

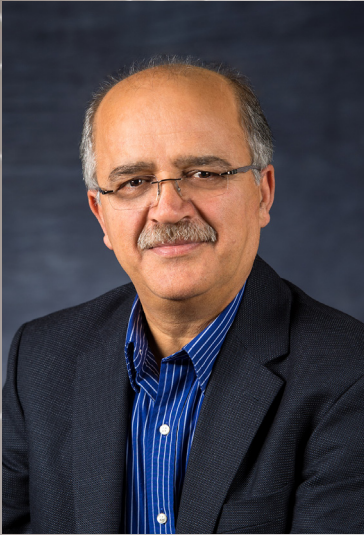


Issue 07

CS News BYTES

A publication of the UNB Faculty of Computer Science

Message from the Dean



Dear friends of the Faculty,

I am delighted to present to you the rebirth of our quarterly newsletter, CS News Bytes. We started publishing our Faculty newsletter back in 2008. Some time has passed since our last issue, and by popular demand, we thought 2014 would be a good year to resume the publication of this interesting piece of information. We still have a lot to say and many upcoming events that we want to announce, and we feel this is the best medium for us to reach out to the IT industry, our community and alumni. We feel it is important for us to showcase academic accomplishment, success stories and promote career development to build a strong and vivid CS community.

2013 has been an exciting year here at the Faculty of Computer Science. Indeed, we had the pleasure of celebrating 45 years of computing education at UNB. I personally want to congratulate and celebrate all the faculty and staff, past and present, for their hard work and dedication, which contributed without a doubt to the outstanding quality of our programs, our students' success and the longevity of our Faculty. We have accomplished a lot together in the past 45 years, and are eager and ready for any challenge that may come.

We are very proud of our Faculty's accomplishments and successes. We have excellent students, who make us very proud by studying hard and winning various contests and prizes. They also prove to be exceptional employees at their co-op jobs. We are also very proud of our alumni, here in New Brunswick and all over the world, who keep shining as eminent computing professionals.

In conclusion, I wish to thank you all, friends of the Faculty of Computer Science, for your unwavering support. I hope you will enjoy reading this newly resumed CS News Bytes as much as we enjoyed putting it together for you. If you have a story idea or would like to contribute to this publication, we will be very pleased to hear from you. Do not hesitate to contact us about it!

Professor Brad Nickerson Retires After 26 Years at UNB Faculty of Computer Science

Last July, after a brilliant career of 26 years, Dr. Brad Nickerson officially retired from the Faculty of Computer Science. His time with us has brought remarkable and innovative contributions to the Faculty.

Born in Saint John, NB, Dr. Nickerson received his Ph.D. in Computer and Systems Engineering from Rensselaer Polytechnic Institute, Troy, New York in 1987. He has both a Master's degree (1979) and a Bachelor's degree (1977) in Surveying Engineering from UNB. Dr. Nickerson joined the Faculty of Computer Science in 1987. From 2009 until he retired in 2013, he was Assistant Dean, Research and Outreach, as well as the Software Engineering program Coordinator.

A Teacher of Exception

Several will remember attending one of the numerous courses Dr. Nickerson taught throughout his career. When recalling his teaching years, one of the things he is particularly proud of is the Faculty of Computer Science Excellence in Teaching Award that he received in 2003. Only students can nominate instructors for this award.

Dr. Nickerson is well known for his sincere concern for his students, always has an open door policy and is always eager to help students.

A Distinguished Researcher

Since he joined the Faculty in 1987, Dr. Nickerson has supervised 43 graduate students and is currently supervising a Ph.D. and four Master of Computer Science students. He is currently working with a Ph.D. student on the study of new spatial data structures to support efficient search and retrieval of massive datasets that change over time. For example, shipping channels and harbours are constantly changing due to silt buildup and ocean storm influences. A so-called persistent spatial data structure will assist fast editing and modelling of the evolution of the ocean floor, and support accurate tracking of its changes.

Significant Contributions

Aside from being an excellent teacher and an outstanding researcher, Dr. Nickerson has contributed in several significant ways to the Faculty of Computer Science.

