

# CSE 440: Introduction to HCI

User Interface Design, Prototyping, and Evaluation

Lecture 01:  
Introduction and  
Personal Informatics

Tuesday / Thursday  
12:00 to 1:20

James Fogarty  
Kailey Chan  
Dhruv Jain  
Nigini Oliveira  
Chris Seeds  
Jihoon Suh

# What Is This Course?



Time for a Door Quiz:

Say out loud what action you use to open the door

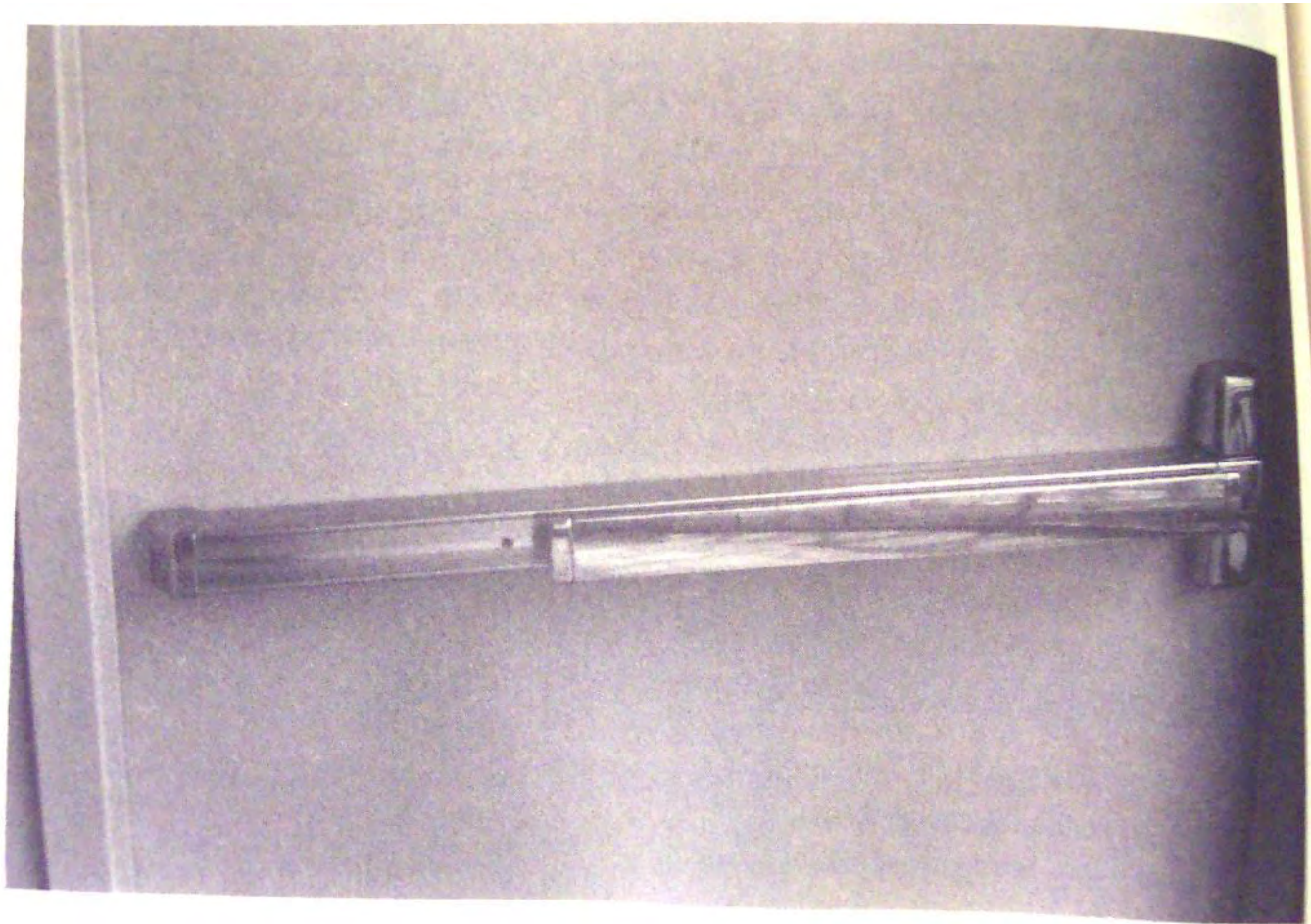
Push

Pull

# Door Quiz



# Door Quiz





# Door Quiz



# Door Quiz



# Door Quiz

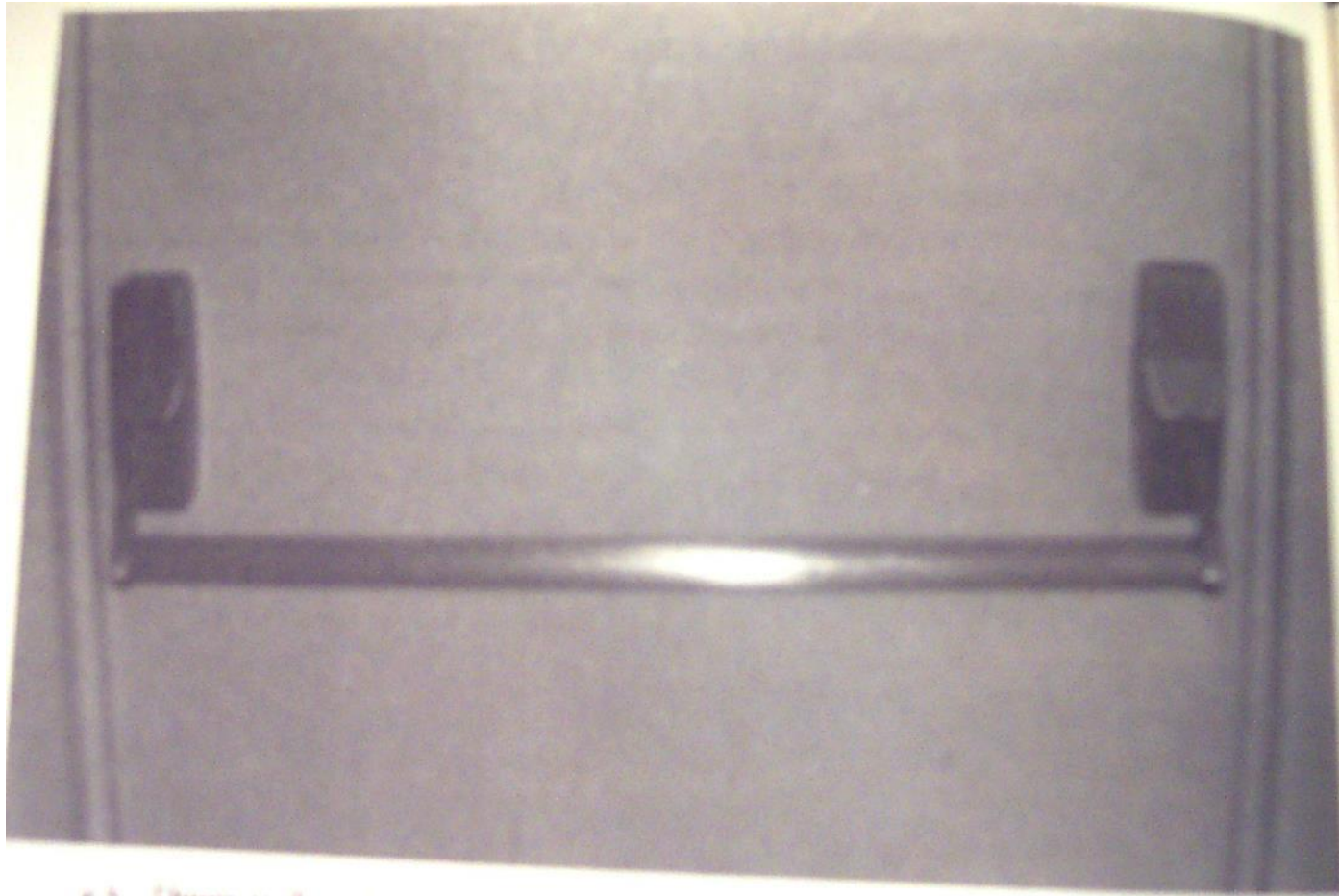


# Door Quiz





# Door Quiz



# Door Quiz



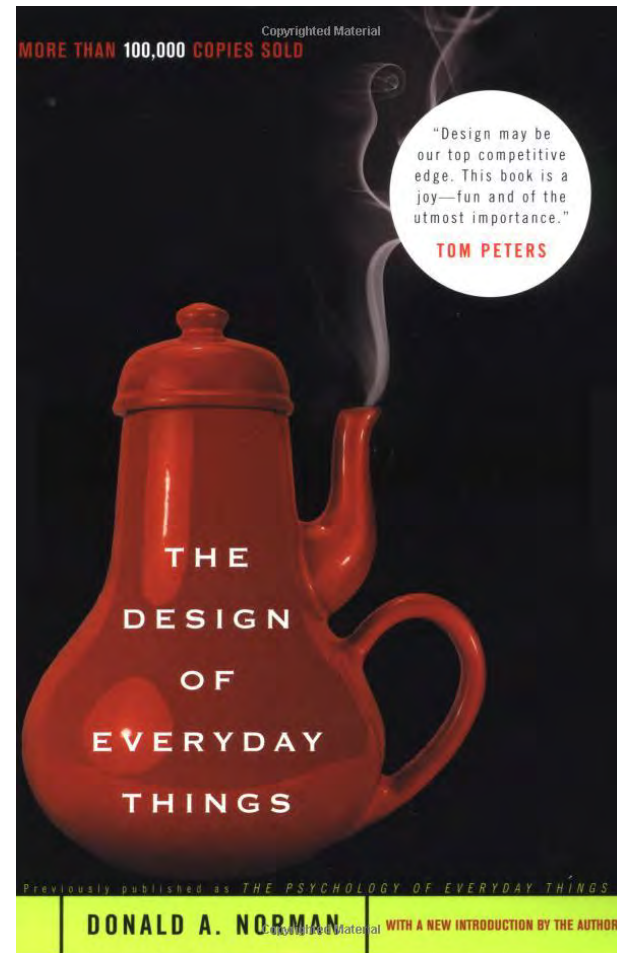
# What is so Special about Computers?

