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



James Fogarty

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



Industrial Stints

IBM, 2000 IBM Research, 2003 Microsoft Research, 2007



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

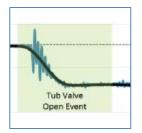
CSEP 510: Human-Computer Interaction



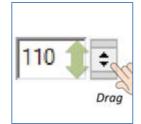




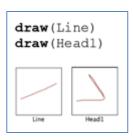


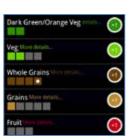


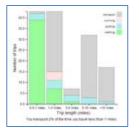


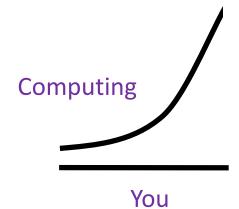














Daniel Epstein

BS, Computer Science
University of Virginia, 2012

Grad Student, UW CSE 2012-20XX?



with friends and family

Hobbies: Game development, running,

hiking, programming competitions



Brad Jacobson

BA, Psychology Dartmouth College, 2013

MS, University of Washington HCDE, 2013 – 2014



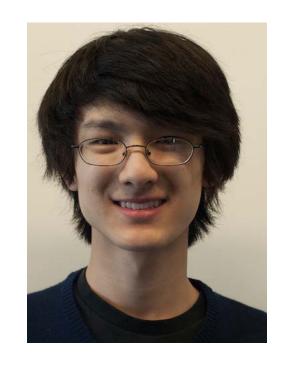
Interests: user research,

"pop-psych" books, soccer, skiing, and plenty of tv shows and movies



King Xia

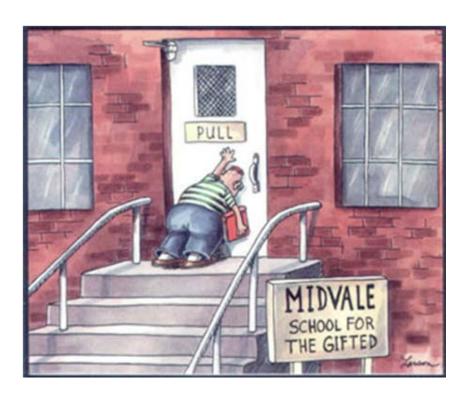
University of Washington, 2015 Computer Science & Business



Interests: The Kingkiller Chronicles, learning new languages, LoL, cooking, debate



What Is This Course?



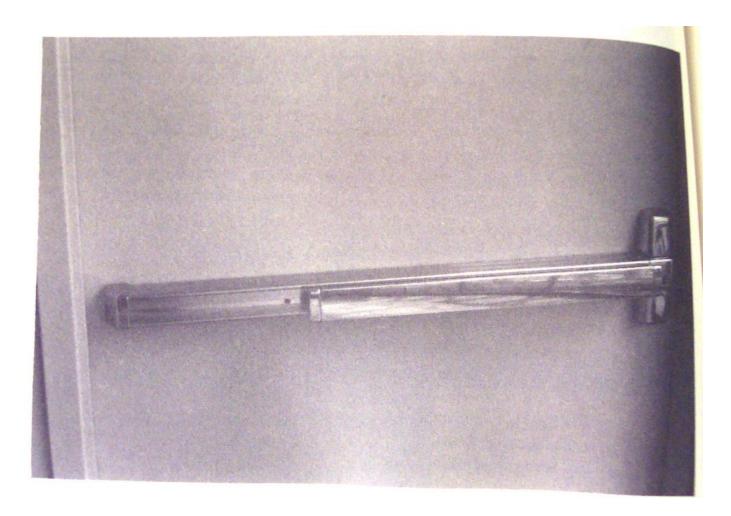
Time for a Door Quiz:

Say out loud what action you use to open the door

Push

Pull







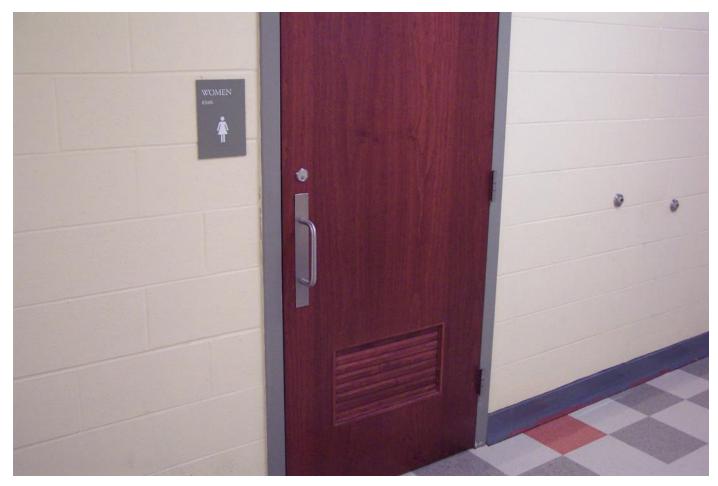


Washington





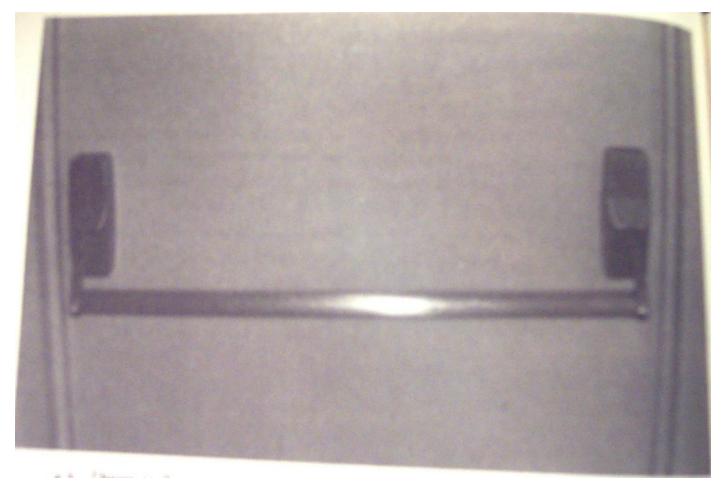
















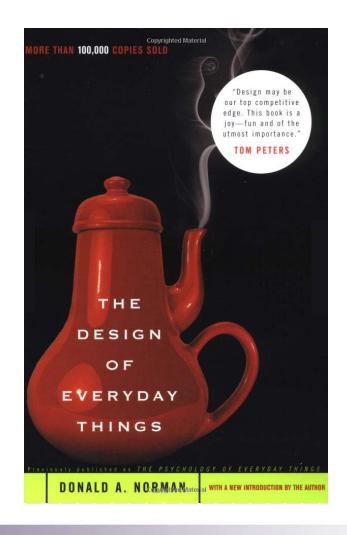
What is so Special about Computers?

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?

