

CS 338: Graphical User Interfaces

Lecture 1-1: Interfaces & Users

Welcome!

- About me
 - Ehsan Khosroshahi
 - Email: *eb452@drexel.edu*
- About this course
 - Syllabus, timeline, & resources on-line...

Course Syllabus

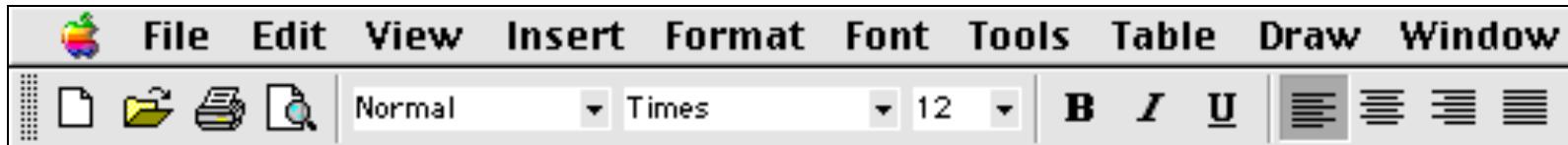
- Schedule
- Lectures
- Homework Assignments (Labs)
- Project
- Grading
- Other

What's a Graphical User Interface?

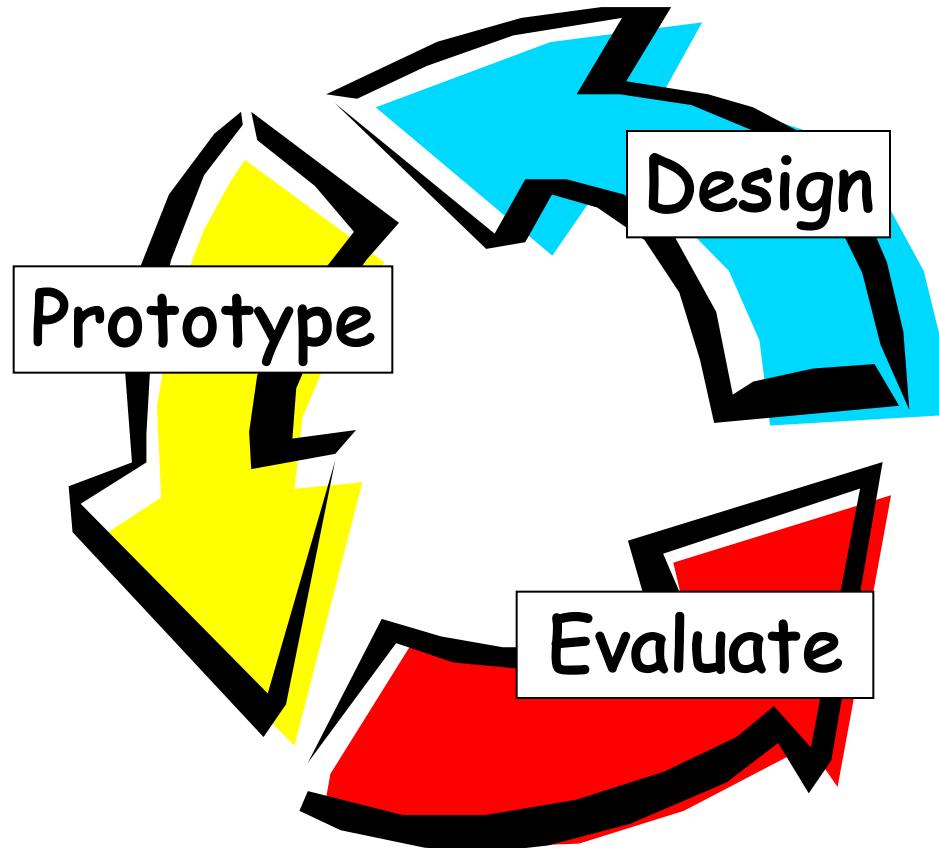
- In the narrow sense...
 - a graphical information channel between a user and computer system/application
 - e.g., most Windows & Mac applications
 - any interface with buttons, menus, etc. (“widgets”)
- In the broader sense...
 - ATMs, cell phones, navigation devices, etc.
 - GUIs don't have to have standard widgets!
 - GUIs don't have to be on your desktop!
- This course focuses on the first group,
but we'll keep the second group in mind

Why GUIs?