Dr. Nickerson always strongly believed that the University should contribute back to society. To help with this goal, Dr. Nickerson established the Information Technology Centre informally in 1988, and as a formal UNB Centre in 1998. The

Centre's goal was to act as a bridge between the Information and Communication Technology Industry and ongoing computer science education and research occurring at the University of New Brunswick.

As coordinator of the Software Engineering program, Dr. Nickerson developed a web presence for the program that shows prospective (and current) students the opportunities available, and how they can be successful in two Faculties. With help from the Electrical and Computer Engineering Dept., Dr. Nickerson was successful in engaging the Engineering and Computer Science Faculties to facilitate ongoing upgrades to the Software Engineering Lab.

Dr. Nickerson also founded the Faculty of Computer Science Research Expo, first held in June, 2004. The FCS Research Expo showcases the Faculty's research to the wider UNB community, to ICT industry, to government and to the general public. In 2013, the Research Expo marked its tenth year.

In July, 2008, Dr. Nickerson was appointed to be the Chair of the Faculty of Computer Science Recruitment Committee.

In this position he oversaw a significant growth in applications to UNB Faculty of Computer Science degree programs. With the help of a talented team, Dr. Nickerson worked tirelessly to make sure that as many prospective students as possible were contacted, and followed up with on tour requests and by telephone once they were accepted. This role was particularly challenging, and still is, given the decreasing number of high school graduates in New Brunswick, and the increasing competition from universities such as Waterloo, Dalhousie, Concordia, Carleton, McGill and Memorial.

Dr. Brad Nickerson has contributed extensively to the growth and success of the Faculty of Computer Science. Most of all, he was a valued and esteemed colleague. Thank you for everything, Dr. Nickerson; we wish you a peaceful and pleasant well-deserved retirement!



Celebrating Excellence in Computer Science

The Faculty of Computer Science's Awards Dinner was a success

On November 6th, the Faculty of Computer Science held its annual Awards Dinner. The banquet, offered every year to honour our Dean's List students, winners of student prizes, scholarships, bursaries and other awards, was once again a beautiful success.

A Moment to Celebrate the Past and Look Towards the Future

As this year marks 45 years of Computing Science at UNB, some time in the evening was dedicated to highlighting this particular moment of our history. The Honourable Craig Leonard, Minister of Energy and Mines, was present for the 4th year and emphasized on this special anniversary

A total of \$1,109,205 in undergraduate prizes and scholarships were awarded during the ceremony, as well as \$1,006,286 in graduate prizes and funding.

in his speech. "45 years of [computer science] at UNB, I am no technological expert but I'm sure quite a lot has changed over that time frame. But it's clear that one thing that hasn't changed is the high quality of [the Faculty's] programs".

He also reached out to the students and graduates in the room, inviting them to be part of the driving force behind New Brunswick's economy. "When I look around the room tonight, it's clear that our future is here."

Honouring Dr. Dana Wasson

This year's Awards Dinner was also an occasion for the Faculty to honour one of its pioneers, Dr. Dana Wasson. "Everything with Dr. Wasson starts with the word 'first' ", said Dr. Ali A. Ghorgani, our Faculty's Dean, in introduction. Indeed, Dr. Wasson was the first Director of UNB's Computing Centre, first Director of the School of Computer Science, and first Dean

of the Faculty of Computer Science. Three of Dr. Wasson's former colleagues were present to honour him: professor John DeDourek, professor Rodney Cooper and Dr. Jane Fritz. Mr. Cooper told the audience about

his time working with Dr. Wasson. "There is one word that immediately comes to my mind to describe what working with Dana was about: vision." It was, indeed, guided by his vision that UNB established, years ago, Atlantic Canada's first master's, undergraduate, co-op and PhD programs in computer science. Dr. Fritz concluded the tribute by sharing how "Aside from being the founding father of computing in New Brunswick, Dana is a lovely man."

Finally, the Faculty had the pleasure of receiving two special guests from our major sponsor and partner, J. D. Irving, Limited: Brian Lordon and Ray Harris. Mr. Harris graduated from UNB in 2013 with a Bachelor's

Degree in Information Systems. He told the audience about his accomplishments at the Information Technology Division of J. D. Irving as a Business Analyst. One of which consisted of improving Kent Building Supplies' management and exchange of business orders and invoices, by moving 300 Kent Vendors from an 11 steps procedure using fax to a 2 steps, easy process using electronic means.

