

Computer Science Department

Annual Report for 2005-2006

Summary

The Computer Science Department began the 2005-2006 academic year in a state of transition. Dr. John Dalphin, department chair from 1999 to 2005, retired in December 2005. Dr. Timothy Fossum was hired in August 2005 and began his service as department chair. Dr. Susan Haller also joined the faculty in August 2005 as an Associate Professor, replacing Dr. Barbara Nostrand, who was non-renewed. In January 2006, Dr. Charles Marshall was the only faculty member remaining in Computer Science who was in the department prior to this academic year.

Dr. Dalphin spearheaded several changes in prior years, including: updating the major requirements by aligning the CS major more closely to accreditation standards; adding a concentration in Information Systems; and designing an interdisciplinary Informatics curriculum. Dr. Dalphin also rebuilt the Board of Advisers, shaping it into a significant voice of support for the Department and a catalyst for change.

These changes occurred at the same time that interest in computer science nationwide was declining dramatically. Between the fall of 2000 and the fall of 2004, the percentage of incoming students interested in computer science dropped by 60%, and interest in the major is a significant predictor of degrees awarded. Even more troublesome is that among CS majors, the proportion of women to men also declined in this period.

There are no easy fixes to these trends. Interest in computer science has fluctuated wildly since the mid-1970s, with dramatically high peaks in 1985 and 1999 and low points in the early 1990s and the one we see currently. One can argue that the advent of the personal computer triggered the decline from the mid 1980s, and there's no question that the bursting of the "dot-com bubble" and recent moves by US corporations to outsource IT jobs abroad have been significant contributors to the latest decline. Even so, the Department of Labor predicts that computer-related jobs will continue to have strong growth in the US in the coming years, and a decline in CS graduates will have a negative impact on the country's ability to remain technologically competitive.

The number of CS majors at Potsdam averaged slightly under 42 in the four academic years 2002-2003 through 2005-2006, and our Fall 2006 major count is currently 43, so we have not experienced a precipitous drop in the past few years as reported by some of our peer institutions. Our program is small, but we have capacity for growth. We believe that we will increase the number of CS majors through our continuing efforts to make adjustments to our curriculum and to market our program more effectively.

We can achieve a marketing advantage in part by increasing the external visibility and recognition of our program. This can be done through such activities as publishing in scholarly outlets, applying for and receiving grant funding, visiting community colleges, involving students in extra-campus activities, and participating in professional societies. Our Board of Advisers has been instrumental in offering internship and employment opportunities for our students. We continue to explore opportunities that will improve our degree program and its attractiveness to students.

In the computer science community, it is commonly accepted that the "half-life" of a computing practice, technology, or pedagogy is 18 months. As CS faculty, we are continually faced with

the daunting task of keeping pace with the rapid changes in our field. We underscore the need for the College to provide computing resources and infrastructure sufficient to support these changes. This means periodically replacing inadequate computing workstations, lab equipment, servers, and software as well as acquiring new devices and equipment illustrative of modern advances in technology. It also means changing the ways we engage our students in learning, the ways we interact with colleagues elsewhere, and the ways we carry out our own intellectual and professional development. While changes in computing technology have affected the entire educational enterprise, these changes have *immediate* impact on those who develop and deploy the technology – ourselves (CS faculty) and our students.

Highlights

Scholarly Activity

“Measuring card sort orthogonality” by **Timothy Fossum** and **Susan Haller** was published in the *Expert Systems* journal. This work has already played a significant role in several other recent computer science education research publications. It was the primary basis for the paper “A new quantitative assessment tool for computer science programs”, also by **Fossum** and **Haller**, which appeared in the *Proceedings of the 10th Annual SIGCSE Conference on Innovation and Technology in Computer Science Education* and was presented in Lisbon, Portugal.

At the same Lisbon conference, **Fossum** also presented a paper entitled “Classes as first-class objects in an environment-passing interpreter”. This paper was directed to those teaching a course in programming languages and addressed the issue of how to incorporate object-oriented features into language design.

Fossum was co-author of the paper “Women catch up: Gender differences in learning programming language concepts”, which appeared in *Proceedings of the 37th SIGCSE Technical Symposium on Computer Science Education* and was presented in Houston, Texas.

Fossum worked with a CS student, **James Snow**, on a summer project sponsored in part by the National Science Foundation (NSF). The purpose of this project was to incorporate two low-cost robot platforms into the Pyro robotic programming infrastructure and to evaluate the Pyro environment in terms of its ability to accommodate diverse robot platforms. A paper describing this experience is in preparation. The NSF support came from a grant to Potsdam intended to attract and retain students in science programs. Integrating these new robots into the Pyro infrastructure will allow us to take low-cost robots to recruitment events such as Potsdam Open Houses to attract students into our program.

Given the rapid pace of change in computing technology, conferences provide a timely opportunity for dissemination of research results. Consequently, a significant proportion of advances in computer science research are reported in conference publications rather than journal articles.

Professional activities

Susan Haller and Ingrid Russell (University of Hartford, Hartford CT) were program co-chairs of the 38th SIGCSE Technical Symposium on Computer Science Education held in Houston, TX,

March 1–5, 2006. This is the premier international conference on computer science education. **Timothy Fossum** also attended this conference, where he presented a paper (see above).