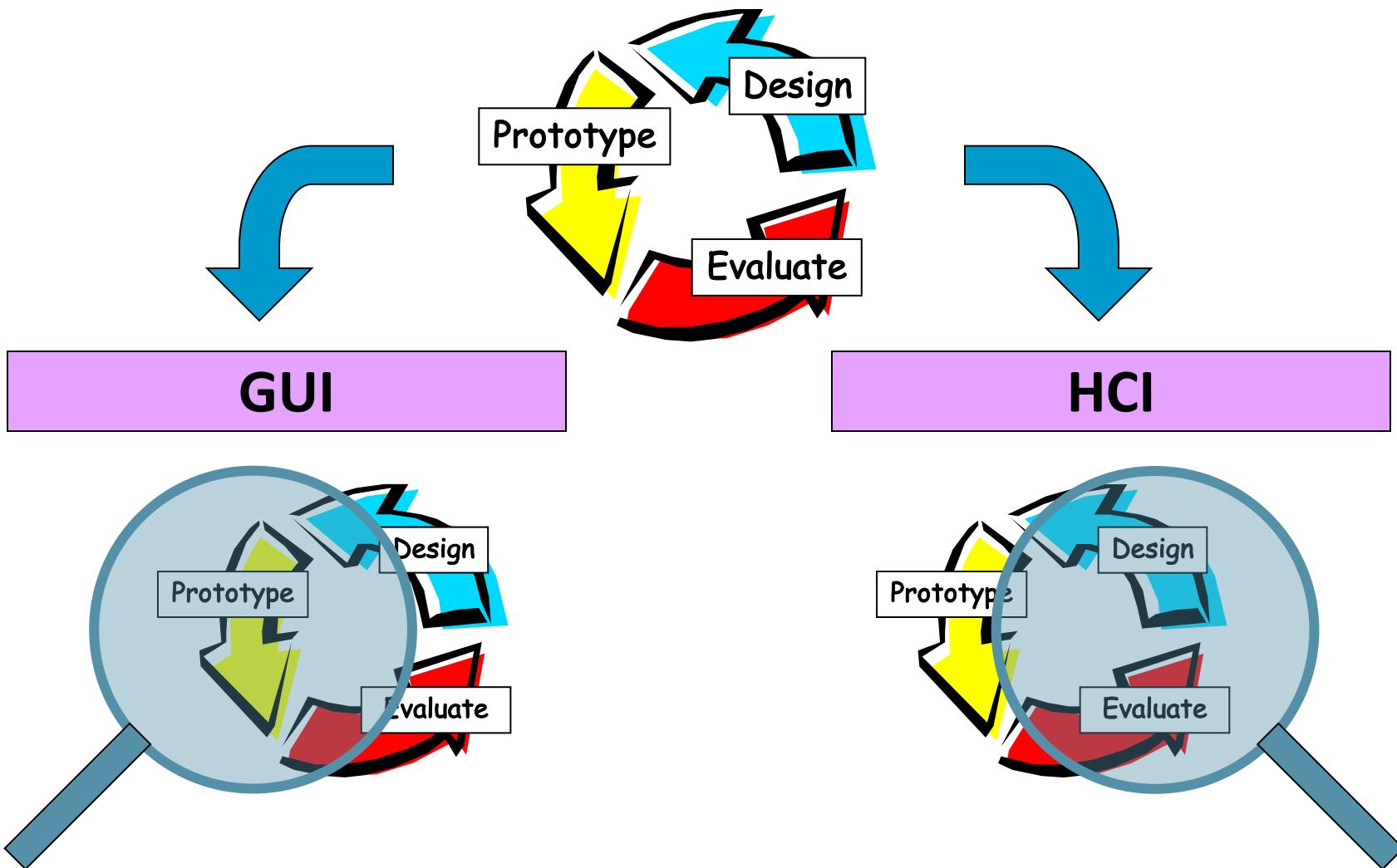
- Can present a lot of information in small area but still maintain readability
- Can present different types of information (e.g., pictures, animations)
- Can store “functions” on-screen without forcing user to remember them
- Can provide “direct-manipulation” interfaces with various input