Nothing! It is about good designs and bad designs

We 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





# Signs Do Not Help



# Signs Do Not Help





# What is so Special about Computers?

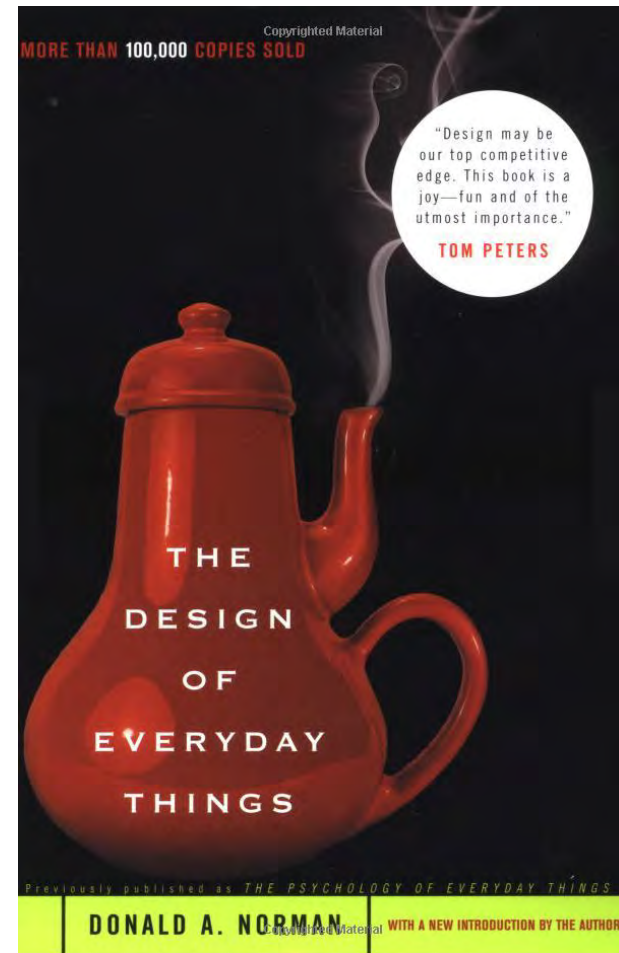
Yet we blame ourselves

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

“Enlightened trial and error succeeds over the planning of the lone genius” – Peter Skillman, IDEO

# 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

# Design Research & Task Analysis

Observe practices and understand needs

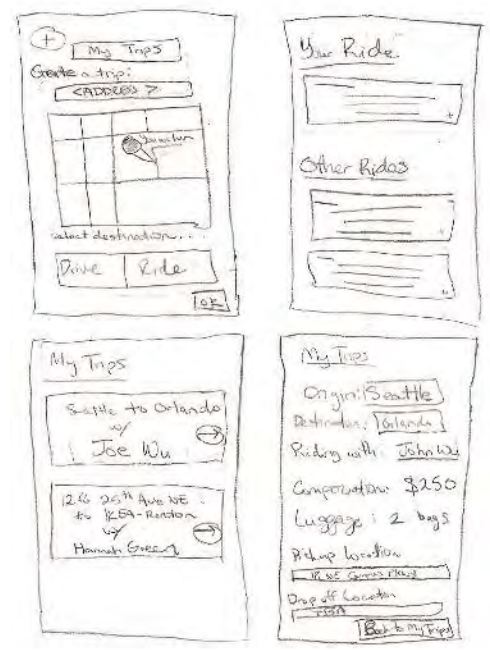
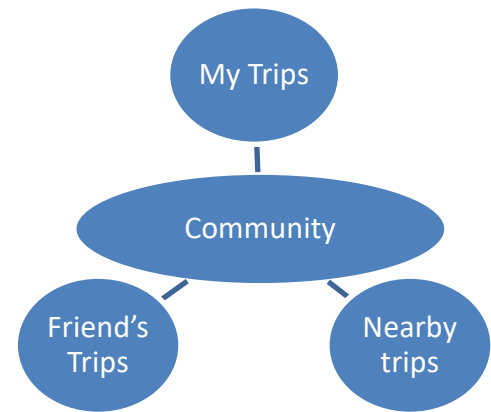
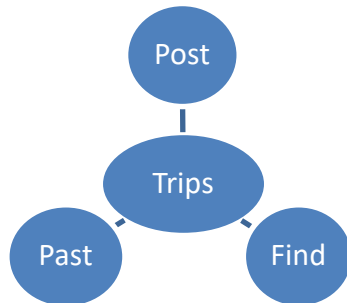


