VILLANOVANS RIDE TALL INTO BIG D

Dallas, Texas was the location for the SIGCSE 42nd Technical Symposium on Computer Science Education, the signature meeting for computer science educators. From March 9 to 12, members of Villanova’s Department of Computing Sciences were, as usual, very active and well represented. Attendees this year included faculty members Drs. Beck, Beroch, Cassel, Goelman, Joyce, Matusek and Way, alumnus Pete DePasquale, graduate students Casey Burkhardt, Kristin Raudonis, Bharath Arabandi, Ravindraraju Kolahalam and Sricharanreddy Gangireddy, as well as Dr. Joyce’s son Tom, a student at Susquehanna University.

Dr. Joyce, as Symposium Vice Chair, presented the SIGCSE Lifetime Service Award to Gordon Davies, who recently retired from the UK Open University.

Dr. Cassel presented an invited talk on “Teaching Survival Skills” aimed at young women entering academic careers in computing, organized Ensemble Project activities including a poster presentation, NSF Showcase presentation and spending time in the project booth. She also chaired a session on “Parallel and Concurrent Programming: Tools and Languages” and was co-author of a presented paper entitled “Cooperative Expertise for Multidisciplinary Computing” on the integration of computing and other disciplines. That paper, co-authored with Dr. Way and colleagues at The College of New Jersey (TCNJ) reported on results of a cross-disciplinary teaching collaboration between Villanova and TCNJ.

Dr. Beck, as SIGCSE Symposium Coordinator, was busy planning the 2014 meeting and assisting at the present one. He chaired a session on computing and music, and served as a judge in the student research poster competition.

Dr. Goelman presented his paper “Reaching Out to Many Majors: A Database Approach” with co-author Suzanne Dietrich and was a judge for the student research poster competition.

Dr. Way was co-author with Dr. Cassel of a paper on cooperative expertise that was presented, judged the student research poster competition, and volunteered in the Kids Kamp by performing a computer science themed magic show for the children in attendance.

Villanova graduate students volunteered at the Symposium. Kristin Raudonis and STUDENTS99 presented their research in the student research poster session.

The Villanova presence at SIGCSE again was impressive and maintained Villanova’s prominence at this prestigious international symposium.

COMPUTING SCIENCES PARTNERS WITH COMCAST ON RESEARCH

The Department has partnered with the Comcast Corporation on a special project that includes four undergraduate students and one faculty member for the fall 2010 and Spring 2011 semesters. The project is evaluating Business Intelligence (BI) software tools and using those tools to perform exploratory analysis of large-scale data sets. Dr. Tom Way is the project’s faculty mentor, with computing sciences majors Mike Dokas, Chris Miller, Scott Robinson and Andrew Dammann performing the evaluation and analysis research.

The primary objective of the students is to produce a comparative assessment of technology offerings and provide an analysis of service usage and trend reporting for large scale, network telemetry data sets. The students presented an executive summary of their findings to Comcast in December 2010.

“Students were given a golden opportunity to interact with our industry colleagues at Comcast in a realistic way, using real data while tackling challenging, enterprise-scale problems, under the guidance of faculty and staff of our department’s Center of Excel- lence in Enterprise Technology (CEET),” Dr. Way said. "By virtue of its successful position in the marketplace, Comcast needs to analyze terabytes of data in order to ultimately guide business decisions, a role that the faculty, staff, and student members of CEET are ideally suited to fulfill.”

Mike Dokas said the project gave him valuable experience working on an inside-industry project. "At this point in my life, every opportunity to work in industry and learn about a particular industry is very valuable," Dokas said.

Scott Robinson said, "I had the opportunity to use the computer science theories taught in my classes and apply them to a real-world business challenge, solidifying the importance of the core computer science principles taught here at Villanova."
this Spring the Computing Sciences Department's special topics course series hosted an interdisciplinary opportunity for Villanova students.

The Mobile Device Programming course introduces students to the software aspects of designing apps for mobile devices, but also the business and wireless networking aspects of the process. This collaboration among the Villanova Business School, the College of Engineering, the College of Liberal Arts and Sciences, Villanova’s Center of Excellence in Enterprise Technology (CEET), and Villanova’s Center for Innovation, Creativity, and Entrepreneurship (ICE) was taught by Drs. Frank Klassner, Sarvesh Kulkarni (CoE) and William Wagner (VSB).