The GUI Life Cycle

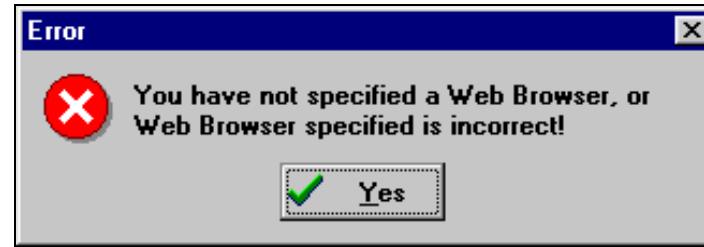


Focus of this course



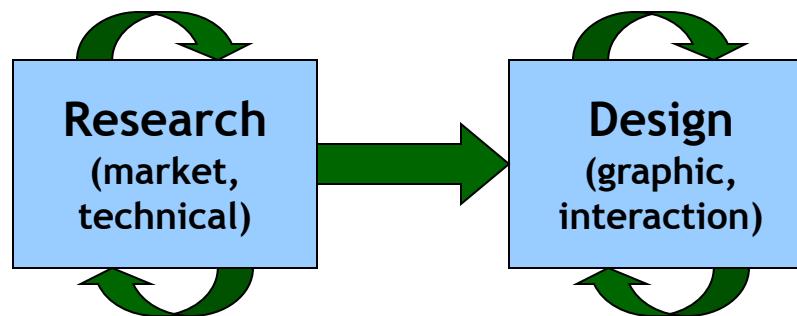
To set the stage...

- Some problems with GUIs today:
 - software is “rude”
 - e.g., inappropriate or derogatory error messages
 - software makes unwarranted assumptions
 - e.g., assumes user knows underlying mechanisms, such as saving to a hard drive
 - software is obscure
 - “Use passive mode on FTP proxy?”
 - software exhibits inappropriate behavior
 - open Word document, print it, close it — “Save?”



