TEACHING STATEMENT

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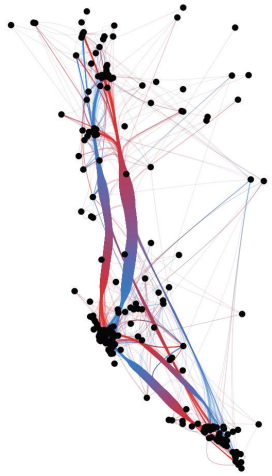
The opportunity to work with students as both a teacher and mentor has been a highlight of my experience as a faculty member. I aim to engage students in project-based learning: to require students to apply course material to real-world problems, and ideally spark a sustained interest or further pre-existing passions. Through my courses, I hope to foster the next generation of data scientists and interaction designers.

INTEGRATING LEARNING AND PRACTICE

The Republic of Letters shows patterns of correspondence among Enlightenment thinkers. This *CS448B* project was later featured in the NY Times.

My personal teaching philosophy is that learning is best when paired with doing. My experience has been that project-based courses help students develop practical skills and provide a context in which both theoretical and empirical research can be understood and applied. As a result, I strive to integrate real-world problems and stakeholders with course material. In my course *CS448B Data Visualization*, I invite guests from both within and outside campus to share project ideas. By pairing students with domain experts and real-world analysis challenges, I hope to engage the students in situated learning through legitimate peripheral participation. In addition to helping students advance their own research projects, course projects have catalyzed a number of new collaborations.

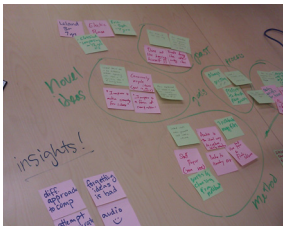


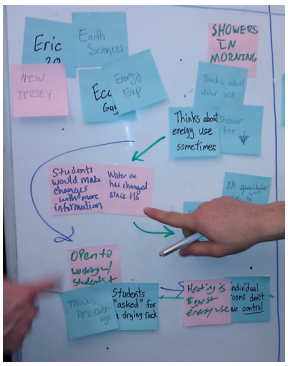
David Selassie's *CS448B* work explores novel visualization methods for directed networks; now published at InfoVis 2011.

For example, Dan Chang, Yuankai Ge and Shiwei Song worked with Stanford Digital Humanities scholars to visualize the correspondences of Enlightenment-era thinkers. In 2009, their interactive map was awarded 1st prize by the North American Cartographic Information Society (NACIS). This work was later featured in the New York Times. Other projects have contributed to the Encyclopedia of Life and to on-campus research in HCI, computer systems, computer vision, computational biology, and medicine.

Similarly, my design courses (*CS247 HCI Design Studio* and *CS294H Social Software*) involve a quarter-long process of iterative design and implementation. Projects are often conducted in collaboration with external communities or organizations. In *CS294H*, Coram Bryant, Jacob Klein, and Kelly Nigh worked with the Symbolic Systems program and the Stanford Daily as they created Life Pathways, a site connecting Stanford alumni and students via interviews. At the end of these courses, students publicly present their work and receive feedback from a panel of leading researchers and entrepreneurs.

BROADENING INTERDISCIPLINARY EDUCATION





Student brainstorming sessions in *CS247 HCI Design Studio*.

When teaching far-reaching topics such as data analysis and interaction design, interdisciplinary learning is critical. For example, visualization requires both theory and methods from computer science, psychology, statistics, and graphic design. My courses in data visualization, social software, and HCI accordingly integrate a diverse background of material. Though a variety of courses introduce data analysis methods (e.g., visualization, statistics, data mining), most universities lack courses that consider data analysis across the full life-cycle of acquisition, cleaning, visualization, modeling, and dissemination. In response, I developed *CS448G Research Topics in Interactive Data Analysis*, a new course that focuses on challenges at the intersection of HCI, systems, and statistics. The class connected students with leading researchers and practitioners, while the publicly available course materials are now being used within multiple companies and research units.

In conjunction with interdisciplinary material, I believe it is important to foster an interdisciplinary student body. First, there is a clear need to teach analysis and interaction design skills to students from disciplines outside computer science, many of whom require (and exhibit) increasing technical skills. Second, I have found that computer science students are enriched by exposure to the challenges and perspectives of other disciplines. As a result, I encourage diverse disciplinary backgrounds in my courses; this has included students from psychology, bioinformatics, medicine, education, design, music, and journalism. For example, Stanford Knight Journalism Fellows regularly join my visualization course, and their descriptions of the newsroom environment and its tight deadlines augment students' understanding of the associated design challenges.

"Wizard of Oz" prototype user testing in HCI design courses.

Finally, I believe that proactive outreach to other disciplines and to the greater public will facilitate knowledge dissemination and catalyze new research opportunities. Towards this aim, I help teach a summer course in data analysis methods for social science students and am involved in the design of a new computational social science program. In addition, the public availability of research software and course materials provides important educational opportunities: through open source software, carefully designed examples, online videos, and published lectures, I hope to use my group's research and teaching output to help educate and empower interested members of the public.