

Timothy Hickey
Computer Science

C.V. attached

Faculty Activity Report 2007-2008

SUBMITTED

Instructional Activities

Term	Course Number	Course Description	Enrollment
Summer 2007	COSI 2A 1 [sn]	INTRO TO COMPUTERS	7
Summer 2007	COSI 33B 1 [sn]	INTERNET AND SOCIETY	4
Summer 2007	COSI 92A 1	INTERNSHIP & ANALYSIS	1
Summer 2007	INET 98A 1	INDEPENDENT STUDY	1
Summer 2007	COSI 65A 1 [sn]	INTRO 3-D ANIMATION	4
Fall 2007	COSI 155B 1 [sn]	COMPUTER GRAPHICS	21
Fall 2007	COSI 210A 1	INDEPENDENT STUDY	1
Fall 2007	COSI 400D 1	DISSERTATION RESEARCH	2
Fall 2007	COSI 98A 1	INDEPENDENT STUDY	2
Fall 2007	INET 92A 1	INTERNSHIP & ANALYSIS	1
Fall 2007	INET 98A 1	INDEPENDENT STUDY	2
Fall 2007	COSI 93A 1	RESEARCH INTERNSHIP & ANALYSIS	1
Spring 2008	COSI 210A 7	INDEPENDENT STUDY	1
Spring 2008	COSI 2A 1 [sn]	INTRO TO COMPUTERS	57
Spring 2008	COSI 400D 1	DISSERTATION RESEARCH	3
Spring 2008	COSI 98B 1	INDEPENDENT STUDY	8
Spring 2008	INET 92A 1	INTERNSHIP & ANALYSIS	1
Spring 2008	INET 98B 1	INDEPENDENT STUDY	2
Spring 2008	COSI 93A 1	RESEARCH INTERNSHIP & ANALYSIS	1

Teaching innovations:

The Cosi 2a class in Spring 2008 required a much larger time investment as we pioneered using community-engaged learning in this class. All students are required to spend 3 hours over the semester contributing to the project (mostly by helping staff and and develop the computer center and the Prospect Hill Community Center and writing up a reflection of their experience and

suggestions for the future). I spent an additional 3 hours per week supervising students at PH on Tuesday afternoons, while by CEF supervised students on Wed and Thu.

I've also made an effort to encourage students to design their projects (in all courses and in the independent studies) in such a way that they apply the theory they have learned to create an artifact that makes a difference in the world (e.g. we developed the "Fantasy Major" servlet in CS2a with plans to release it to the general Brandeis population). For their final projects they are designing "useful" web applications such as a tool for students to buy/sell used books for Brandeis courses...

Reading courses, theses, dissertations, research projects (undergraduate and graduate):

I have two PhD students that are planning to graduate this year: John Langton in the Spring and Kenroy Granville in the summer. I have also served on a few dissertation committees but these require much less time.

I have been involved in several independent studies, research internships, summer internships, this past year. The independent studies are usually run by building a syllabus with the student in the first weeks of the course where they will read 15-20 pages of journal articles per week. They they write a paper and give a public presentation at the end of the semester.

The research internships are keyed to a research problem and the students meet regularly with me to work on this problem.

I'm working with one group this semester to design a new class of social network that would solve many current problems with these networks (e.g. privacy, the need to update your profile in several place, the difficulty in forming small private communities, etc.) We are working with a Business/Economic student who is developing a business plan to plot one way to bring these ideas to the market (although it is very clear that the purpose of this course is purely pedagogic, the goal is to have them learn about software development and business planning, but not to actually start a business during the class.)

Another research internship involves using the NDvis system developed by my PhD student to study a very large medical data set from an experiment on Host versus Graft Disease.

Another research internship involves developing neuron model simulators and having my student learn how to run them effectively on the parallel cluster we are helping to build in Feldberg.

Another research project has a student learning how to effectively use the new cluster to run parallel neuron simulation experiments.