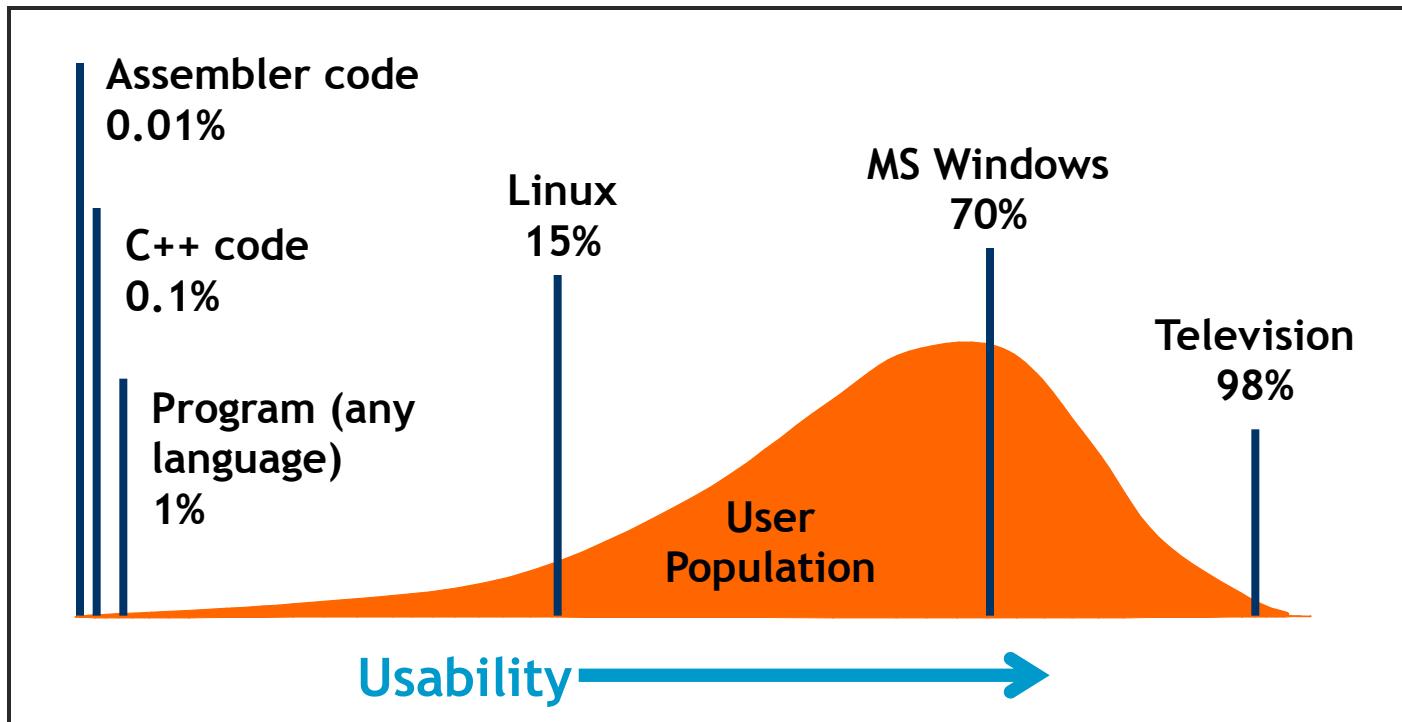
To set the stage...

- Why do we have these problems?
 - we might have a conflict of interest
 - for whom exactly are we developing the system?
 - we might lack a rigorous process
 - how can we think like engineers to evaluate user needs and develop *appropriate, usable* systems?
 - one simple, common, but not-so-good process:



To set the stage...

- But most importantly...
 - we don't always understand our users!



Thanks to Scott MacKenzie @ York U for this graph!

Multidisciplinary nature of GUI & HCI

- Human side:
 - cognitive psychology
 - ergonomics and human factors
 - linguistics
 - communication theory
 - social and organizational psychology
 - graphic and industrial design

Thanks to Scott MacKenzie @
York U for the next 2 slides!!

Multidisciplinary nature of GUI & HCI

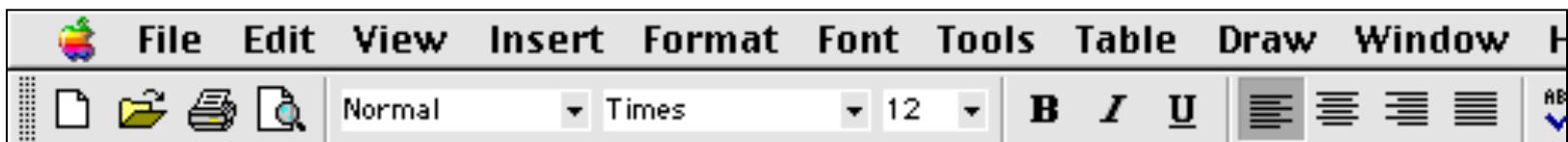
- Machine side:
 - computer graphics
 - operating systems
 - programming languages
 - software engineering
 - development environments
 - artificial intelligence

Users, Users, Users

- Right now we'll focus on the “human side.”
Soon we'll deal with the “machine side.”
- How can we possibly deal with all the complexity of the human side of GUIs?
 - one short answer: It's hard.
 - one long answer: See an HCI design course.
 - our short answer: **KEEP THE USER IN MIND!**