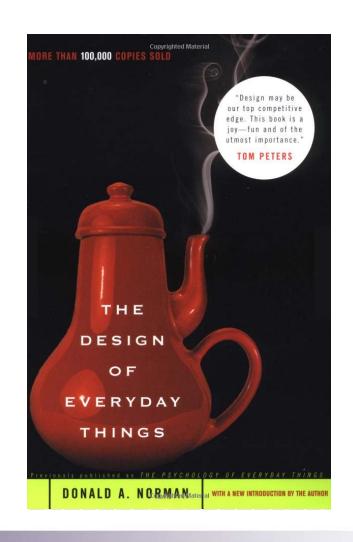
Yet we blame ourselves

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



StoneSoup

Contextual Inquiry & Task Analysis

Observe practices and understand needs

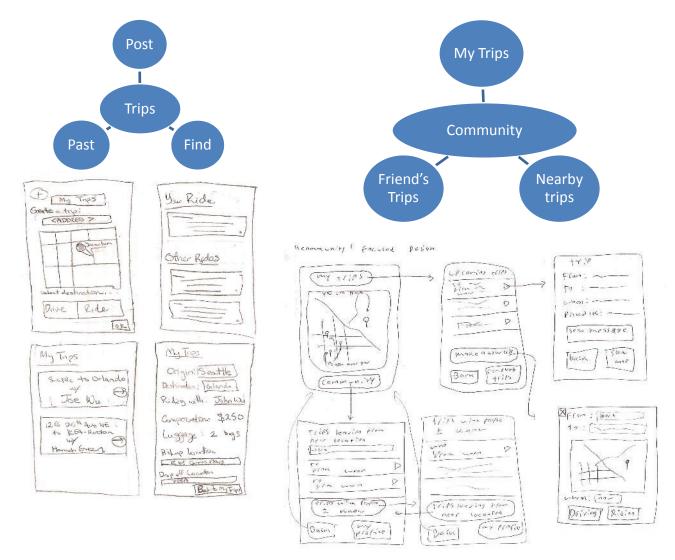


Consumester



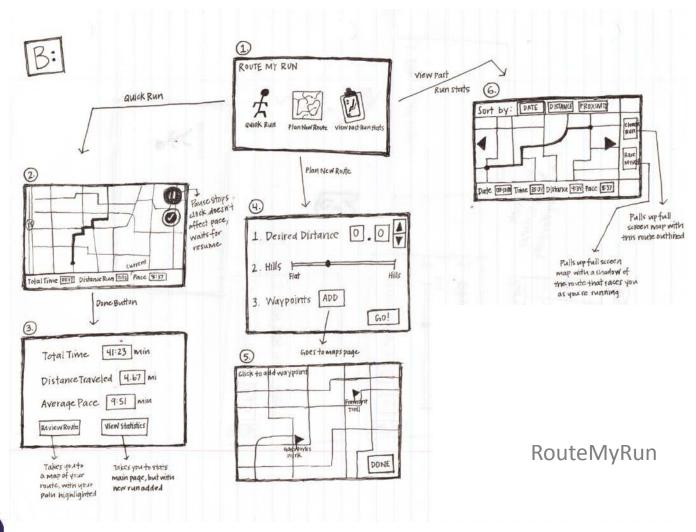
FoodWatch

Sketching & Storyboarding



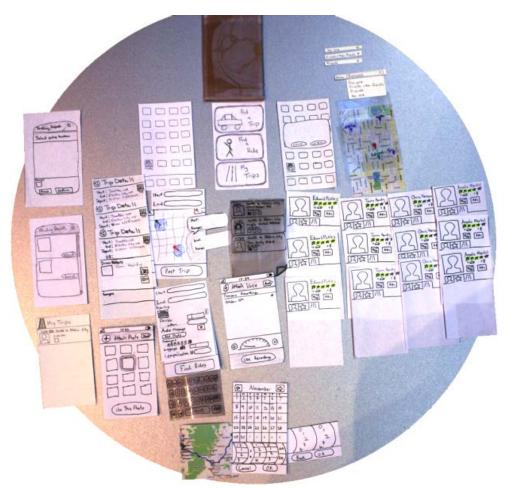


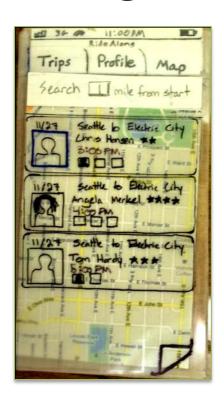
Sketching & Storyboarding





Low-Fidelity Prototyping & Testing





RideAlong



Digital Mockup





.calm

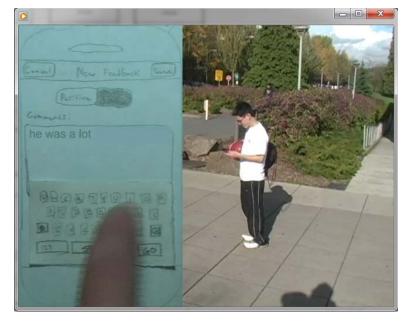


Fitter

Video Prototypes



GetOut



PickUp



Learn by Example from Prior Projects

Plantr:

http://courses.cs.washington.edu/courses/cse440/13au/projects/plantr/

NutriView:

http://courses.cs.washington.edu/courses/cse440/13au/projects/nutriview/

JuiceBox:

http://courses.cs.washington.edu/courses/cse440/13au/projects/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!



