CSE 440: Introduction to HCI
User Interface Design, Prototyping, and Evaluation

Lecture 01:
Introduction and
Personal Informatics

James Fogarty
Daniel Epstein
Brad Jacobson
King Xia

Tuesday/Thursday
10:30 to 11:50
MOR 234
Two Forms Going Around

Overload request

We are targeting exactly 48 students
Will email today, attempt to finalize decisions
Email may ask you consider attending a section
Ask your friends to drop immediately

Section switch availability

To get to 48, we may need to move people
Who We Are

James Fogarty

BS, Virginia Tech, 2000
PhD, Carnegie Mellon, 2006
Joined UW CSE, 2006

Industrial Stints

IBM, 2000
IBM Research, 2003
Microsoft Research, 2007
Who We Are

Cross-Campus HCI Efforts

- DUB
- MHCID

Teaching

- CSE 332: Data Structures
- CSE 440: Introduction to HCI
- CSE 441: Advanced HCI
- CSE 510: Advanced Topics in HCI
- CSEP 510: Human-Computer Interaction
Who We Are

Computing

You
Who We Are

Daniel Epstein

BS, Computer Science
University of Virginia, 2012

Grad Student, UW CSE
2012-20XX?

Research: Sharing self-tracked data with friends and family

Hobbies: Game development, running, hiking, programming competitions
Who We Are

Brad Jacobson

BA, Psychology
Dartmouth College, 2013

MS, University of Washington HCDE, 2013 – 2014

Interests: user research, “pop-psych” books, soccer, skiing, and plenty of tv shows and movies
Who We Are

King Xia

University of Washington, 2015
Computer Science & Business

Interests:  The Kingkiller Chronicles, learning new languages, LoL, cooking, debate
What Is This Course?

Time for a Door Quiz:

Say out loud what action you use to open the door

Push
Pull
Door Quiz
Door Quiz
Door Quiz
Door Quiz
Door Quiz
Door Quiz
Door Quiz
Door Quiz
Door Quiz
What is so Special about Computers?

Nothing! It is about good designs and bad designs

- We all make push/pull decisions many times per day
- We all encounter doors that do this badly
- We all see signs that do not change what we do
What is so Special about Computers?

Yet we blame ourselves

Absolutely everything we encounter in the made world was designed

Too often poorly designed

Read this book

Be warned you cannot unread it, you become angry
Iterative Human-Centered Design

This is a course about process

This is not a course about ‘good’ interfaces or rules that you should follow in design

Rapid iteration and exploration is the most important and effective tool for effective design
A Whole Lot of Administrivia

Today we have a lot to cover

Course Mechanics and Project Overview
Some Perspectives
Assignment 1: Project Proposal

Background in Personal Informatics
The Price of Progress
Staying in Touch

Web:  http://www.cs.washington.edu/440
      You are responsible for calendar

Email Us:  cse440-instr [at] cs.washington.edu

Email:  You are responsible for course email

Office Hours:  Posted on Calendar
              Also By Appointment
GitHub Repository

The website, assignments, and other materials are being run from a GitHub repository

https://github.com/uwcse440/web-cse440-au14

You will contribute when posting your projects

You can and should contribute when you see the opportunity
Project Overview

The core of this course is a group project

Propose and do an intense end-to-end design

Getting the Right Design
Getting the Design Right
Communicating the Design

Not an implementation course
Contextual Inquiry & Task Analysis

Observe practices and understand needs
Sketching & Storyboarding

Post

Trips

Past

Find

My Trips

Community

Friend's Trips

Nearby trips

RideAlong
Sketching & Storyboarding

RouteMyRun
Low-Fidelity Prototyping & Testing

RideAlong
Video Prototypes

GetOut

PickUp
Learn by Example from Prior Projects

Plantr:

NutriView:

JuiceBox:
Studio Time in Section and Lecture

This course is designed around rapid feedback

Section is primarily studio time with the staff

  Groups will be formed within section
  Your team will always bring a product to studio

Participation is a critical component of the course

  Many in-class exercises scheduled for Tuesdays
  Participation is a critical component of the course
Grading

Group Project: 65%
  Assignment 1: 3%
  Assignment 2: Getting the Right Design: 21%
    Final Report 15%, Milestones 6%
  Assignment 3: Getting the Design Right: 14%
    Final Report 10%, Milestones 4%
  Assignment 4: Communicating the Design: 15%
    Website 5%, Video Prototype 5%, Poster 5%

Presentations: 12%

Exam (25%)
Readings (5%)
Participation (5%)
Grading

We provide a grading scale, but it is subjective

Design is subjective, and so is this course
Wow us with your work, not with complaining

Entire project process is designed for feedback

Milestone grades mean you did the milestone

You still must act on feedback as part of
continuing to refine and develop your project

A focus on “doing the work” and “getting feedback”
means final grades are more “quality of result”
Submissions

Many assignments are due “night before class”

It means “before I wake up”, which is often 5:00am
Catalyst operationalizes this as 4:00am

“Day of class”, “just before class”, or “in class”
are all unacceptable, risking zero credit
“Now” vs “When You Need It” Content
This course has both, we will try to distinguish

Several assigned readings will be posted
- Intentionally minimal but critical
- May be on exam
- Small reading report required

Additional resources will be made available
- If you find others you want to share, GitHub!
A Whole Lot of Administrivia

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Background in Personal Informatics
Some Reflection

This will not be an easy course

Students have said this was their most intense course
You have two deadlines per week, every week
But I believe in everything that is included

This course challenges aspects of what
the CSE curriculum has taught you is important
It will be what you make it
People Really Get It

Was this class intellectually stimulating? Did it stretch your thinking?