Users at a Lower Level

- Users embody all aspects of being human
- Being human means having limitations:
 - visual attention (e.g., noticing animation)
 - visual processes (e.g., reading a word)
 - motor processes (e.g., mouse movement)
 - cognitive processes (e.g., memory)



Users at a Lower Level

(Videos)

Users at a Higher Level

- Users have *goals* in using our GUIs
- User-centered design involves...
 - goals: what is the user trying to accomplish?
 - needs: what does the user need to do this?
 - user constraints: what can/can't the user do?
 - task constraints: what can/can't be done?
 - and other things to consider

Example: Web site design

- Jakob Nielsen's
“Top Ten Mistakes in Web Design”

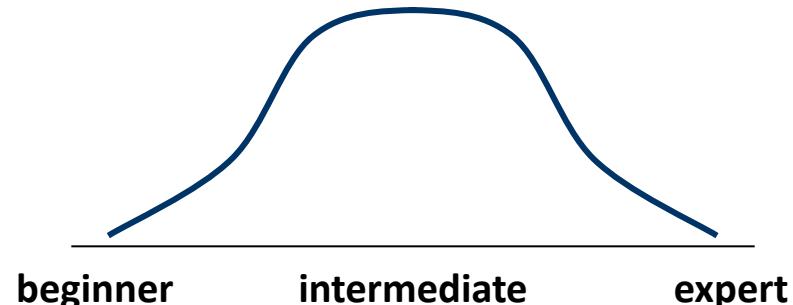
1. Using Frames	5. Orphan Pages
2. Gratuitous Use of Bleeding-Edge Technology	6. Long Scrolling Pages
3. Scrolling Text and Constantly Running Animations	7. Lack of Navigation Support
4. Complex URLs	8. Non-Standard Link Colors
	9. Outdated Information
	10. Overly Long Download Times

- Is good design really this easy?
- These are really just heuristics that
keep the user in mind

Optimizing for intermediates

- Alan Cooper uses a “bell curve” argument:

“Most users are neither beginners nor experts; they are intermediates.”



- He thus argues that we should “optimize for intermediates”
- Is this always the case?
 - for what systems does this make sense?
 - for what systems *doesn't* this make sense?

Dealing with beginners, experts

- Let's not forget the non-intermediates
- Beginners need...
 - straightforward "mental model"
 - good, concise topical help (need not be long)
- Experts need...
 - lots o' shortcuts
 - directed, specific, unintrusive help

