the future of software design in education and research

Andrew J. Ko
about me

Computer science
+ Social psychology
+ Interaction design

= Human-computer interaction
software is changing the world.
the people who **make software** are changing the world.
I want to change the people who make software
research
streamline software design work, reinvent design

service
engage students in the software industry

teaching
educate students about software design work
research

studies of collaboration in software development teams

technologies to improve these activities
information needs in software teams

1. why won’t this work?

2. why is this in the spec?

3. why is this code written this way?
design arguments
in software teams

read 100 most contentious bug reports
from Firefox, Linux, and Facebook API
analyzed rhetoric, evidence, and
structure of arguments
design arguments
in software teams
design arguments
in software teams
how do people fix software when it breaks?
how do people fix software when it breaks?
how do people fix software when it breaks?

Friday, May 15, 2009
how do people fix software when it breaks?
how do people fix software when it breaks?
research  
apply what I’ve learned to the classroom  
teaching  
service
teaching

user-centered design

collaborative aspects

of user-centered design
user-centered design

design technology that serves people’s needs
user-centered design

design technology that serves people’s needs

user research
interviews
user-centered design

design technology that serves people’s needs

user research

sketching

interviews

brainstorming

creativity
user-centered design

design technology that serves people’s needs

user research

interviews

sketching

brainstorming

creativity

prototyping

evaluation
collaborative aspects of UCD
creating useful, usable technology in teams

social psychology and
small group dynamics

quarter-long team
design project

prepares students for careers in the software industry
research  service

make teaching relevant through service

teaching
service

internship mentoring
advising undergraduate capstone projects
job shadowing and peer mentoring
undergraduate capstone advising involving students in...

real design projects  real research
**internship mentoring**

weekly **meetings**
reflective **diaries**
**interviews** with other interns
**tours** of other companies

“We had the ITS all hands meeting, and after almost 3 months of working here I only now realized something... **I am the only female in the team.**

...  

**Was I hired because I was female?** I hate that idea!”

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job shadowing and peer mentoring
an NSF grant in review
job shadowing and peer mentoring
an NSF grant in review

1. before shadowing, organizers recruit...

75 participants
1st year students in affinity fields

25 peer mentors
seniors and past participants

75 industry professionals
initially through existing contacts, later through recruiting arms and alumni
job shadowing and peer mentoring
an NSF grant in review

1. *before shadowing*
   organizers recruit

2. *at inaugural event, students...*

- meet mentors
- select shadowing opportunities
- learn about the software industry from industry professionals
- form community

75 participants
1st year students in affinity fields
25 peer mentors
seniors and past participants
75 industry professionals
initially through existing contacts, later through recruiting arms and alumni

Friday, May 15, 2009
job shadowing and peer mentoring
an NSF grant in review

1. before shadowing, organizers recruit students...
2. 75 participants
   1st year students in
   affinity fields
3. during shadowing period, students...
   75 industry professionals
   initially through existing
   contacts, later through recruiting
   arms and alumni
   meet mentors
   select shadowing opportunities
   learn about the
   software industry
   from industry professionals
4. blog about
   experiences
   meet weekly with each other
   and peer mentors to discuss
   experiences in social context

observe for 1 half day with 2 different professionals

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identify new research by engaging with industry
identify new research by engaging with industry

research

apply what I’ve learned to the classroom

teaching

make teaching relevant through service

service