Consumester

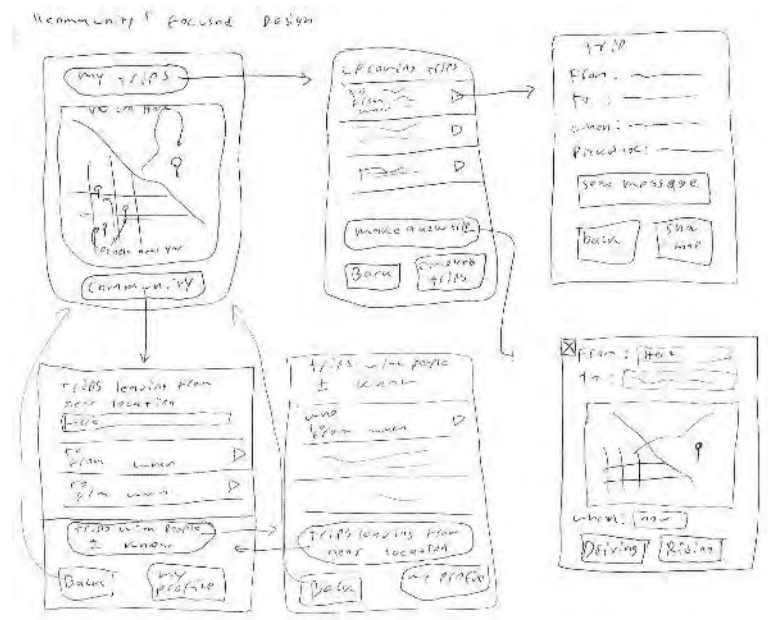


FoodWatch

# Sketching & Storyboarding

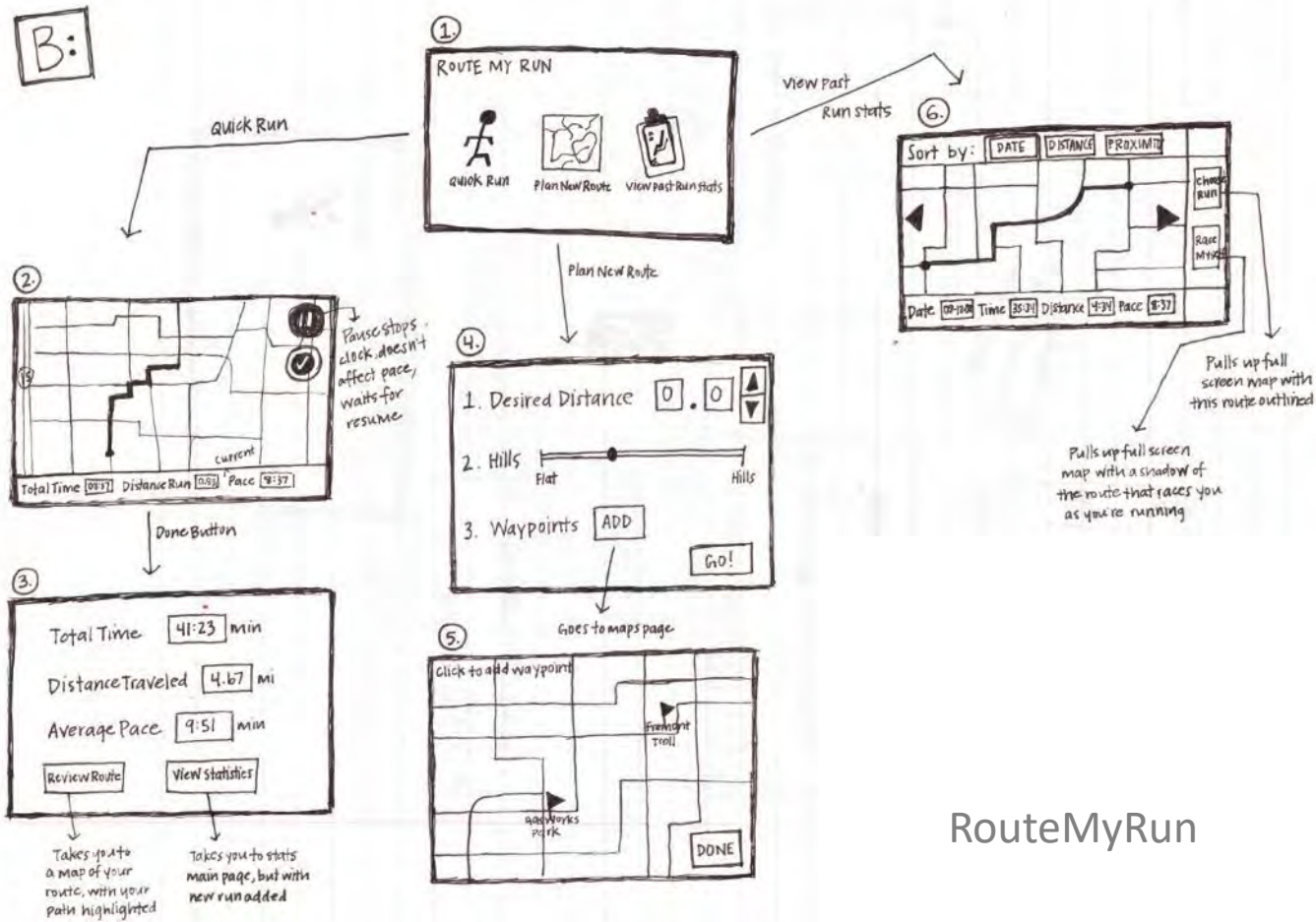


RideAlong





# Sketching & Storyboarding



RouteMyRun