Personas

- One system won't make everyone happy

Alesandro's goals

- Go fast
- Have fun



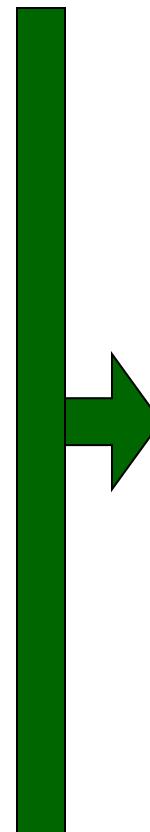
Marge's goals

- Be safe
- Be comfortable



Dale's goals

- Haul big loads
- Be reliable

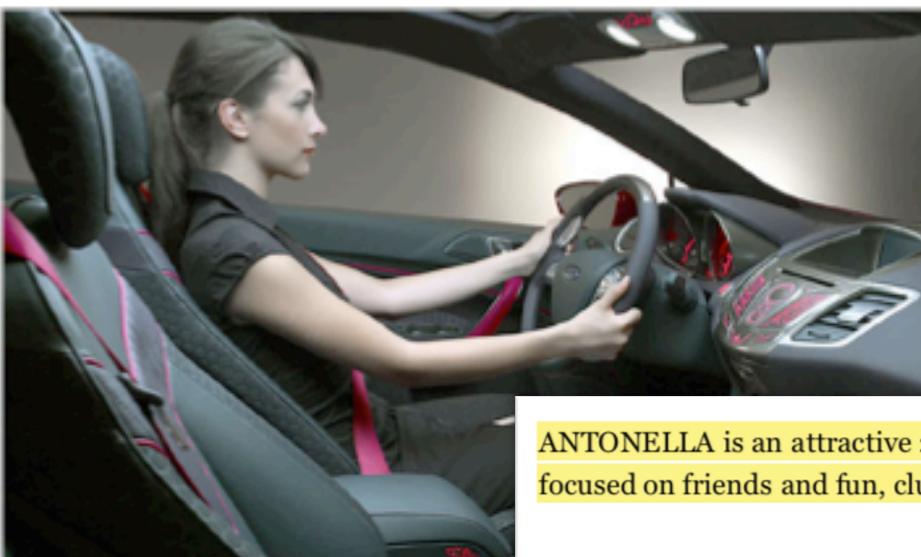


???

Personas

- How do we develop personas? Research.
 - user interviews
 - subject-matter experts
 - market research surveys
 - etc.
- End production: Each persona represents a class of users *in context*
 - persona is not an “average person”, but an exemplar or “canonical person” with an associated range of behaviors

Before Creating the Car, Ford Designs the Driver



A model depicting Antonella, the imaginary woman who was the guiding basis for the new Fiesta. [More Photos >](#)

By PHIL PATTON
Published: July 18, 2009

ANTONELLA is an attractive 28-year old woman who lives in Rome. Her life is focused on friends and fun, clubbing and parties.

[She is also completely](#)

But her influence is definitely real. It is evident in the design of the Ford Fiesta, on sale in Europe now and arriving in the United States next summer as a 2011 model.

Antonella was the guiding personality for the Ford Verve, a design study that served as the basis for the latest-generation Fiesta. A character invented by Ford designers to help them imagine cars better tailored to their intended customers, she embodies a philosophy that guides

Multimedia



[Slide Show](#)
[Designing a Car for an Avatar](#)

Multimedia



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[She is also completely imaginary.](#)

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Antonella is the personification of a profile created from demographic research about the Fiesta's target customer, said Moray Callum, executive director of Ford Americas design.

Ford is using characters like Antonella to bring a human element to the dry statistical research drawn from polls and interviews. Based on psychological profiles, these characters are a more modern version

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Before Creating the Car, Ford Designs the Driver



A model depicting Antonella, the imaginary woman who was the guiding personality for the Ford Verve, a design study that was the basis for the new Fiesta. [More Photos >](#)

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Published: July 16, 2009

ANTONELLA is an attractive 28-year old woman who lives focused on friends and fun, clubbing and parties.

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But her influence is evident in the design of the car that will go on sale in Europe now and the United States next summer.

Antonella was the guiding personality for

Ford's goal in using made-up characters is that they will help produce cars that transcend national traits and are instead built around international, psychological archetypes. Antonella is an extreme version of a type the Ford designers call the fun-seeker.

"There are fun-seekers in London and Cleveland," Mr. Callum said.

Ford is using characters like Antonella to bring a human element to the dry statistical research drawn from polls and interviews. Based on psychological profiles, these characters are a more modern version

"Invented characters get everyone on the same page," Mr. Callum said. "Personalizing gives context to the information we have. Sometimes the target demographics are difficult to relate to by, say, a 35-year-old male designer."

"We found in the past that if they didn't understand the buyer, designers would just go off and design something for themselves," he added.



[Side Show](#)
Designing a Car for an Avatar

the company's design studios these days: to design the car

Antonella is the personification of a profile created from data gathered from a customer, said Moray Callum, executive director of Ford's

Exercise: CS/CCI Web Site

- Check out the web sites on the next few pages.
- What's your gut reaction?
 - yikes, ugly
 - yikes, cool
 - just fine
 - yawn
- Ok, that's out of your system.
Now let's think about our users...