Special Thanks

The Faculty wishes to thank their generous keynote speakers of the evening, Geoff Flood, CEO of T4G, and Cheryl Hansen, Executive Director of Health Business and Technology Solutions, Department of Health. Their inspiring speeches have encouraged our students and graduates to join their talent to New Brunswick's IT community and contribute making a difference in our society.

The Faculty also wants to thank J.D. Irving for their unwavering support to our Faculty, and also our Co-Op partners and sponsors, who offered many interesting gifts to the students and graduates who attended the banquet.

We hope to see a lot more partners, alumni and friends of the Faculty next year to our 2014 Awards Dinner. It's always a great opportunity to make new contacts and get to know our future graduates. See you then!



The Honourable Craig Leonard, Minister of Energy and Mines, was present for the 4th year and had inspiring words for our students.

Below, Brian Lordon, from J.D.I., Dr. Ali Ghorgani, Dean of the Faculty, and Ray Harris, FCS graduate and Business Analyst at J.D.I.



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Discover Ara Labs

A start up company born right here, in the heart of the FCS

“When I was a kid, we were always exposed to computers at home. I remember, my dad had a programming book with examples in it. I would type them in our Commodore 64, and I was amazed by the results. One of the first programs I wrote displayed a hot air balloon bouncing around the screen. I remember how one tiny error would compromise the whole thing and you had to start over.”

When you ask Hadi Shiravi where his interest for computer science came from, there’s a little spark in his eye. It goes way back! Born in Iran, he did a Bachelor’s degree in software engineering before coming to Canada, to do his Master’s in Computer Science here at UNB Faculty of Computer Science. He is now on his way to getting his Ph.D. Last year, he teamed up with two other doctoral candidates in network security alongside with Dr. Ghorbani to form Ara Labs, a startup company that offers a cloud-based Software-as-a-Service product for detecting and fighting cyber-fraud.

“We crawl the web looking for hundreds of thousands of pieces of malicious software each day, and we analyze the intelligence,” Hadi told a panel at the Atlantic Venture Forum recently. “Sixty percent of the threat analysis we provide is unique.”

A Growing, Expensive Problem

Cyber security has been the center of a lot of media attention in the past few months. With incidents like the Target data breach or the discovery of the enormous ZeroAccess botnet, cyber security has become a hot topic. Reports estimate that cyber-crime costs the global economy about \$300 billion a year - and it is worsening. The number of successful attacks on companies from various sectors has more than doubled since 2010.

“Cyber-criminals are using very clever ways to breach security measures. Some infections go undetected for weeks”, explains Hadi. Indeed, this would be the reason why the ZeroAccess botnet grew to such biblical proportions. “ZeroAccess is very sneaky: it utilizes a wide array of infection vectors to compromise hosts. Nevertheless, it must elevate its privileges to install successfully and it does so using a clever decoy that would lure in even the savviest of users”, he explains. Indeed, the malware disguises as an Adobe Flash Player update (how often do we authorize this program to update in a month!) to lure the user into authorizing it to install.

A lot of antivirus are updated based on intelligence gathered

postmortem, meaning the information “is often too old to be of any direct practical use.” So even a fully updated antivirus engine on fully patched computers can’t identify some softwares as malicious.

This is where Ara Labs’s product is revolutionary. They study and update information as it happens, and inform the client, as it happens. “This way a client would know one or more of his devices have been corrupted almost as it happens, because we already know how to identify the malware’s behavior. This means quicker detection, quicker reaction and, most of all, a reduced financial impact for the client”, explains Hadi. Indeed, HP Enterprise Security’s latest report revealed that the average number of days to resolve an attack in 2012



was 32. With an average cost of \$32,469 a day, it doesn’t take long until the bill gets horribly heavy.