Advising and Mentoring (undergraduate advisees, graduate advisees, teaching fellows, other interactions, office hours):

Undergraduate	43	Graduate	3
Students:		Students:	

My office hours are usually by appointment where I mail my calendar to the student and they pick times they can meet. I also have office hours for my classes, but these change semester by semester. Currently I have office hours Monday 10-11, Tue 1-2, Fri 12-1

I've sponsored monthly CS major meetings where bring in some specialty food (e.g. Italian desserts) and talk about what is happening in the department and the students give me feedback about the department. We have also had students give

presentations at these meetings about their experiences with internships or summer jobs.

I meet regularly with prospective students and their parents and typically talk for 45-60 minutes about our program.

I started an ITjobs@lists.brandeis.edu list serve where we post IT jobs for Brandeis students.

I helped organize a purchase of 10 computer nodes from department funds and several research grants to help expand the shared Science computer cluster from the current 30 nodes (or 240 cores) to 40 nodes (to 320 cores!)

I run a monthly CS website redesign meeting where grads and undergrads are helping us redesign the CS website.

I run a monthly CS systems meeting where students and staff discuss CS systems policies and share information about backups, security patches, etc.

I organized and attend a weekly CS grad seminar where our PhD students present their ongoing research to their peers.

I organized and attended an evening event where CS alumni from 2000 came to Brandeis with the CTO of their company to talk about job and internship possibilities as well as how the company (Kayak) runs.

I started a LinkedIn group for TYP alumni which we are starting to build up and I am helping Jordan Pollack build up the www.blints.org IT alumni group on linkedin.

I've been organizing students to help out with the Prospect Hill Community Center Computer Club and I spend one afternoon a week (Tuesday 3-6) with CS2a students and other CS students helping develop that project.

Publications, Research and Artistic Creations

Conference Paper(s)

John T. Langton, Astrid A. Prinz, and Timothy J. Hickey. "NeuroVis: combining dimensional stacking and pixelization to visually explore, analyze, and mine multidimensional multivariate data." SPIE/VDA 2007, 2007.

John T. Langton, Astrid A. Prinz, David K. Wittenberg, and Timothy J. Hickey. "Leveraging Layout with dimensional stacking and pixelization to facilitate feature discovery and directed queries." Visual Information Expert Workshop (VIEW2006), Paris, France. 2006.

Forthcoming Publications

Langton, John and Gifford, Elizabeth and Hickey, Timothy. "Visualization and Interactive Exploration of High Dimensional Datasets." Applications of Computational Intelligence in Biology: Current Trends and Open Problems, vol. 122 Ed. Smolinski, Tomasz

G.; Milanova, Mariofanna G.; Hassanien, Aboul-Ella.
Springer, 2008 (forthcoming)

Ongoing Work

I have several active projects ..

* Ecolibrary - Dan Perlman (BIOL) and I have been working on the ecolibrary web application with a CS undergrad (Limo Sadalla). We are planning on submitting a grant proposal to the NSF CCLI program to further develop this tool for use in Science classes (K-12 and post-secondary) and to assess the impact of the site..

* CollabEd - I'm working with a PhD student Kenroy Granville to develop collaborative editors that allow multiple people widely distributed about the globe to simultaneously edit a single document.

* NDVis - I'm working with a PhD student John Langton to develop exploratory data analysis tools based on visualization of very large datasets projected into high dimensional space using a new technique called Gestalt Visualization that we are developing.

* Schemebat - I'm working on a new approach to teaching programming based on allowing students to attempt to solve programming problems online and to have their attempts analyzed by the server using extensive pre-designed tests. The server then collects the attempted solution and classifies them, thereby developing a large database of mistakes which can be mined to study the (incorrect) cognitive models these students are developing on their way to learning to program effectively.

* JScheme - I'm the lead developer of the JScheme programming language which is an open source project

* CLIP - I'm also the lead developer of the CLIP interval arithmetic constraint logic programming project

* DSpace - I'm working with Lois Widmer in LTS to start building an institutional archive of CS articles written by Brandeis faculty.