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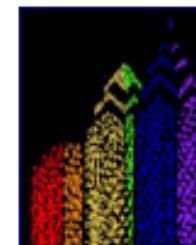
Dr. Frank Lee joins the Computer Science faculty



Dr. David Breen joins the Computer Science faculty



CIGNA Undergraduate Merit Prize for Computer Science



Department hosts ISSAC 2003 (Intl. Symp. on Symbolic & Algebraic Computation)

Search

Calendar

Today's Events

- None scheduled

Announcements

- Undergraduate curriculum changes
- Computer Graphics II to be offered in Fall 2003
- MCS Society BBQ - Friday 8/22
- MCS Summer BBQ - Sunday
- Undergraduate updates & course offerings
- Graduate course offerings 2003-2004 posted

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User login

Username: *

Password: *

Features



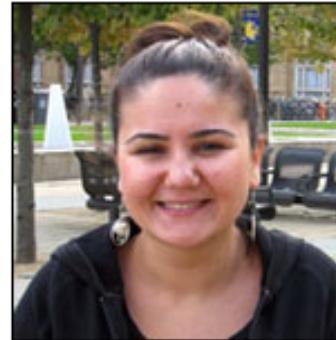
National CS Education Week, Dec. 7-11



Students Inducted into Upsilon Pi Epsilon, Fall 2009



Drexel Gaming Team Places First in Philly Game Jam



CS Ph.D. Student Follows Dream to DreamWorks



Upcoming Events

Monday, January 11

- 9:45am - UPE's Magical Moment
- 11am - CS Colloquium: M. Ani Hsieh, Drexel University

Monday, January 25

- Jay Modi Memorial Lecture

News and Notes

- Computer Software Engineer noted as one of top 50 best careers
- Jeremy Johnson presented series of talks at universities
- Jeremy Johnson organized software session during Japan conference
- Dr. Frank Lee invited to present at Temple University
- Dr. Frank Lee granted tour of Cira Centre and demonstration of lighting system

Announcements

- Course announcement for CS650
- PostgreSQL Conference East 2010 Call for Papers
- CS Electives for Winter (09-10)

Quick Links

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- Drexel University Computing Academy Summer Program
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Minor Computer Science
Minor Software Engineering
B.S/M.S. Computer Science
B.S./M.S. Software Engineering

Graduate Programs

Ph.D. Computer Science
M.S. Computer Science
M.S. Software Engineering



Game Programming & Development



Drexel Announces New College of Computing and Informatics

Drexel University President John A. Fry announced today that the University will create a new College of Computing and Informatics. The College will combine the strengths and assets of Drexel's many

[Read more »](#)

Dr. Erin Solovey Joins College of Computing & Informatics as Assistant Professor of Computer Science

Dr. Erin Solovey joins Drexel University's College of Computing and Informatics as an Assistant Professor of Computer Science and will begin teaching undergraduate and graduate courses Winter Quarter

[Read more »](#)

Professors Jeffrey Popack and William Mongan Receive IBM Award for Big Data and Analytics Project

Upcoming Events

Sep 26, 2013,
Women in Computing Society (WiCS) Fall Welcome Social

Sep 27, 2013,
Hack the Change 2013

Oct 1, 2013, 3 to 4 p.m., Room L33, Hagerty Library
Writing the NSF GRFP "Graduate Research Statement" Workshops

[More Events »](#)

News & Notes

Sep 8, 2013
Drexel Hosts IEEE SASO Conference, Sept. 9-13, 2013

Sep 4, 2013
CS advising has moved!

Aug 30, 2013
ATTN Students: CS Electives Fall 2013-14

Aug 30, 2013
NSF Graduate Research Fellowship Program (GRFP) - Fall 2013

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Exercise: CS Web Site

- What are some personas for the CS Web?

Final Thoughts

- Before getting to implementation, let's look at some of the early days of user interface design...
 - <http://www.designinginteractions.com/interviews/BillAtkinson>
 - <http://www.designinginteractions.com/interviews/StuCard>