It is during his doctoral studies, working at the Information Security Centre of Excellence (ISCX) here at the Faculty of Computer Science, that the Ara Labs project began to take shape. “In my second and third year, I was reading a lot about hacking and I’ve been exposed to a lot of industry problems at ISCX. I could then see how this would fulfill a need for a number of companies”, says Hadi. “I know a lot of people study, thinking obtaining their degree is the end goal, but I wanted to achieve something more. It’s not easy to build a company, and it is far less easy when you are a group of international students. There are a lot of additional details that you have to take into consideration. We don’t have permanent residence here in Canada, but student visas, it makes everything more complicated. But it’s worth the ride, really”, he concludes.

Ready for New Challenges

Their system is now up and running, their seed funding has been approved and they have a few pilot projects under way. The Ara Lab team revealed recently in a Daily Gleaner article that they were just hired by Fredericton e-Novations, which operates the city’s Internet system. They also revealed they were in the process of partnering with the Government of New Brunswick’s security event management [...next page]

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...Discover Ara Labs (2/2)

centre that oversees the safety of the government network. With a network of approximately 44,000 users, New Brunswick will be the first government in Canada to have botnet protection, including botnet intelligence, malware analysis, and log correlation, explained Christian Couturier, Chief Information Officer for the provincial government, to the Daily Gleaner. Now Ara Labs' next challenge is one that a lot of IT companies have here in New Brunswick: "Bring in talent!" They are always on the lookout for talented, qualified individuals interested in network security. "We have a lot of work to do and a lot of ideas and projects we want to develop."

Why "Ara Labs"?

Ara means "protection", in Latin.

Labs is to reflect the intrinsic nature of their work, research and study.

The FCS Recruitment Committee

Our dedicated team works on attracting new students to our programs

After the infamous high tech slump of the early 2000s, also known as the "dot-com bust", Computer Science faculties all over North America saw their application numbers drop. In 2006, UNB Faculty of Computer Science's Dean at the time, Dr. Bhavsar, decided to take action and put together a recruitment committee, to draw new students to the Faculty.

In the beginning, the "recruitment committee" was in fact a team of two: Dr. Andrew McAllister alongside with Debbie McAnany. They designed a dynamic presentation to bring to high school classes and, with the help of professors and staff members of the faculty, started doing school visits, in grade 11 and grade 12 math classes.

The presentations were an instant success. The first term, Winter 2006, over 1800 students were visited. The next Fall, over 2000.

"High pay, plenty of jobs, but few students: it doesn't compute"

The Globe and Mail
September, 2006

in 65 schools all over the Maritime Provinces. Also, a new presentation was introduced to the recruitment team's arsenal: the team now visits not only Grade 11 and 12 Math and Science classes, but also decided to work further upstream by designing a presentation for the Personal Development and Career Planning course, offered in Grade 9 and 10. Part of this course's curriculum focuses on exploring different career paths. The teachers are, therefore, always eager to have visitors like us come and talk about the career opportunities that lie in the ITC sector - especially since the technology sector has such a shortage of qualified professionals nowadays.

In recognition of its outstanding performances and innovative ideas and projects in 2012-2013, the Faculty's Recruitment Committee was awarded the Macaulay-O'Sullivan Administrative and Innovation Award. This award aims to "recognize and publicly celebrate success stories at UNB which are worthy of emulation and foster further innovation by encouraging and recognizing individuals, groups and units for creative and effective ways of doing things which have a positive impact on our strategic directions." The Macaulay-O'Sullivan Awards program aims to recognize and encourage innovation across UNB. It stands for "exceptional innovation and achievement".



7 Years Later...

Since we started visiting schools in 2006, our recruitment numbers have gone up 47%. In 2012-2013, the recruitment committee visited over 5000 prospective students

Looking Back - Part 7

Our special series retracing FCS's history

By Dr. Ali Ghorbani

In our last issue, we continued our report on the 1988 proposal for separating the School of Computer Science from the Faculty of Engineering and establishing the Faculty of Computer Science.

In the proposal for establishing the Faculty of Computer Science at UNB and in the section on 'Distinctiveness', the proposal outlines the distinctiveness of Computer Science and its programs that set it apart from the Faculty of Engineering. It includes the following quote from page 2 of the March 1972 proposal for an Undergraduate Degree Program in Computer Science:

"Computer Science is concerned with the fundamental principles unifying the application of computers to diverse problems, as well as with the design and organization of computer hardware and software systems themselves. It is concerned with the design and organization of computer hardware and software systems themselves. It is concerned with the art and science of representing and processing information..."