I think the first six weeks of this class should be required training for all PMs at Microsoft. Our software would benefit so much from the material shared in this class.

Was this class intellectually stimulating? Did it stretch your thinking?

Yes, because it put me outside of my box working on my own by requiring user studies with unknown people.
People Really Get It

Was this class intellectually stimulating? Did it stretch your thinking?  

Yes  No  Why or why not?

Yes, cooler pair was forced engagement with non-engineers.

What aspects of this class contributed most to your learning?

Interacting with users during assignments.
Sometimes We Forget to be Clear

Was this class intellectually stimulating? Did it stretch your thinking? Yes No Why or why not?
Yes, this class stretch my thinking sense the ideas of human computer interaction were new to me. But overall I don't feel that I learned a lot at this class. May be, that is a specifics of the subject - there is not too much of "real" knowledge in it?

What suggestions do you have for improving the class?
I didn't get why we were doing iterative design projects until you told us that it was so that we could improve the designs around us, from then on I got the class.
But it is not for Everybody

What aspects of this class detracted from your learning?

Finding strangers in malls and coffee shops was a major hurdle.

What suggestions do you have for improving the class?

Don't exclude the two most available sources of people—friends and university students.
A Whole Lot of Administrivia

Today we have a lot to cover

- Course Mechanics and Project Overview
- Some Perspectives
- Assignment 1: Project Proposal

Background in Personal Informatics
Project Proposal Schedule

Project Brainstorm Due Tonight
Brainstorming in Section Tomorrow

Project Proposal Due Monday Night
Sponsored Projects Posted Tuesday

Project Bids Due Wednesday Night
Groups Assigned Thursday
Brainstorming in Section Friday
Assignment 1a: Project Brainstorm

You have an assignment due tonight:

http://courses.cs.washington.edu/courses/cse440/14au/assignments/assignment1/

Propose 3 project ideas:

These are starting points for brainstorming

Submit online:

This proves that you did your preparation
Submit via email if unable to access Catalyst

Bring to section tomorrow:

You have a lot more brainstorming ahead of you
Assignment 1b: Project Proposal

You have an assignment due tonight:

http://courses.cs.washington.edu/courses/cse440/14au/assignments/assignment1/

One page of text:

Problem and Motivation
Analyze the problem or idea (e.g., a scenario)

Submit online:
Sponsored Projects will be Posted for Bidding
A Whole Lot of Administrivia

Today we have a lot to cover

Course Mechanics and Project Overview
Some Perspectives
Assignment 1: Project Proposal

Background in Personal Informatics
Background in Personal Informatics

Some Definitions

What is the Point?

What is the Problem?

What is Personal Informatics

“We define personal informatics systems as those that help people collect personally relevant information for the purpose of self-reflection and gaining self-knowledge. There are two core aspects to every personal informatics system: collection and reflection.”

Li I., Dey A., Forlizzi J. CHI 2010. “A Stage-Based Model of Personal Informatics Systems”
What is Quantified Self

“The Quantified Self is an international collaboration of users and makers of self-tracking tools.”

“Our aim is to help people get meaning out of their personal data.”

“Self knowledge through numbers.”

What is the Point?

Gnothi seauton
“Know thyself”
Leonardo da Vinci

Odometers on the left
Pedometer on the right

To track troop activities
Benjamin Franklin

Temperance
Silence
Order
Resolution
Frugality
Industry
Sincerity
Justice
Moderation
Cleanliness
Tranquility
Chastity
Humility
Benjamin Franklin

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<th>TEMPERANCE.</th>
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Manpokei

交通巡回
11260歩=6.7㌔(8時間)

ビアホールのウェートレス
12550歩=5.5㌔(8時間)

エアホステス
9000歩=4.1㌔(6時間半)

万歩計
Thousands of Health Monitoring Apps
Activity and Medical Sensing Devices

- Blood glucose meter
- Thermometer
- Blood pressure monitor
- Heart rate monitor
Five-Stage Model of Personal Informatics

PREPARATION | COLLECTION | INTEGRATION | REFLECTION | ACTION

Li I., Dey A., Forlizzi J. CHI 2010. “A Stage-Based Model of Personal Informatics Systems”
Alice

20 years old

Has a family history of heart disease

Wants to be more active

Does not know how, because she is busy

Li I., Dey A., Forlizzi J. CHI 2010. “A Stage-Based Model of Personal Informatics Systems”
Preparation

Li I., Dey A., Forlizzi J. CHI 2010. “A Stage-Based Model of Personal Informatics Systems”
Li I., Dey A., Forlizzi J. CHI 2010. “A Stage-Based Model of Personal Informatics Systems”
Integration

Li I., Dey A., Forlizzi J. CHI 2010. “A Stage-Based Model of Personal Informatics Systems”
Reflection

Li I., Dey A., Forlizzi J. CHI 2010. “A Stage-Based Model of Personal Informatics Systems”
Action

Walk in park instead of watching TV

Li I., Dey A., Forlizzi J. CHI 2010. “A Stage-Based Model of Personal Informatics Systems”
Five-Stage Model of Personal Informatics

Li I., Dey A., Forlizzi J. CHI 2010. “A Stage-Based Model of Personal Informatics Systems”
What is the Problem?

