the creation of datasets that are, more often than not, forgotten in dusty office drawers. In the Digital Humanities scholars are interested in the application of digital tools to cultural datasets. The digitization of non-digital research material and the ever-increasing amount of data have proven to be a retrieval and analysis challenge for scholars. Too often the data is locked in a spreadsheet, prisoner of a “research portal” or lost forever on a forgotten hard drive.

Dr. Robert Warren, a post doctoral fellow in our Institute for Big Data Analytics uses hyper-realistic simulations of World War I to address a key challenge facing Linked Open Data Projects: how to release laboriously (and expensively) compiled information from its database

prison. His response to this challenge offers a new example of how the humanities and sciences can work together to improve the dissemination of archival information (e.g., World War I maps) and increase our knowledge of major historical events (e.g.: Halifax Explosion). The cutting edge information retrieval technologies (e.g., search engines) created for this research will be of benefit to the specialists audiences and the general public alike.

Drawing on Computer Science expertise in automated database integration, social network analysis and data-mining applied to real world problems, Dr. Warren is working to free data and make it presentable and comprehensible in innovative and yet intuitive ways using hyper-realistic simulations. He is currently working to integrate extremely detailed semantic web databases (including geographical, astronomical and archival data) to create realistic simulations of World War I based on the actual maps, events and experiences of

the people who were there.

Dr. Warren is heading this project in collaboration with Dr. Neil Randall of the Games Institute at the University of Waterloo and Dr. Eric Champion at Curtin University in Western Australia. Their collective goal is to create an effective mechanism for linking and integrating databases and 3-D models in virtual environments to produce a precise and accurate simulation of World War I. If successful, they will introduce this approach to interacting with past realities, through immersive simulation, to the academic, museum and archival communities.

This novel and exciting project integrates the promise of Big Data with that of immersive simulations using innovative technologies to create immediate, compelling and accessible methods of accessing the past.

Changing campus: one app at a time

Students showed off their innovative digital creations at the third-annual Dalhousie App Challenge.

Sixty students gathered on a snowy Wednesday afternoon in the Goldberg Computer Science Building's atrium for this year's edition of the Dal App Challenge. Each year the challenge, sponsored by the Vice-President Academic and Provost's office, inspires students to design apps that could be used by the university or fit a university need.

"The purpose of the contest is multi-fold," says Alex Brodsky, professor in the Faculty of Computer Science and one of the organizers. "[It's] to generate ideas for mobile apps that Dal may wish to pursue;



motivate students to think about how they can improve campus life; get students working with current technologies and acquire new skills; and create opportunities for students to add to their portfolios."

While there's no guarantee that the winning apps will come to fruition, they all offer interesting digital ideas for addressing what their creators see as campus needs or concerns.

A winning idea for course registration?

Kyle Ramey, a third-year Computer Science student doing a minor in business, took home the grand prize, \$750 for his app called "Dal Scheduler." His app is designed to improve the course registration process, allowing students to choose courses and put them in their timetable in real time while also detecting course conflicts.

"I decided to create this app because I have found the registration process to be tedious and often rather frustrating," said Ramey. "The best way to plan your schedule right now is to write down all your classes on paper and try to juggle them around. I've had the general idea for this app in the back of my mind for some time and this seemed like the perfect opportunity to actually build it."

All present and accounted for

Second place and \$500 went to Jeremy Tupper, a Computer Science student in his final year of study. His app, "Dal Check-In," is designed to give course instructors the ability to easily track attendance.



"My girlfriend was talking to me about how some of her classes still passed around an attendance sheet to give the students participation grades," he explained. "This is inefficient and easy to cheat and it also frustrated her because sometimes the sheet wouldn't make it around to her."

He decided to make an app to replace the paper attendance sheet and make things easier for both the student and the instructor. He made two apps, one for students and another for instructors to detect which students are near them in class. The app checks in the students that are in class, displays the class list and the current attendance grade on the instructor's phone.

Community-based solutions

The third place app and the people's choice winner each received \$250. Third place went to Computer Science Ph.D. student Raghav Sampangi for "TigerPark app," a community based social solution to parking on campus. Using the app, students, faculty or staff at Dalhousie can let others know when a parking space (called tiger space) is available and drivers can find a tiger space, navigate to it and then report it is no longer available. The app is incentive based, as everyone who reports a parking spot receives points that they could redeem for discounts at various campus services.

The people's choice award, chosen by



students, went to Amr Zokari, a Computer Science student who's also minoring in Management. His "Dal Ad" app brings together students who need help with coursework and those who want to help by allowing students to post ads that represent their needs related to their courses. These needs could range from seeking used books and materials, to looking for tutoring and even starting a study group.

"My personal experience served as the building block in initiating this app," says Zokari. "I have been a student at Dalhousie University for three years now and I often encountered obstacles in some of the courses that needed, in my opinion, such an app to overcome."

The competition's judging panel were Carolyn Watters, Vice-President Academic and Provost, Computer Science Dean Mike Shepherd and Computer Science professor Derek Reilly.

News & Notes



Congratulations to Karthikeyan Damodaran, vice-president external of the Dalhousie Computer Science Society on receiving the Student Union Gold D Award for showing excellence in extra-curricular activities.



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The Faculty of Computer Science has a new look online!
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Contributors:

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