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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?	Yes No	
I think the the first six		
class should be regained train	of for all	PM's at
microsoft. Our software would	be retit	so much
from the material should in this	s chis	*

Was this class intellectually stimulating? Did it stretch your thinking?	No Why or why not?
Yes, because it put me outs in	de of my
box working on my own by requir	ing user
box working on my own by require studies with huknown people	O



People Really Get It

Was this class intellectually stimulating? Did it stretch your thinking?	Yes No Why or why not?
Jus. Coolest part	ruos forcad
engagement with	non engineen.

What aspects of this class contributed most to your learning?				0 1
Interacting	reith	users	during	assignment



Sometimes We Forget to be Clear

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

Yes, thus class stretch my then tung Sence the ideas of Human- Computer interaction were new to me. But overall I don't feel that I day be, I learned a lot at thus class. It May be, that is a specifics of the sy subject - there is not too much of "Peal" knoledge in it?
```

```
What suggestions do you have for improving the class?

I didn't get why we were doing iterative daign projects until you told us that it was so that we could improve the daigns around us. From them on I got the class.
```



But it is not for Everybody

What aspects of this class detracted from your learning? Finding Strangers in malls ? 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 ? university Students



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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



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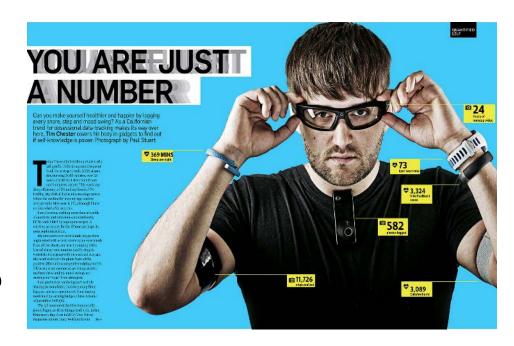


Background in Personal Informatics

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."



What is Quantified Self

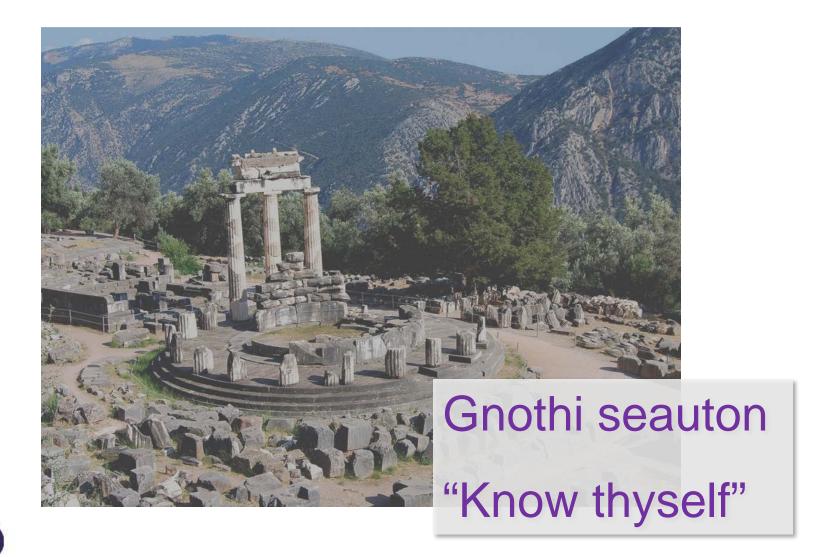
"The Quantified Self is an international collaboration of users and makers of self-tracking tools."

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

"Self knowledge through numbers."



What is the Point?





Washington

Leonardo da Vinci

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



	TEMPERANCE.						
EAT NOT TO DULLNESS. DRINK NOT TO ELEVATION.							
	S.	M.	T.	w.	т.	F.	s.
T.							
S.	*	*		*		*	
0.	* *	*	*		*	*	*
R.			*			*	
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Manpokei







万歩計



Thousands of Health Monitoring Apps



Activity and Medical Sensing Devices







Blood glucose meter

Thermometer



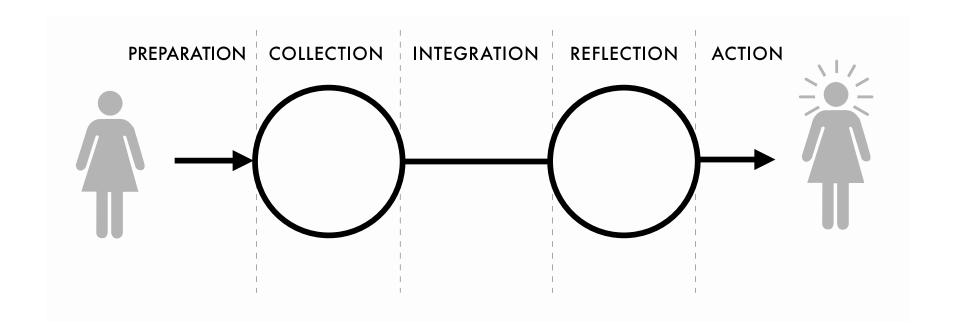