Ten majors from each college signed up for the course. Students were organized into 10 teams, with each major represented on a team. The course's major objective was for each team to plan and develop a functioning app and a business plan. Three teams chose to work in Objective-C and develop for the iPad, iPhone, and iPod and seven chose to work in Java for the Droid platform.

In addition to lectures on topics ranging from commercialization, interface planning, and network security, students heard from representatives of regional companies about the process of creating business plans and developing apps and tools for the mobile market. The innovative nature of the course caught the attention of Verizon Wireless, which provided five Droid X phones with data plans.

Verizon Wireless sponsored only two such courses in the country -- the other course was at UC Berkeley. Team projects covered a variety of applications, including a Gift-Grabber app that allows users to scan item barcodes for wish-lists, a Smart-Money app to support purchases through Wildcard accounts, a Homework Organizer app, a Mobile Inventory app, and an IDE iPad app for editing and uploading HTML files. Computing Sciences major Mikhail Oza ('12) cited his experience in the course and in his Smart-Money app team as an important reason the software company SAP offered him an internship this summer in their mobile development division.


A s you’ve read elsewhere in this issue of the Newsletter, employment opportunities in computing remain extremely healthy, even in today’s economy. This column regularly shines the spotlight on one of our illustrious alumni. This time we report on Todd McNeal (BSCS, 2006), who writes:

Since graduating in '06, I've worked as a software developer at IBM, specifically in IBM Global Services' e-commerce division. IBM has a software platform called Web-Sphere Commerce which is a market leader for large-scale B2C and B2B e-commerce sites. At IBM, I worked for various clients to design and develop e-commerce websites built upon this platform.

A typical project could last between a few months to several years, depending on the scale of the project. Project teams tend to be small, so as a result I've gotten a chance to work in many different types of roles and work with a lot of different technologies.

Since our teams work closely with our clients, I typically traveled to the client's office and worked there from Monday to Thursday and worked from home on Friday. Consulting has its own set of challenges, but it's a great way to learn about technology and business, since it's each project is its own separate job. It's been rewarding to work with many talented people and work on some of the largest e-commerce sites on the web today.

In November, I left IBM in order to found a startup in the area of Social Commerce. Social media sites like Facebook and Groupon are increasingly going to affect how people shop and buy online and in brick-and-mortar stores. I’m excited to be building a product in an area that is really just starting to gain traction.

V I L L A N O V A  S T U D E N T S  A C T I V E  I N  R E S E A R C H

O ur students have been very busy this year attending conferences and writing papers. Some highlights are:

Jenny Liang and Lauren McDermott, junior computer science majors, presented their research on connectivity in wireless communication networks at the 2011 Richard Tapia Celebration of Diversity in Computing, held April 3-5 in San Francisco. Under the supervision of Kristin Raudonis, they developed an interactive simulation and visualization platform for wireless communication graphs, then used it to determine the signal strength necessary at each wireless node to guarantee full wireless connectivity. Their research was sponsored by the 2010-2011 Collaborative Research Experiences for Undergraduates program of the Computing Research Association Women's Committee.

Kristin Raudonis, a graduate student in Computing Sciences, presented her research on wireless networks with directional antennas at the International Conference on Combinatorial Optimization and Applications, held December 18-20, 2010, in Hawaii. Under the guidance of Dr. Mirela Damian, Kristin settled a long standing open problem in computational geometry, showing that a particular neighboring graph is a spanner. Kristin also traveled to the Grace Hopper Conference in Georgia last October and recently to SIGCSE in Dallas to present a poster on The Laptop Instrument.

Victoria Suwardiman, a junior computer science major, is one of only 50 students nationwide selected to receive a Microsoft Golden Ticket. This entitled her to an all-expense paid trip to Microsoft headquarters in Redmond, Washington, where she was given access to Microsoft engineers, visionaries, grassroots innovators, unreleased technology, and networking opportunities. She also won a travel grant to allow her to attend the 2011 Richard Tapia conference.
MESSAGE FROM THE CHAIR

Computing is back! One measure is the number of calls and emails that I have received from companies looking for interns. Another is the increase in the number of students applying to study computer science. A third is the intense recruiting that some of the top computing companies are doing to lure the excellent students to their doors.

For example, Victoria Suwardiman received an invitation to a Microsoft Golden Ticket event; Vincent Veltri has been signed with Bank of America for weeks; and three of our top student developers—AJ Palkovic, Casey Burkhardt, and Taylor Clifton will be at Google.