* Finally, I'm working with Mark Auslander to prepare an NSF proposal to investigate the effect of introducing low cost laptops into a large percentage of low income households in Massachusetts, together with a comprehensive suite of collaborative software tools ...

* I'm also looking into submitting a grant with Claudia Bucher in FA for an artists-in-lab project that would bring an artist into Science labs where they could work with grad students and/or postdocs to develop science themed/inspired creative projects. This could be used to stimulate interest in Science research among non-scientists as well as potentially generate exciting new artistic work!

Service

Arts and Sciences

09/01/2006- 08/31/2009: Representative Diversity Representative for Faculty Searches

09/01/2007- 08/31/2008: Member School Council
Science Council member

Department Activity

09/01/2002- 05/31/2008: Chair Department of Computer Science

01/01/2000- 08/30/2008: Member Undergraduate Advising Head

Interdepartmental Programs

07/01/2001- 08/31/2008: Chair Internet Studies

01/01/2007- 08/30/2008: Member Film Studies Faculty Committee

University Activity

09/01/2003- 05/31/2007: Member University Advisory Council
Appt extended from 2-yr to 4-yr for staggering term purposes

07/01/2006- 06/30/2008: Member Library and Technology Advisory Committee

09/01/2004- 06/30/2008: Member Davis Committee on Experiential Learning

09/01/2006- 08/30/2007: Member Brandeis as a Global Institution

09/01/2006- 08/30/2007: Member AI Quds/Brandeis Cooperation Committee

09/01/2006- 08/30/2007: Member TYP Faculty Oversight Committee

09/01/2007- 07/01/2008: Chair Search Committee for new CIO

Other Service

** I prepared the External Review dossier for our external review this year

** I'm working with Jordan Pollack on developing a "Center for Scientific Informatics" at Brandeis that would bring together all scientists for which computation plays a critical role in their research

** I'm working with Susan Nebel to bring alumni back to Brandeis to give talks. We brought in Shawn Broderick ('88) to speak to CS2a, and we're bringing in Eric Friedberg ('77) to give a CS seminar lecture on 4/17.

** I'm working with Susan Nebel to arrange a CS alumni get together during the Reunion weekend for the class of '88 (a great class!)

** I'm working with Jordan Pollack to establish better connections with Alumni through his www.blints.org linked in group

** I'm working on further developing the 4collegewomen.org website (with Dr. Susan Blumenthal and a masters student)

** I'm working with Claudia Bucher (FA) to organize an Animation festival for the Festival of the Arts (COSI FA Fest!)

** I'm developing a "Fantasy Major" website based on suggestions by Elaine Wong

** I am the webmaster for the CS website (but I'll be having a student take over next year!)

Grant Activity

Grant Proposals

Title:	Interactive Gestalt Visualization: Algorithms, Applications and Analysis			
Role:	Principal Investigator	Sponsor:	NSF	
Total Cost:	\$449,863	Start Date:	07/01/2008	End Date: 06/30/2011
Title:	MRI: Acquisition of Science Cluster, Archive and Visualization Lab			
Role:	Principal Investigator	Sponsor:	NSF	
Total Cost:	\$470,000	Start Date:	09/01/2008	End Date: 08/31/2011

Honors and Awards

Intellectual Property

Inventions, patent applications, patents, copyright, software, maskworks, and any other intellectual property that (i) you have conceived or reduced to practice, individually or jointly with others.

Professional Activities Outside the University

Professional activities (delegate, invited presenter, organizer, moderator, etc. at academic conferences, lectures, speeches and presentations) given outside the university.

Editorial work, reviews of publications, and membership on selection committees for national fellowship and grant programs

Society memberships

Work Outside the University

Courses taught at other institutions.

Employment and/or consultant arrangements

Management of fiduciary activities in which you have a role as an officer, director, trustee, supervisor, or founder with respect to any corporation, organization, or group

Intellectual property which has been developed by you outside of Brandeis University

Other

Additional Comments