Blood pressure monitor

Heart rate monitor





Five-Stage Model of Personal Informatics





Five-Stage Model of Personal Informatics

Alice



20 years old

Has a family history of heart disease

Wants to be more active

Does not know how, because she is busy



Preparation







Li I., Dey A., Forlizzi J. *CHI 2010*. "A Stage-Based Model of Personal Informatics Systems"

Preparation







Washington

Collection



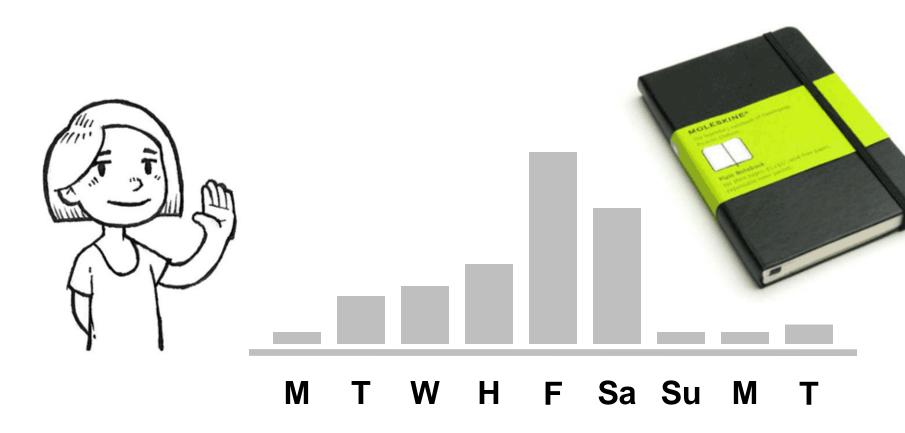






Washington

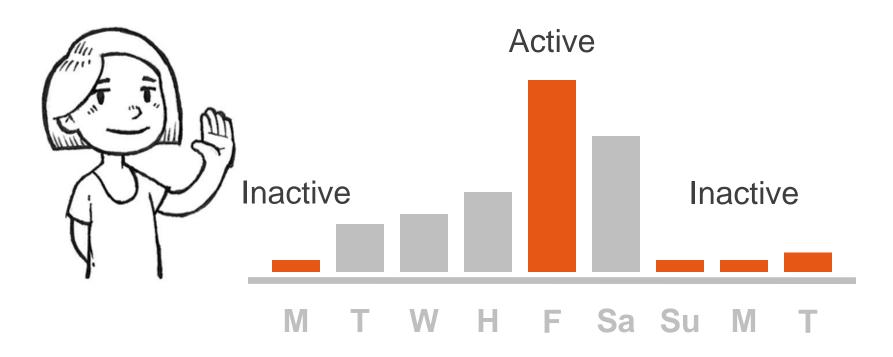
Integration





Li I., Dey A., Forlizzi J. *CHI 2010*. "A Stage-Based Model of Personal Informatics Systems"

Reflection



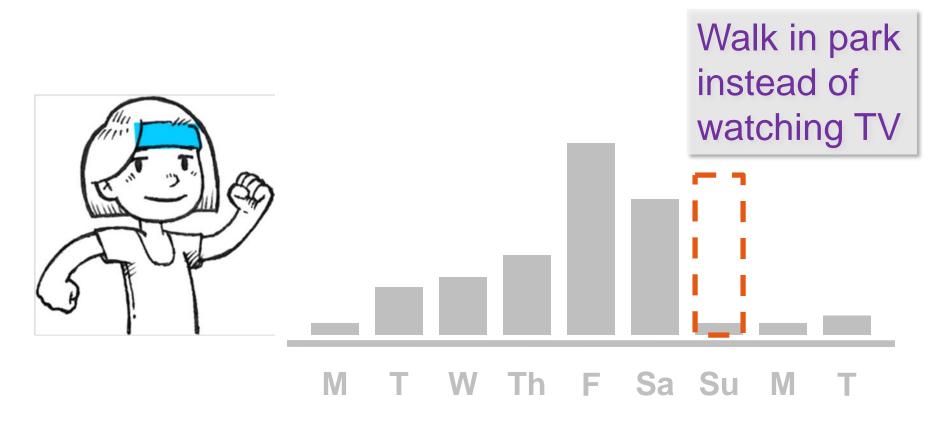


Washington

Li I., Dey A., Forlizzi J. CHI 2010.

"A Stage-Based Model of Personal Informatics Systems"

Action

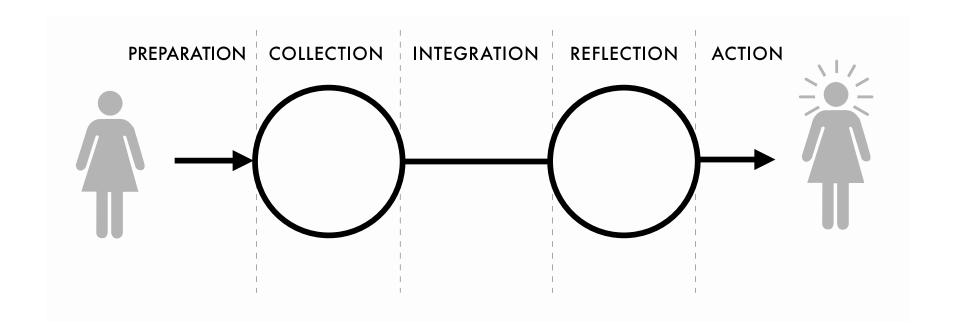




Li I., Dey A., Forlizzi J. CHI 2010.

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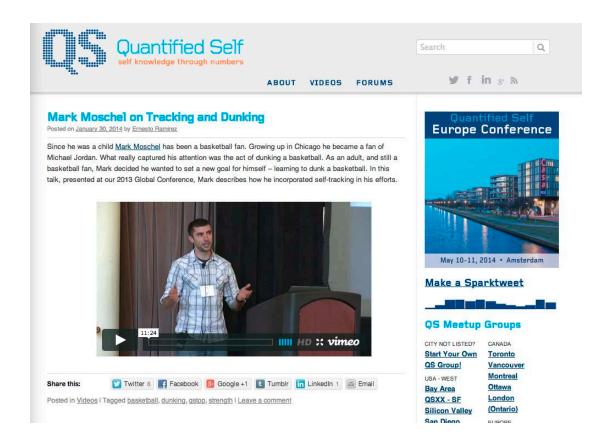
Five-Stage Model of Personal Informatics





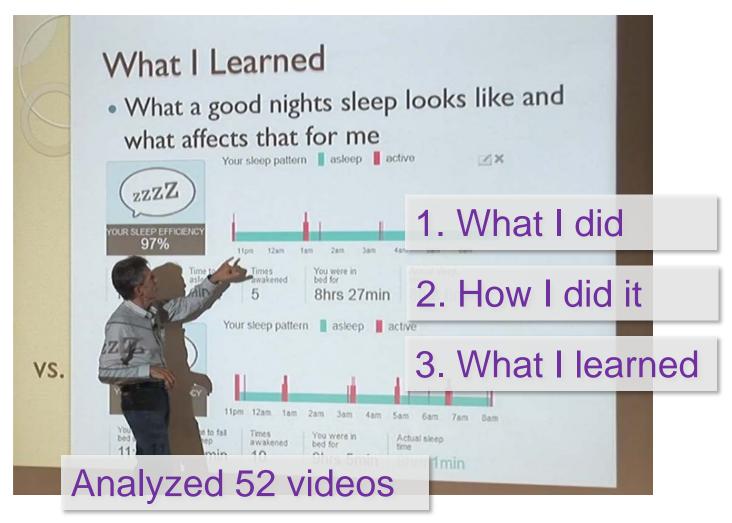
What is the Problem?

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





Quantified Self Talk Format





Choe E.K., Lee N.B., Lee B., Pratt W., Kientz J.A. CHI 2014. "Understanding Quantified Selfers' Practices in Collecting and Exploring Personal Data"