Fossum attended the Northeast Section meeting of the Consortium of Computer Science in Colleges (CCSC) in Worcester, MA. Seven students accompanied Fossum to this conference, three of whom participated in a pre-conference programming contest where they placed 10th out of 25 teams.

Following their success as SIGCSE program co-chairs, **Haller** and Russell were appointed as conference co-chairs for the 39th SIGCSE Technical Symposium to be held in Northern Kentucky (the Cincinnati area) in March 2007. This conference is expected to draw over 1200 participants.

Haller also attended the National Science Foundation ITWF & ITR/EWF Principal Investigator Conference in Raleigh, NC, as co-Principal Investigator with PI Sylvia Beyer (UW Parkside, Kenosha WI) on a National Science Foundation grant.

Haller attended the Florida Artificial Intelligence Research Symposium (FLAIRS) in Melbourne FL in May 2006 and was re-elected as the Secretary of FLAIRS. **Haller** was elected to serve as general chair and principal organizer of the FLAIRS conference in 2009.

Haller and **Fossum** both served on National Science Foundation (NSF) review panels for CCLI in July 2005, March 2006, and July 2006. **Fossum** served on another NSF review panel in December 2005.

At then acting President King's initiative, King, **Fossum**, and several other representatives of the School of Arts and Sciences attended an exploratory meeting at the nanoscience technology center in Albany to discuss possible ways in which SUNY Potsdam could collaborate with Albany's College of Nanoscale Science and Engineering, especially through student internships and faculty development activities.

Haller served as a reader for the Educational Testing Service Advanced Placement Examination in Computer Science, in Clemson SC, June 14-20, 2006.

University service

Susan Haller served on the Admissions Committee for the academic year, and as its chair in Spring 2006. As Admissions Committee chair, **Haller** also served on the Executive Committee of the Faculty Senate. **Haller** was elected as an alternate senator representing SUNY Potsdam to the SUNY Faculty Senate and attended the Winter and Spring Plenary sessions.

Timothy Fossum served as chair of the Arts and Sciences Curriculum Committee in Spring 2006. **Fossum** also represented the department in the Faculty Senate, served on the Senate Business Affairs Committee, and was appointed to the Teaching and Learning Technology Roundtable (TLTR).

Charles Marshall was alternate senator representing the Department to the Faculty Senate and also served as Department liaison to the College Libraries. **Marshall** also served on the Friends of the Gibson Gallery and rendered community service at The Arts Center of the Capitol Region in Troy, New York.

As chair of the Department of Computer Science, **Fossum** participated in Potsdam Open House sessions and other activities related to student recruitment and retention. **Fossum** also organized two Computer Science Board of Advisers (BOA) meetings, one on November 5, 2005 and another on April 28, 2006. In addition to participating in BOA meetings, **Fossum** went on the

road with Nancy Griffin to meet with alumni in Rochester in mid-November 2005, the Syracuse/Binghamton/Rochester area in mid-January 2006, to Raleigh, NC in mid-February 2006, and (with Danielle Brining) to the Boston area in late May 2006.

Fossum chaired the CS Department recruitment committee during the search for an Assistant Professor, with **Charles Marshall** and **Faye Simmons** as other members of the committee. Applications were received from about 140 candidates. As a result of the committee's work and recommendation, the College hired **Brian Ladd** into the position, beginning Fall 2006.

Marshall served as a judge for the Junior Science Olympiad on March 24, 2006.

Curriculum changes

Timothy Fossum presented a plan to the Fall 2005 BOA meeting outlining a re-structuring of the major in Computer and Information Sciences to bring the course names and contents more in line with those in use at other institutions (for ease of transferring, for example) and to rename the program to Computer Science. These changes were endorsed by the BOA, and **Fossum** went on to have the changes approved up the line by the Arts and Sciences Curriculum Committee, the Arts and Sciences Council, the Faculty Senate Committee on Academic Programs and Curriculum and the full Faculty Senate, which was completed in mid-May 2006. The next step is for these changes to be sent on to Albany for SUNY Central Administration approval. In anticipation of this approval, the Potsdam department name has been officially changed to Computer Science.

Faye Simmons, **Susan Haller**, and **Fossum** collaborated on a successful effort to have CIS 105 (Introduction to Computing) certified as meeting the new Freshman Mathematics requirement of the General Education program.

Miscellaneous

Through IBM employee donations and two-to-one matching corporate funding, **Timothy Fossum** acquired a high-performance BladeCenter computing cluster with five processor units and Gigabit Ethernet interconnectivity. The cluster will be used for high-end student projects and as an opportunity to attract students into our program.

Conclusion

Computer Science remains a viable program at SUNY Potsdam. As is evident from the highlights presented in this Annual Report, the CS Department faculty are significantly involved in the College and professionally. Changes to our curriculum will help to align our program with national standards and consequently will be more attractive to prospective students. We look forward to enhance our program's reputation here and elsewhere by building on: our department's strengths; the College's continuing support of our activities; and our ongoing efforts to give our program external visibility.