Timothy Hickey
    Computer Science

    Affiliations
        Film, Television and Interactive Media
        Volen National Center for Complex Systems

Instructional Activities

Term	Course Number	Course Description	Enrollment
Summer 2013	COSI 153BJ 1	MOBILE GAME DESIGN	12
Summer 2013	COSI 320A 1	IT ENTREPRENEURSHIP PRACT. I	1
Summer 2013	COSI 153AJ 1	MOBILE APPLICATION DEVELOPMENT	12
Summer 2013	COSI 154AJ 1	JBS INCUBATOR	12
Fall 2013	COSI 98A 1	INDEPENDENT STUDY	5
Fall 2013	TYP 6A 1	TYP: COMPUTER SCIENCE	17
Fall 2013	COSI 320A 1	IT ENTREPRENEURSHIP PRACT. I	2
Fall 2013	COSI 400D 1	DISSERTATION RESEARCH	2
Fall 2013	COSI 65A 1	INTRO 3-D ANIMATION	54
Fall 2013	COSI 210A 1	INDEPENDENT STUDY	2
Spring 2014	COSI 155B 1	COMPUTER GRAPHICS	33
Spring 2014	COSI 98B 1	INDEPENDENT STUDY	9
Spring 2014	COSI 320A 1	IT ENTREPRENEURSHIP PRACT. I	1
Spring 2014	COSI 400D 1	DISSERTATION RESEARCH	3
Spring 2014	COSI 210A 12	INDEPENDENT STUDY	1

Teaching innovations:

CS65a -- I redesigned this course to include much more 3D Game Development. The last week
was spent in a Game/Movie Festival where students presented their work, answered
questions, and reviewed each others projects as a final reflection on the course material.

CS155b - I also redesigned this course to include an experiential component where students
build a RayTracer from scratch and also create a 3D game using OpenGL. To capture the
concepts, the textbook described the concepts, algorithms, and techniques used in a
state-of-the-art open source Ray Tracer that they were able to modify.

I also started using some online tools in class to get rapid feedback from my class. One
of my PhD students, William Tarimo, is studying educational technology and built a tool,
iResponder, that allows me to ask questions in class and get immediate feedback and to
grade their answers in real time. This allows me to flip the classroom at times quite
effectively.

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

I have been advising two groups of students who are learning about advanced software
design by building products. The first, studybuddy, is a tool to allow Brandeis students
to form study groups with other students in their classes. The second, intumusic, is an
application that generates music by watching how the player moves. Both groups presented
their projects at the New England Undergraduate Computing Symposium that I co-organize
every year.

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

        Undergraduate Students: 16   **Graduate Students:** 4

I have been mentoring my teaching fellows. They mainly serve to grade and to help students
understand the material during office hours.

Scholarship

Conference Proceedings

Hickey, Timothy J and Salas, Pito. The Entrepreneur's Bootcamp: A New Model For Teaching Web /Mobile Development and Software Entrepreneurship. Proc. of ", The 44th ACM Technical Symposium on Computer Science Education, SIGCSE'13</U>. Denver, Colorado, USA: ACM, 2013.

Journal Article(s)

Hickey, Timothy J. "Physics-based 3D Game Design as a First Course in Computing." the Journal of Computing Sciences in Colleges 28. 8 (2013): 35-41.

Forthcoming

Hickey, Timothy J; Tarimo, William. "The Affective Tutor." The Journal of Computing in Small Colleges (2014). (forthcoming)

Ongoing Work
I am working with Prof. Becci Torrey in Math and my PhD student Kristian Kime to study new peer-based models of interactive learning for Calculus. We have developed a tool, CalcTutor, that allows students to get take online Math Quizes and get real time feedback (where correctness does not depend on the form of answer they generate). We are now exploring interactive versions where students make quizzes for each other.

I am working with Prof. Jason Pontrello to develop 3D Games to help students deepen their understanding of Organic Chemistry concepts. We have had the students in Honors Organic chemistry review these games and engage in the metacognitive task of explaining how playing the game does or does not enhance understanding of particular concepts.

I am working with a PhD student Fatima Abu Deeb to develop online games that help novice Computer Science students deepen their understanding of computer programming using techniques similar to the CalcTutor -- immediate feedback, personalized problem sets, online formative grading, etc. We plan to use these tools in the CS11a Intro to Programming class next year.

I am supervising two graduate students, Nick Moran and Fatima Abu Deeb, who have been working with Professor Bob Sekuler and his PhD Student Yile Sun, to develop a game to study the interaction between visual and auditory processing. A version of that game is being used in the Museum of Science to gather data from a wider range of subjects that we typically have at Brandeis.

I have started working with Sarah Mead to develop an app that would allow the student to view a string quartet from multiple angles and to see the score for each part in the modern and the original versions. (We discussed the shape of the app in the Fall, she recorded in the Winter, but I haven't gotten back to finishing up the app yet due to other projects arising...)

I a developing a short text on Ray Tracing that guides students through the process of building a Ray Tracer from scratch and introduces (and proves) all of the mathematics needed along the way.

Service

Arts and Sciences

From: 09/01/2013   Through:06/01/2014 Member

Other

   Experiential Learning Committee

Department Activity

From: 09/02/2013   Through:06/02/2014 Member

Other

   Graduate Admissions Committee

From: 09/02/2013   Through:08/29/2014 Director

Other

   Director of the MA in Computer Science and IT Entrepreneurship program

University Activity

From: 08/28/2013   Through:08/27/2014 Chair

The Committee on Faculty Rights and Responsibilities

From: 02/03/2014   Through:06/02/2014 Member

Other

   Search Committee for Director of Rabb School

Other Service

I organized the first annual Computer Science Alumni Networking and Career Fair event in
January that drew 20 CS alumni and over 100 CS students (graduate and undergraduate) for
an evening of networking. I worked closely with Joe Dupont and Sue Levine and Anne
Gudaitis (CS) in having the students prepare their resumes which went into our "Resume
Book" Here is a link
https://sites.google.com/a/brandeis.edu/cs-networking/networking-jan-27-2014

I co-organized the New England Undergraduate Computing Symposium (http://www.neucs.org
)for the fifth time this year. It was held at BU and attracted over 100 Computer Science
students from around New England. I drove a van of Brandeis students to the event and we
had several faculty and staff also attend, partly to staff an information table about our
PhD, MA and JBS programs.

Grant Activity

Grant Proposals

Grant Awards

I did not submit any grant proposals this year. I'm focusing my effort on getting three
new PhD students working effectively and publishing papers in Educational Technology.

Honors and Awards

   Title   **From**   **Thru**

Intellectual Property

   Intellectual Propery

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
     Member of the Association for Computing Machinery

Work Outside the University

   Courses taught at other institutions.

   Employment and/or consultant arrangements
     I was paid $1000 by Boston University for my work consulting with Prof Bob Sekuler on a
     collaborative project he has with BU faculty.

   **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