Questions about the Quantified Self







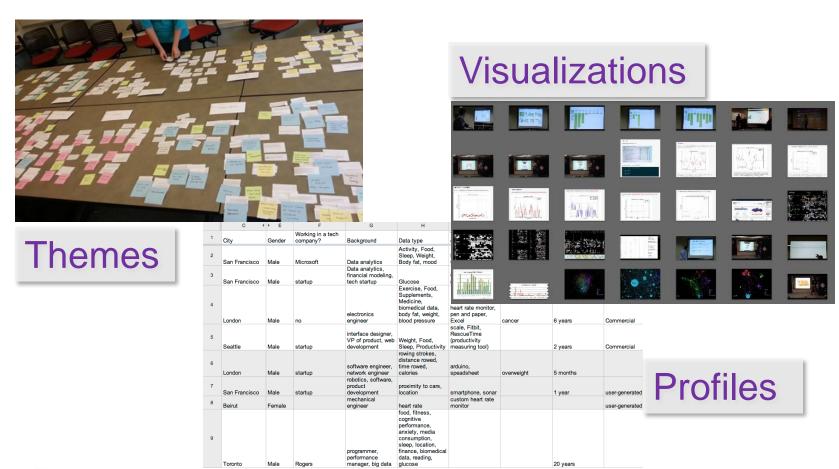








Analysis



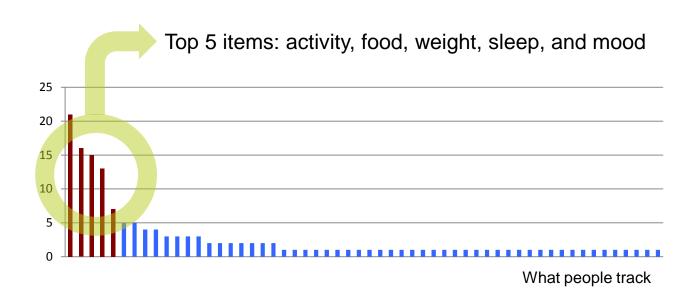


Choe E.K., Lee N.B., Lee B., Pratt W., Kientz J.A. CHI 2014.

"Understanding Quantified Selfers' Practices in Collecting and Exploring Personal Data"

What do they track?

Number of People Who Tracked an Item



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

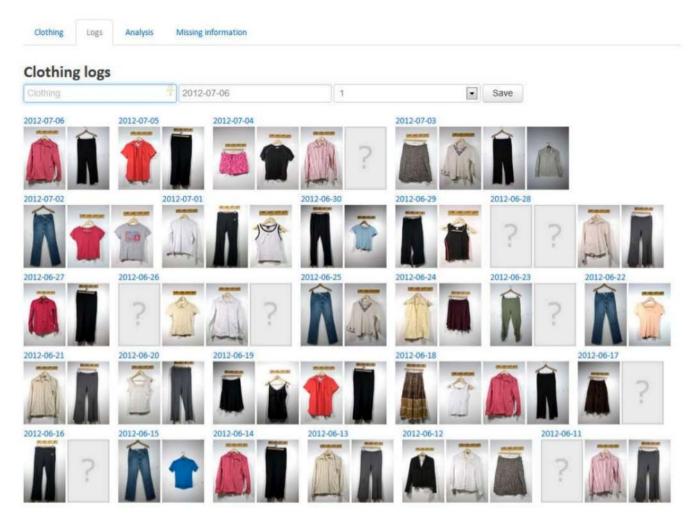


Movies Seen in Theatres Since 2001





Clothing Log





Choe E.K., Lee N.B., Lee B., Pratt W., Kientz J.A. CHI 2014. "Understanding Quantified Selfers' Practices in Collecting and Exploring Personal Data"

"Understanding Quantified Selfers' Practices in Collecting and Exploring Personal Data"

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



Motivations for Tracking

Motivations	Sub-categories
To improve health	To cure or manage a condition
	To achieve a goal
	To find triggers
	To answer a specific question
	To identify relationships
	To execute a treatment plan
	To make better health decisions
	To find balance
To improve other aspects of life	To maximize work performance
	To be mindful
To find new life experiences	To satisfy curiosity and have fun
	To explore new things
	To learn something interesting



Data Collection and Exploration Tools