But computing needs to come back more. The demand for computing professionals far exceeds the projected supply. The need for women as computer scientists is more acute than ever. Students who are thinking of majoring in mathematics may want to reconsider, even if they haven’t learned about computing in high school. (And don’t get me started on that subject.)

For those of you who have been steady supporters of the Department through your earmarked gifts to the Alumni Fund, we thank you. The students who have received travel support thanks to your generosity are particularly grateful. For the rest of you, we would be excited to receive your gifts and to hear about your successes. Some of you may know the story of the small gift that allowed us to purchase 20 MindStorm robots and the way that gift has been multiplied many times over, bringing the Department over $1 million in support of research with robots.

BITS & BYTES

Philip Sopylo (‘12) is currently our intern at the Vatican. He is working on creating a database that houses all of its media. The intention of this centralization is to allow easy access to resources. The difficult part is this requires manual filtering in order to supply each piece of content with keywords applicable to the subject. His project with the Vatican Radio fits in with this goal. His assignment was to create a parser that reads through and extracts pertinent headlines from eight national newspapers stored in PDF format on the intranet. Vatican Radio journalists generally have spend every morning searching for articles but this project should automate this otherwise laborious process.

Edward Orsi (‘11), a computer science major and communications minor had been accepted to the master's program in Fine Arts at Boston University. When he took his first video production course this fall, he decided that he wanted to study screenwriting. He looked up academic programs for aspiring screenwriters and found Boston University which has a fledgling and indeed promising reputation for film. They accepted him and he will receive an MFA in Screenwriting.

Mikhail Oza (‘12) will be interning at SAP in their mobile app division this summer, and Kristin Palazzolo will be working at the Department of Homeland Security's Field Support Division in Jamaica, NY this summer.

Ten groups presented posters at the Sigmi XI induction on April 8th. Sigma Xi, a scientific research society, include members who range from graduating seniors to Nobel Laureates. Kristin Raudonis (‘10) and Carmen Nigro (‘11) were inducted into Sigma Xi that evening.

Dr. Giorgi Japaridze has been appointed to a top level visiting position at Shandong University, the second-oldest university of China (after Peking University), and the main university of the Shandong province. His title is translated roughly as “distinguished professor.” He will spend three months every year at the University, which is located in the city of Jinan 200 miles south-east of Beijing.
As a computer scientist, I’m often asked by friends and relatives to help them troubleshoot a hard disk problem, wireless network failure or printer error message. This is the public relations challenge we face. The rest of the world just doesn’t seem to get that Computer Science is no more about fixing broken computers than Astronomy is about fixing broken telescopes.

To deal with this perceptual chasm, Carnegie Mellon professor Jeannette Wing coined a new term, “Computational Thinking” in 2003. If you haven’t heard about this yet, you probably will soon. Wing views Computational Thinking as a fundamental skill for our time, and no less important than “the 3 Rs,” reading, ‘riting and ‘rithmetic. And now it’s starting to show up in all levels of education. This is a very good thing.

Computer Science is unique among the sciences since people often misunderstand it as using computer programs and computers, rather than what it really is: the science of thinking computationally, which provides the power to answer these sorts of questions:

- How difficult is a problem to solve? What’s the best way to solve it? Is an approximate solution good enough? Can a seemingly difficult problem be reformulated into a new, easier problem? Can we break a hard problem into many smaller, easier parts?
- Computer scientists just happen to use computers as a way to analyze and answer problems like these, but you don’t really need computers at all. Wing observes that “Computer Science is the study of computation – what can be computed and how to compute it.” It is about conceptualizing, not programming, and a way that humans, not computers, think. It combines mathematical and engineering thinking and is about ideas, not the results of those ideas. And it is for everyone, not just computer geeks.

Did you realize you were already a Computational Thinker? Yep! You are thinking computationally every time you do things like pick the best way to drive home to avoid traffic, or plan a shopping list to get everything you need for the week’s meals, or rearrange furniture to make best use of the space in your bedroom, or pick college classes so you never have to get up before noon, or organize who gets picked up first, second and third in a carpool. It’s all Computational Thinking, and who wouldn’t like to be a little better at that?

If Jeannette Wing has her way, one day soon we all will be. Computational thinking will be so much a part of every student’s experience that the tremendous benefits of computational thinking will be as commonplace as the 3 Rs. And Computer Science.