The report goes on by further saying that because of the growth of Computer Science and its unique role and situation, the time has come to establish the Faculty of Computer Science. The report in no uncertain terms says that "To do otherwise will be detrimental to both the School of Computer Science and the Faculty of Engineering, and this to the University."

At the end, the report compares UNB Computer Science with Computer Science in other universities. It states that the M.Sc. (C.S.) program was established in 1968/69, the same year as the Masters program in Computer Science at the University of Toronto. The report goes on:

"There are 40 institutions offering Computer Science programs in Canada that report statistics to the annual meeting of Canadian Computer Science Chairmen. Of these 40 institutions, UNB ranks tenth in granting undergraduate degrees and sixth in granting Masters degrees, according to 1986-88 data."

According to this report, for the size of the institution, UNB's Computer Science program was substantially large then in relation to other universities across Canada. The report concludes that a Faculty of Computer Science is a viable organizational structure for the School to move at this time. A separate Computer Science Faculty would be an asset for the University since it would enable the University to further promote a strong Computer Science program within the region and nation.

(To be Continued ...)

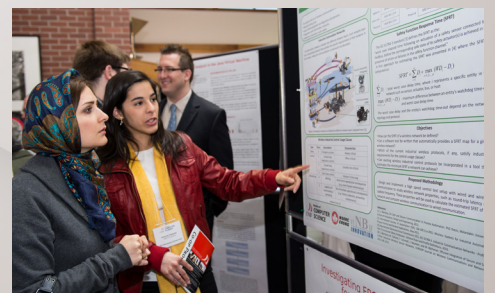
**Source: Notes and documents from the Faculty of Computer Science Archive.*

Latest Research Funding Numbers

The Faculty of Computer Science remains a leader in its field

During 2011-2013, the number and diversity of the research activities of the Faculty of Computer Science has increased extensively. Our researchers received provincial, national, international and industry funding of approximately 10 million dollars to carry out research and development, build research infrastructures, fund graduate and undergraduate students, collaborate with their peers, and publish their work in high impact national and international conferences and journals. During the past two years we maintained our position as a Faculty with proportionally the largest thesis-based graduate program within UNB. With a number of successful NBIF, NSERC strategic, NSERC Engage, AIF, CFI grants, and private sector contracts, we could provide quality experiences for graduate students and research collaborators.

Arguably, our Faculty had proportionally the highest industry collaborations at UNB for the past two years.



Teaching for the Future

The Faculty of Computer Science's Annual Workshop for UNB's pre-service teachers was once again a success

Teaching for the Future Computational Thinking in Teaching and Practice

On March 24th, The Faculty of Computer Science, in conjunction with the Faculty of Education, held its third annual "Teaching for the Future: Computational Thinking in Teaching and Practice" workshop. We've been offering this full-day seminar for three years now to the pre-service teachers about to graduate from the Faculty of Education.

This year again, the Bachelor of Education candidates were introduced to the concept of computational thinking through engaging guest speakers, interactive activities, and facilitated discussions. The purpose of the day was to encourage



future teachers to incorporate computational thinking practices into their classrooms, to foster skills that will lead to more students choosing careers in the Information and Communication Technology sector.

"I am very delighted that our Faculty has the opportunity to introduce you to computational thinking", said Dean Ghorbani in introduction, adding that he hoped this workshop would be useful to the participants in their future life journey as teachers. The Dean of the Faculty of Education, Dr. Ann Shermann, was also present, and reminded her BEd candidates how what they were about to learn would be very interesting for them to use in their future teaching practice, to help their future students solve problems in a different way.

Inspiring Speakers

We had the pleasure of receiving Mr. David Alston, Chief Innovation Officer at Introhive, Startup Advisor, and Code Kids advocate, who told the participants about the importance of computational thinking in our technology driven society. He shared his experience visiting schools in Estonia and discovering their



David Alston addressing the audience

interesting innovative teaching practices. He finally invited the future teachers to be audacious, take risks and try new things to inspire their future students.