Data Collection Tool	% (#)
Commercial hardware	56% (29)
Spreadsheet	40% (21)
Custom software	21% (11)
Pen and paper	21% (11)
Commercial software	19% (10)
Commercial website	10% (5)
Camera	6% (3)
Open-source platform	6% (3)
Custom hardware	4% (2)
Other	10% (5)

Data Exploration Tool	% (#)
Spreadsheet	44% (23)
Custom software	35% (18)
Commercial website	27% (14)
Commercial software	12% (6)
Open-source platform	8% (4)
Statistical software	4% (2)
Pen and paper	2% (1)



Building Custom Tools



Captures smile via wearable sensing Provides real-time feedback



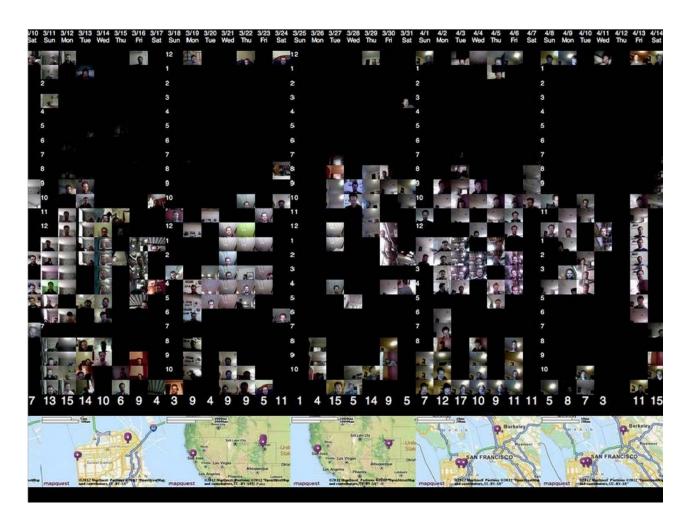
Captures snoring via mobile app Provides data visualization

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



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..."

People burn out on self-tracking



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

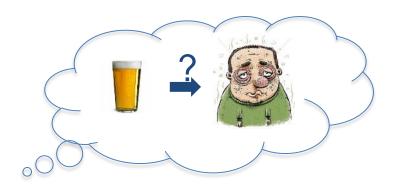
Miss information on how to improve outcome

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



CSE 440: Introduction to HCI

User Interface Design, Prototyping, and Evaluation

Lecture 01:

Introduction and

Personal Informatics

James Fogarty

Daniel Epstein

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King Xia



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MOR 234