somewhere, embedded in the brain of every Computer Science student, present in the notion of “Turing’s The-sis.” Famed logician Alan Turing said that anything that can be computed, can be computed by a computer, big or small, fast or slow, given enough space and time. So, in theory, my sleek Casio calculator with dual chronographs is a computer that might, if ably instructed, perform exactly the same computational gymnastics as IBM’s chess playing Big Blue Supercomputer that beat Grand Master Garry Kasparov in 1997. Still, put your money on Big Blue over my timepiece... unless it’s on Bobby Fischer’s wild.

Turing’s conjecture reminds us that computing, and therefore Computer Science, is everywhere, all around us, all the time. This points to one of the biggest ideas in Computer Science, the Principle of Locality. Locality says that computers tend to execute the same sequence of instructions, again and again, or to access the same (or nearby) location in memory, real soon now. But Locality isn’t just for computers. Ever felt like each day was pretty much like the day before? The reason for this is that you’re living in a universe that is brimming with Locality. Every morning, people tend to execute the same sequence of operations (shower, get dressed, eat breakfast, brush teeth, try to find lost keys). Each day we do the same things, see the same people, travel the same route to work, dial the same phone numbers, take each next step near the last, and visit the same websites. The weather is about the same, the stars arrange in the same patterns, and due diligent attention. It’s Locality. It’s all Locality.

As computer scientists, of course, we knew all this already, and it returns us to Alan Turing and his universal computer, which may be more universal than first we realized. ... just about everything else. Or to paraphrase another great logician, Yogi Berra, “This is like Locality all over again.”

FOR I EQUALS ONE TO INFINITY

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DEPARTMENT OF COMPUTING SCIENCES

NEWSLETTER

December 10, 2006 FALL 2006

MAJOR RESEARCH PROJECT BENEFITS

LARGE SCALE NETWORKS

Innovative research into the use of modeling and simulation techniques to develop and test large scale networks is underway in the Department’s Center of Excellence in Enterprise Technology. The research team of eight faculty members, seven graduate students, three undergraduate students, two full-time staff research associates and three support staff has been focused since late in 2005 on solving the problem of how to improve performance, reliability and capability of service-oriented architectures (SOAs) for the project’s sponsor, the U.S. Air Force. The Applied Research in Computing Enterprise Services, or ARCES, project is being conducted in collaboration with a team of developers at Gestalt, LLC, an industry leading defense software contractor and third fastest growing technology company in Philadelphia. ARCES Program Manager Dr. Thomas Way describes the project as “an extraordinary partnership between academia and industry, drawing from the strengths of both to solve complex problems rapidly and effectively.” Other faculty on the project are Robert Beck, Vijay Gehlot, Dan Joyce, Anany Levitin, Elliot Sloane (School of Business), Sue Metzger (Part Time Studies) and Peter DePasquale (College of New Jersey). Recently, two Villanova graduates Richard Kheir (MS ’06) and Jessica Byrnes (BS ’06) were hired as full-time research associates. ARCES modeling efforts have already identified areas of improvement to be made in the underlying SOA software and created a platform for simulating and testing a large scale SOA.

BETWEEN THE JOB SEARCH AND THE MORTGAGE

As Dr. Beck mentions in his Message from the Chair in this Newsletter, the current job situation for department graduates is extremely favorable. We therefore kick off what will be an ongoing feature recounting the experience of some recent graduates. Mike Czepiel, who received his degree from the department in spring, 2005, writes:

 Guidance at Villanova fueled by your own passion will get you wherever you want. Since graduating I started working as a web developer at Apple Computer in the heart of Silicon Valley — a distance of Apple, Yahoo, Google, eBay, Sun, Oracle, etc. and get paid to play with all the stuff I was doing in the Software Engineering Lab at Villanova. Of course, there are plenty of great jobs to be had in Philly as well; which is great as there’s not a decent cheese steak to be had in the Bay Area.
SCIENCE & THEATRE MAGIC PROGRAM-SUMMER 06

This summer marked the second year of the Science & Theatre Magic Program, a special Villanova University outreach program to engage teenagers in multidisciplinary science exploration. For three weeks in July, Villanova faculty and students (graduate and undergraduate) taught a group of fourteen young scholars (ages 13-17 from schools across the Greater Philadelphia area). These participants explored scientific principles in the creation of a fantastic daily long-performance/ adventure, which they then shared with their apprentices (ages 6-12 from North and West Philadelphia). This culminating event during the final week of the program, sponsored in conjunction with the Philadelphia Department of Recreation, brought over 120 children from Philadelphia by train to “enroll” in a fictional “School of Magic” where the scholars act as guides/teachers, and deliver science-inspired “magic lessons.”

The Science & Theatre Magic Program was developed by the PIVOTS project (Peer Interdisciplinary Volunteer Outreach with Theatre and Sciences), led by Dr. Papalaskari (Computing Sciences) to address the urgent need for enrichment activities, especially among underrepresented minorities to pursue science, mathematics, and engineering careers.

On April 7, 2006, The Villanova Chapter of Upsilon Pi Epsilon (UPE) inducted ten Computer Science students (five undergraduates and five graduates) into the national honor society in Computing Sciences. Congratulations to Luis Ahumada, George Richard Franck, Paul Galarbie, Andrew Murray, Kristin Erica Obermyer, Patrick Rapone, Amy Roberge, Mujtaba Talebi, Timothy White and Jason Williams, who received the UPE award for their outstanding academic achievement and commitment to sciences. Timothy White opened the ceremony with an engaging speech on Facial Recognition Systems in Computer Vision. The induction ceremony was conducted by UPE officers William Cameron, Matthew DePheere and David Walls. Joining the ceremony was Dr. Angela Wu, International President of UPE (also a former Villanova CSC graduate), who addressed a few words of congratulation and advice to the new inductees. The ceremony concluded with a pleasant socializing reception.