The students also had the pleasure of hearing a very inspiring speech from Mrs. Kate Duffy, a teacher from Riverview High School, who teaches Computer Science to her high school students in Moncton.

Hands-On Activities to Take to the Classroom

The rest of the day was filled with hands-on activities where the participants learned how to give computer science unplugged workshop activities to their future students. The students learned how to count in binary, use an algorithm to sort numbers and letters, mimic the Internet and the digital encryption concept and use Boolean values in a fun way.



Students learned how to draw a sorting algorithm and use it in different ways to sort numbers and words

At the end of the day, the participants were invited to share how they planned

to use the concepts learned during the day in their future teaching practices. Very interesting ideas came up, such as using logic gates to establish class rules, play with the sorting network algorithm to sort historical events by relevance, and many others.

The Future of "Teaching for the Future"

By all accounts, the workshop proved successful again this year, with a 100% participation rate among the BEd candidates and very positive feedback. For the third time, we can say "mission accomplished".

The Faculty is very pleased to be able to offer this workshop to UNB's pre-service teachers and hopes to have the resources in the years to come to be able to keep on offering it. We strongly believe that introducing computer science concepts and computational thinking notions to younger kids will help them familiarize with technology and potentially lead to a better input of qualified professionals in the technology sector.

The Computer Science Association Awarded

The Faculty of Computer Science's students association was awarded with the prestigious Club/Society of the Year award

The Faculty's student association, the UNB Computer Science Association (CSA), was recently awarded the UNBSU Club/Society of the Year 2013/14, by the UNB Associated Alumni.

"The works and effort that you have dedicated to the mission of your group will have far reaching effects; not only for the activities and projects that you have taken on, but also for the students you have engaged in the process", wrote the Associated Alumni in their congratulations letter to the CSA. They also thanked the association for contributing to "making [their] club members' time here at UNB so much more valuable and memorable".

"This award is a big deal for us, we are very proud", commented Andrew Martel, president of the CSA. "It is a great recognition of all the efforts that the CSA representatives put

into our activities and it encourages us to keep on going", Martel added.

The CSA offers both academic and social support to the CS students from day one to graduation. The primary objective of the association is to create a sense of cohesion and solidarity among our student body. To help with this goal, the CSA offers a variety of social activities and fundraisers, like their famous Pancake Breakfast, their monthly Board/Card Game Get-Together, their annual Lock-In at Kingswood or any of their numerous charity events. These activities give our first-year students and upper-year students the opportunity of blending in together, establish new friendships and lead to informal tutoring of various kinds.

The Faculty of Computer Science offers its warmest congratulations to the CSA for this award.

Coming up at the Faculty of Computer Science

FCS' 11th Annual Research Expo May 2nd 2014

As per the statistics compiled by the Office of the Vice President of Research, the Faculty of Computer Science has one of the largest number of research graduate students supervised per faculty member at UNB and one of the highest research output per faculty member.

The FCS Annual Research Exposition has become a flagship of research and development in the area of Information and Communication Technologies.

Why?

To discover leading edge information technology research at UNB, to hear industry practitioners speak of their research and proposals, and to explore opportunities for R&D collaboration. Come and see what the most brilliant researchers in the area of computer science have to say!

When and Where?

May 2nd, 8:30 am – 4:30 pm
UNB Fredericton Wu Conference Centre

CS Alumni Breakfast May 2nd 2014

Dear Alumni,

As part of our efforts in improving and consolidating our relations with the UNB CS Alumni, we are cordially inviting all of the Computer Science Alumni for a casual breakfast.

When and Where?

May 2nd, 7:00 am – 8:00 am
UNB Fredericton Wu Conference Centre
(Room 208)

Organized as a prequel to our Research Expo, this breakfast will be a very good opportunity to get back in touch with former acquaintances from your time here at UNB, get updated on the latest news from your field of expertise, broaden your network, etc.

The breakfast will be graciously offered by the Faculty of Computer Science.

Please confirm your attendance by April 24th

by email at gen.audet@unb.ca
by phone at 506-452-6321



Faculty of
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Dean and Professor


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