Examining serious self-trackers, as they represent the early adopters.

1. What I did
2. How I did it
3. What I learned

Analyzed 52 videos

Questions about the Quantified Self

Analysis

Profiles

Visualizations

Themes

What do they track?

Top 5 items: activity, food, weight, sleep, and mood

Other items: cognitive performance, blood glucose, location, heart rate, knowledge, stress, body fat, productivity, snoring, movies, posture, medicine, skin condition, home energy usage, clothes, and public transit usage

Movies Seen in Theatres Since 2001

Clothing Log

What do they Track?

A Diabetic Experience with Self-Quantification
Analyzing My Cancer Data
Going Vegan in December
Improving Skin Health
Cognitive Performance
15 Weeks of Self-Tracking
Diabetes, Exercise, and QS
Experience Sampling of My Stress
Hacking Your Subconscious Mind

Self-tracking is more than just buying a FitBit

“Understanding Quantified Selfers’ Practices in Collecting and Exploring Personal Data”
## Motivations for Tracking

<table>
<thead>
<tr>
<th>Motivations</th>
<th>Sub-categories</th>
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<tbody>
<tr>
<td>To improve health</td>
<td>To cure or manage a condition</td>
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<td></td>
<td>To achieve a goal</td>
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<td></td>
<td>To find triggers</td>
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<td>To answer a specific question</td>
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<td>To identify relationships</td>
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<td>To execute a treatment plan</td>
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<td>To make better health decisions</td>
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<td>To find balance</td>
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<td>To improve other aspects of life</td>
<td>To maximize work performance</td>
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<td>To be mindful</td>
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<td>To find new life experiences</td>
<td>To satisfy curiosity and have fun</td>
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<td></td>
<td>To explore new things</td>
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<td>To learn something interesting</td>
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# Data Collection and Exploration Tools

**Data Collection Tool**

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<tr>
<th>Tool</th>
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<tr>
<td>Commercial hardware</td>
<td>56%</td>
<td>(29)</td>
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<tr>
<td>Spreadsheet</td>
<td>40%</td>
<td>(21)</td>
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<td>Custom software</td>
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<td>(11)</td>
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<td>Pen and paper</td>
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<tr>
<td>Commercial software</td>
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<td>Commercial website</td>
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<tr>
<td>Camera</td>
<td>6%</td>
<td>(3 )</td>
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<tr>
<td>Open-source platform</td>
<td>6%</td>
<td>(3 )</td>
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<tr>
<td>Custom hardware</td>
<td>4%</td>
<td>(2 )</td>
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<tr>
<td>Other</td>
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<td>Data Exploration Tool</td>
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<td>Spreadsheet</td>
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<td>Commercial website</td>
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<td>Commercial software</td>
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<td>Open-source platform</td>
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<td>(4 )</td>
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<tr>
<td>Statistical software</td>
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<td>Pen and paper</td>
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“Understanding Quantified Selfers’ Practices in Collecting and Exploring Personal Data”
Building Custom Tools

- Captures smile via wearable sensing
- Provides real-time feedback
- Captures snoring via mobile app
- Provides data visualization

Custom Visualizations

Custom Visualizations

Why are they Building Custom Tools?

Desirable features are not supported

Collect and reflect on the data using a single tool
Perform self-experimentation

Barriers to success

Tracking too many things
Not tracking triggers and context
Lacking scientific rigor

“Understanding Quantified Selfers’ Practices in Collecting and Exploring Personal Data”
Tracking Too Many Things

“I can honestly say that I’ve made the classic newbie self-tracking mistake which is that I track everything. I didn't know exactly what to track, so I tracked caffeine, dairy, wheat, sugar, nuts, fruit, vegetables, meat, chicken, fish, alcohol supplements...”

Not Tracking Triggers and Context

“I was trying to track all these symptoms and I was completely ignoring the cause...”

People lack clues on what to track
Miss information on how to improve outcome

They track the wrong information

Lacking Scientific Rigor

Conduct self-experimentations without control or without addressing confounding factors

And they conduct flawed experiments

Your Challenge

People invest tremendous effort for little value

Do better, help people achieve their goals

These are smart people, these are hard problems

Think big about the opportunities

Get past the technology fetish
Understand the problems people face
Find the role for interactive technology
Some Reflection

We have high expectations

  We want you to do cool stuff

But we are also enthusiastic and we listen

  Email us, point out opportunities, ask questions

If you are not onboard, please drop now

  Please email us so that we know a spot opened

  cse440-instr [at] cs.washington.edu
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