SCIENCE & THEATRE MAGIC PROGRAM-SUMMER 06

That makes computing at Villanova outstanding?

• We have talented first-year students who have joined the robot research team, the church architectural archival team, and the web site enhancement team. But we could use twice as many majors at least. The jobs are there.

• We have 26 graduate students receiving assistantships and scholarships, all working on research projects including ARCES and digital libraries.

• I meet graduates on the street like Darrell Fernandez ’93, now Vice President—Technology at Fidelity Investments.

• According to the Bureau of Labor Statistics, five computing jobs (systems software engineer, applications software engineer, systems analyst, database administrator, network analyst) are among our top ten salary jobs in its list of fastest-growing opportunities through 2014.

COMPUTER SCIENCE HONOR SOCIETY

What makes computing at Villanova a good major?

• We receive reaccreditation of the BSCS program by the Computing Accreditation Commission of ABET, Inc. for another six years with praise for our strong curriculum and advice to the new inductees. The ceremony concluded with a pleasant socializing reception.

A  SCIENCE & THEATRE MAGIC PROGRAM-SUMMER 06

At this past summer’s eleventh annual ITCS Conference held at the University of Bologna, Professor William Fleischman and two of his students, Jessica Byrnes and Todd McNeal, discussed ethical issues in computing. Professor Fleischman presented a paper, “Meta-Information and Ethical Issues in Computing.” The paper discussed approaches for broadening student understanding of surveillance questions and the societal harm that results from inequities in early exposure to computing technologies in public schools. Byrnes and McNeal were members of a team that collaborated with the eighth grade teaching team at Julia de Burgos Bilingual Elementary School in North Philadelphia on a year-long computer instruction project completed by 160 students.

The team, which also included Zachary Zwebner, Thomas Hufniger, and Lauren Pisciotta, authored a student poster on their project. Byrnes and McNeal presented the poster, which attracted considerable interest. Their expenses were supported by the Department and by a special projects grant from the ACM Special Interest Group on Computer Science Education.

MESSAGE FROM THE CHAIR

What makes computing at Villanova a good major?

• We receive reaccreditation of the BSCS program by the Computing Accreditation Commission of ABET, Inc. for another six years with praise for our strong curriculum and faculty.

• Many of our students, undergraduate and graduate, give papers at national and international conferences and have their travel supported by gifts from alumni made directly to the Department. We can use your support also.

• What makes computing at Villanova outstanding?

• Dr. Giorgi Japaridze’s paper on computability logic is the most frequently downloaded paper from the Annals of Pure and Applied Logic website.

• Dr. Frank Klassner has arranged for the use of a casual video game engine as the foundation for our strong curriculum and development of new styles of video games. He is also leading a team of students who are creating a virtual reality tour of the parish church of St. Peter the Apostle in Philadelphia. What makes computing at Villanova outstanding?

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ARCES RESEARCH

D r. Vijay Gehlot presented ARCES research work at the Workshop on Practical Use of Colored Petri Nets (CPN) in Aarhus, Denmark, in October. The presented work was ex- pressed and supported by Dr. Kurt Jensen, head of the CPN Group at Aarhus University, and also the “father” of Colored Petri Nets. Dr. Jensen also extended an invitation to ARCES researchers for future research collabora-

tion and visits. The presented paper, “A CPN Model of SIS-Based Dynamic Discovery Protocol for Webservices in a Mobile Environment”, dis- cussed details of a model of the discovery protocol for the Multi-Channel Service Oriented Architecture that was built as part of the ARCES project using CPN-Tools. The model can be used to ascertain the correct functioning of the protocol and reveal func-
tional deficiencies.

NEWS BITS AND BYTES

John Keleher (‘02) graduated from American University with a MS in Computer Science last spring and has formed a web technology and software service company, Ben-

ton Consulting, that de-

velops custom software. He and his partner have completed projects for the Department of Art & Technology, American University and other vendors. In his spare time, he is market mas-
ter at the farmer’s market on DuPont Circle on weekends and competes in soccer and frisbee tournaments.

The department pro-

gramming team (Kory Kirk, Mohit Chatt and Patrick Cesarz) participated in the Mid-Atlantic ACM International Programming Contest and secured 10th place, finishing one, and almost finishing the sec-

ond, of three programs. Congratulations for a job well done!

John Welch, founder of PlayFirst, and previous VP of Games and Product at AtomShockwave where he helped build Shockwave into one of the Internet’s top game portals, gave a collo-
quium on how to land a job in the video game industry, at a venture-

funded startup, and/or starting your own com-

pany.

VILLANOVA UNIVERSITY

Presented in Denmark

Dr. Vijay Gehlot with graduate student Anush Hayrapetyan coauthor of the work presented in Denmark

BOLOGNA, ITALY

Dr. Robert Beck CS Department Chair

COMPUTER SCIENCE HONOR SOCIETY

OFFICERS

2006-2007

President: Zachary Zwebner
Vice President: Jessica Byrnes
Secretary: Todd McNeal
Treasurer: Jessica Strope

Dr. Robert Beck CS Department Chair

the top of its list of best jobs (Reuters.com, 2006).

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