# Digital Mockup



Balance

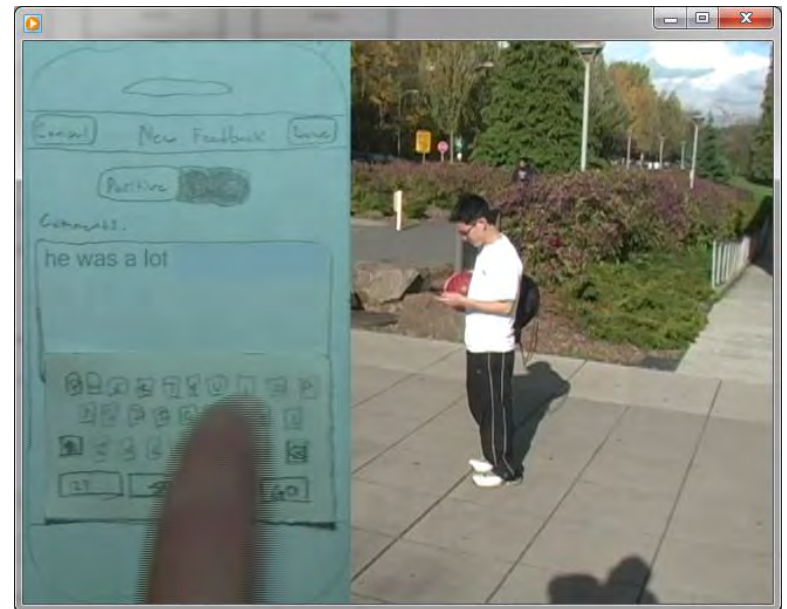
.calm



# Video Prototypes



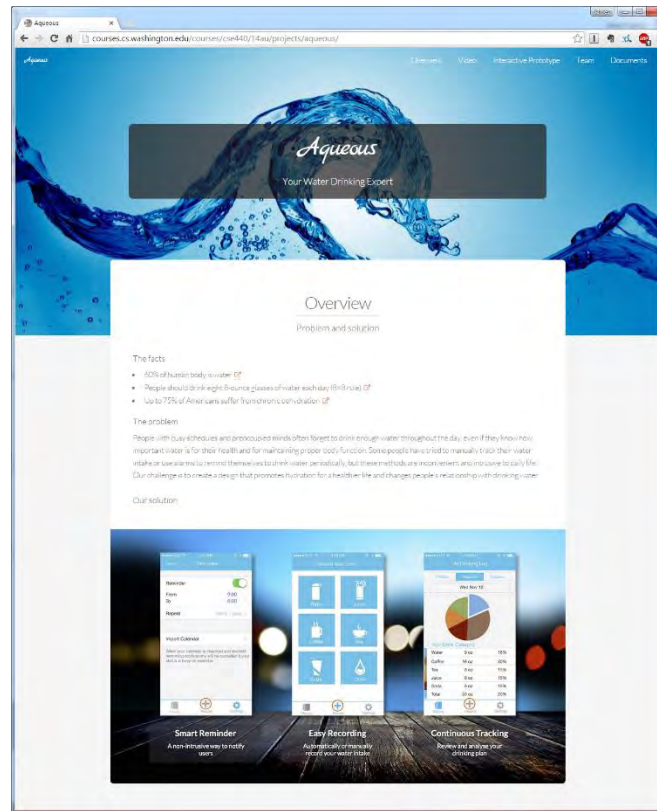
GetOut



PickUp



# Learn by Example from Prior Projects



Autumn 2014 - Aqueous:

<https://courses.cs.washington.edu/courses/cse440/14au/projects/aqueous/>



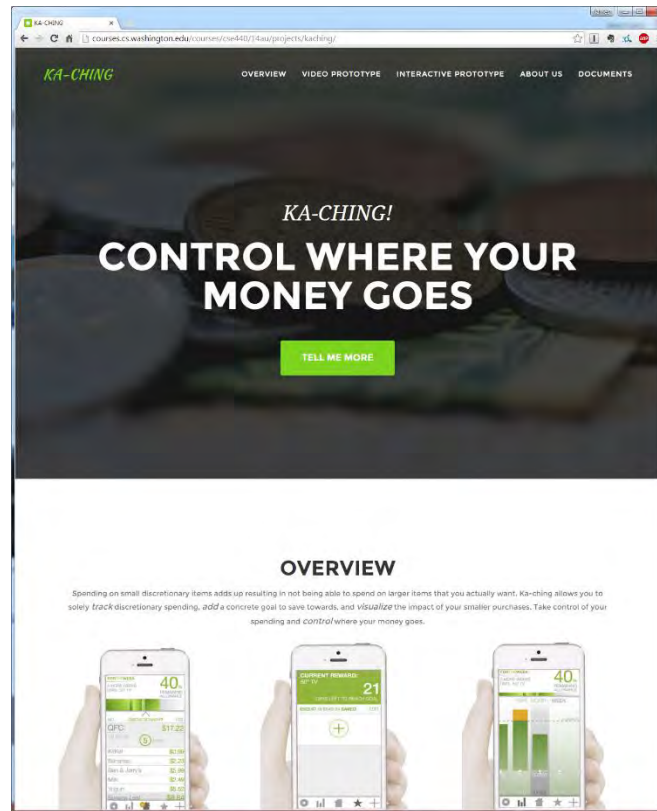
# Learn by Example from Prior Projects



Autumn 2014 - IEP Connect:

<https://courses.cs.washington.edu/courses/cse440/14au/projects/iepconnect/>

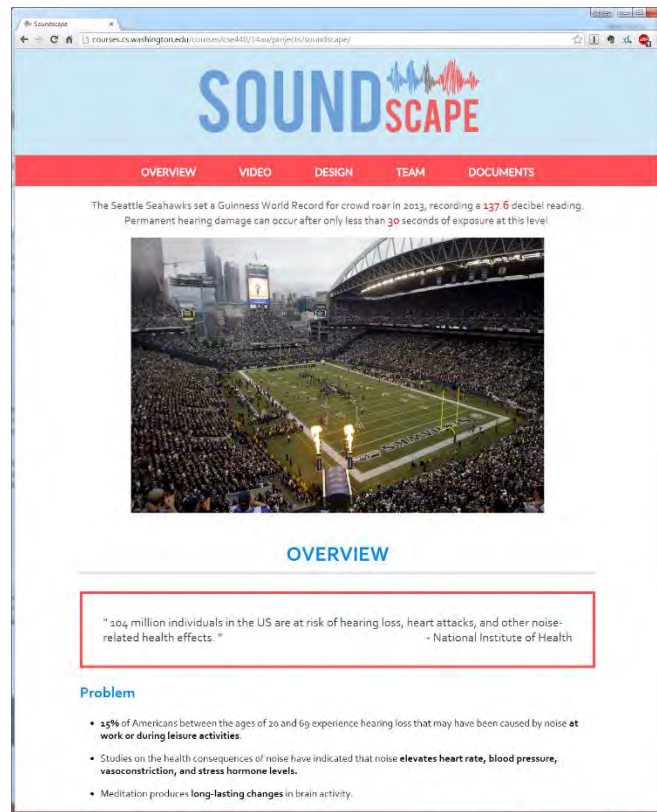
# Learn by Example from Prior Projects



Autumn 2014 - Ka-Ching:

<https://courses.cs.washington.edu/courses/cse440/14au/projects/kaching/>

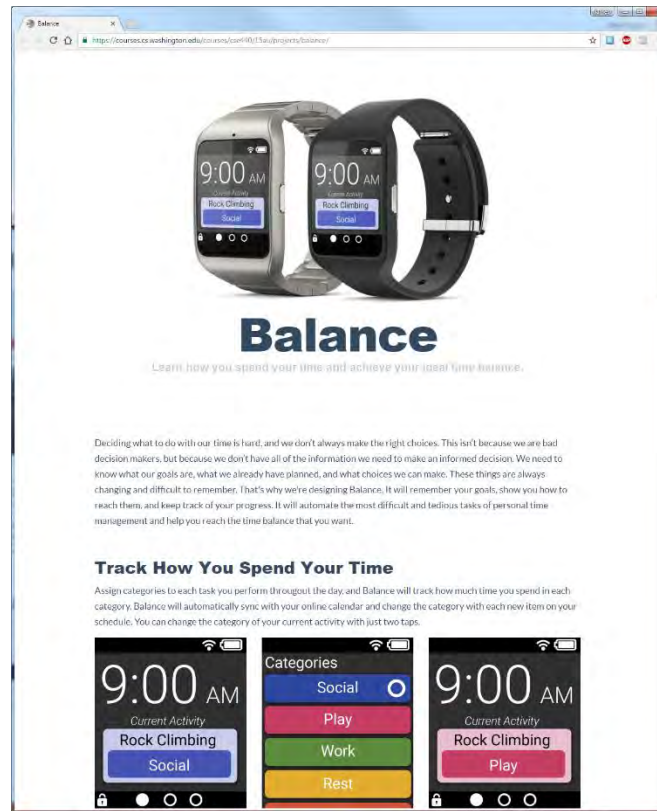
# Learn by Example from Prior Projects



Autumn 2014 - Soundscape:

<https://courses.cs.washington.edu/courses/cse440/14au/projects/soundscape/>

# Learn by Example from Prior Projects



Autumn 2015 - Balance:

<https://courses.cs.washington.edu/courses/cse440/15au/projects/balance/>

# Learn by Example from Prior Projects



Autumn 2015 - Neat:

<https://courses.cs.washington.edu/courses/cse440/15au/projects/neat/>



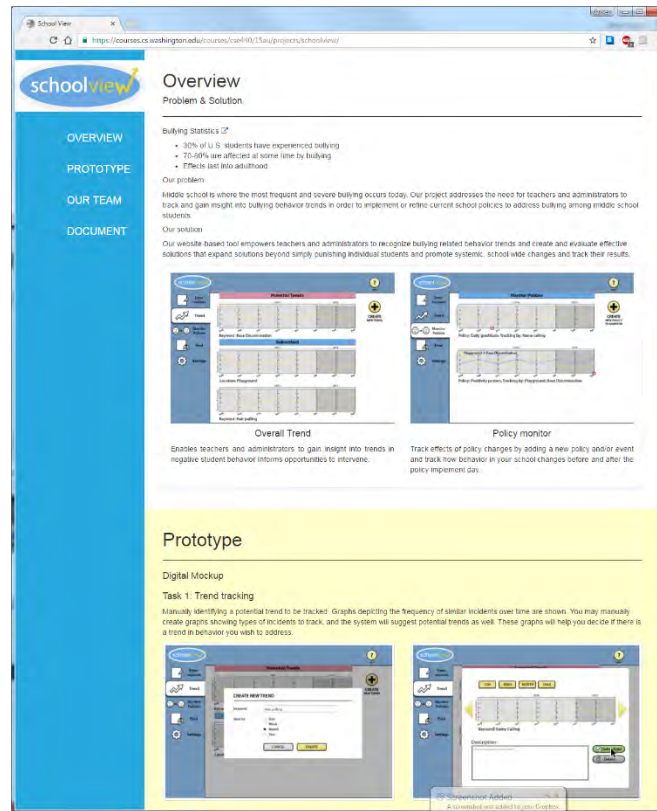
# Learn by Example from Prior Projects



Autumn 2015 - Poliscope:

<https://courses.cs.washington.edu/courses/cse440/15au/projects/poliscope/>

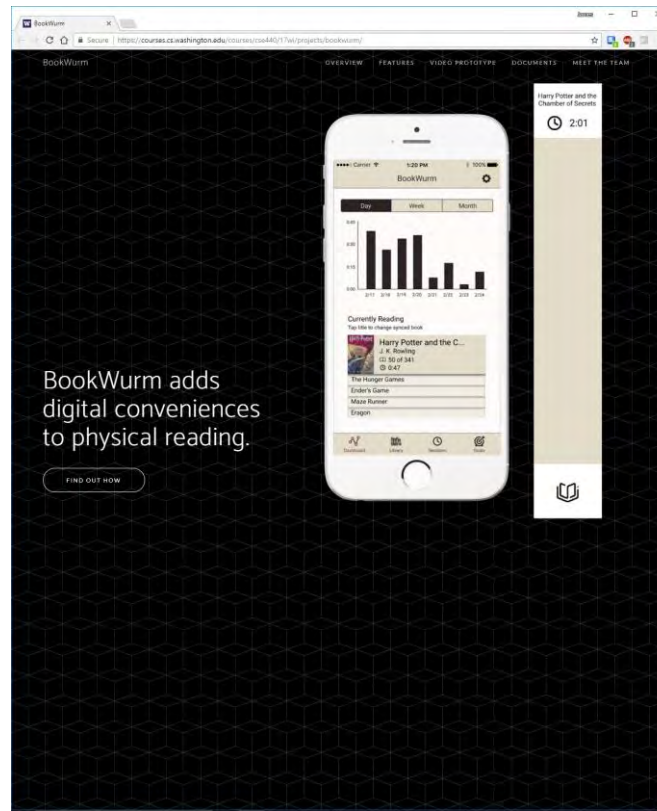
# Learn by Example from Prior Projects



Autumn 2015 - School View:

<https://courses.cs.washington.edu/courses/cse440/15au/projects/schoolview/>

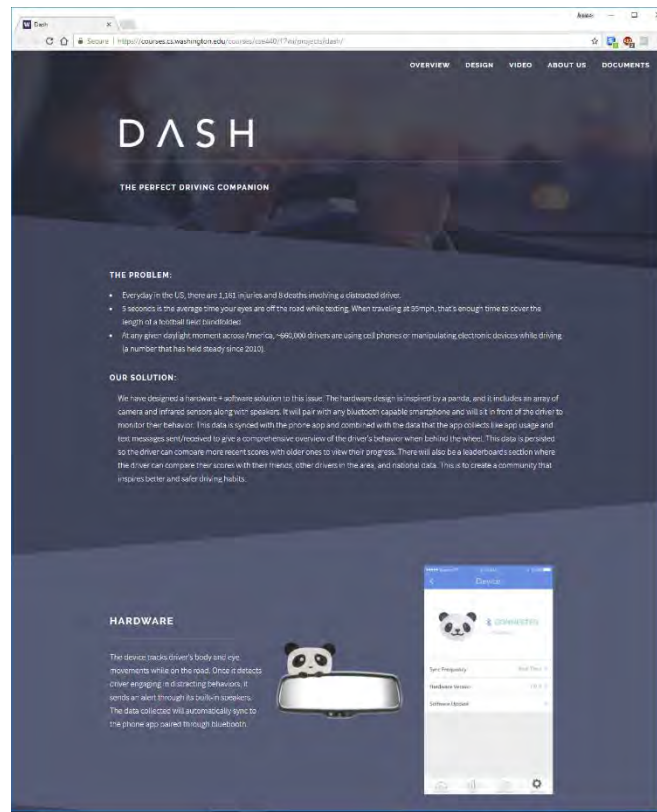
# Learn by Example from Prior Projects



Winter 2017 - BookWurm:

<https://courses.cs.washington.edu/courses/cse440/17wi/projects/bookwurm/>

# Learn by Example from Prior Projects

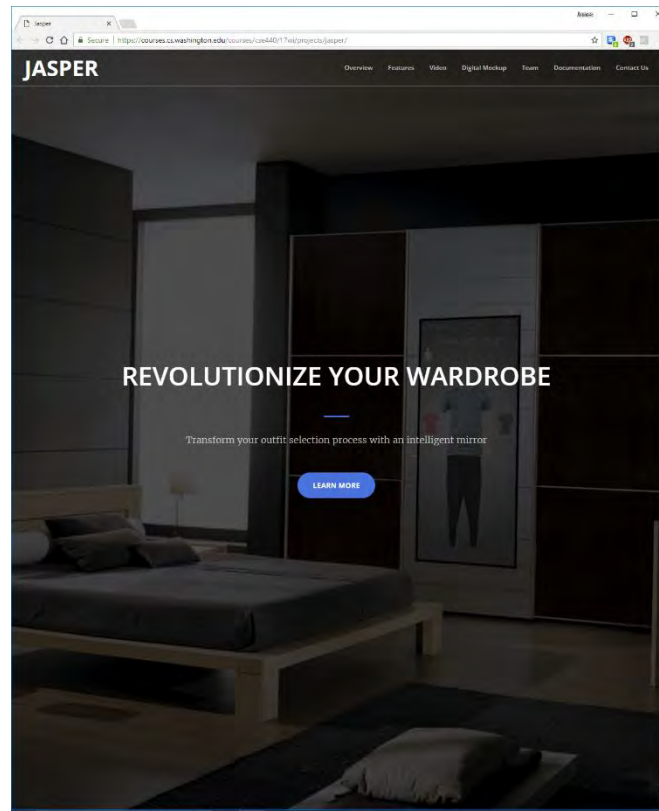


Winter 2017 - Dash:

<https://courses.cs.washington.edu/courses/cse440/17wi/projects/dash/>



# Learn by Example from Prior Projects



Winter 2017 - Jasper:

<https://courses.cs.washington.edu/courses/cse440/17wi/projects/jasper/>

# Learn by Example from Prior Projects



Winter 2017 - Wishing Well:

<https://courses.cs.washington.edu/courses/cse440/17wi/projects/wishingwell/>

# 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 always brings a milestone to studio

Participation is a critical component of the course

Tuesday milestones

Your team always has a milestone due

Class may include project time or activity

Seek feedback (e.g., via office hours)

# Overview

HCI and the Project Sequence

Course Staff Introductions

Administrivia

Assignment 1: Project Proposal

Assignment 1a: Due Tonight

Assignment 1b: Due Monday Night

Some Reflection

Self-Tracking and Relevant Background



# Who We Are

James Fogarty

Prefer: James / He / Him

## Background

BS, Virginia Tech, 2000

PhD, Carnegie Mellon, 2006

Joined UW CSE, 2006

Professor, effective Autumn 2017

## Brief Industrial Stints

IBM, 2000

IBM Research, 2003

Microsoft Research, 2007



# Who We Are

## Cross-Campus HCI

DUB

MHCID



## Cross-Campus Digital Health

UW Medicine Digital Health Advisory Committee

UW Population Health Executive Committee

## Teaching

CSE 440: Introduction to HCI

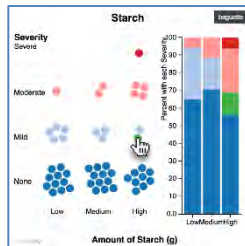
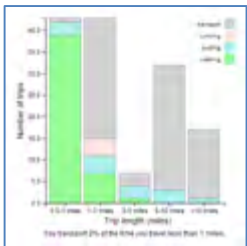
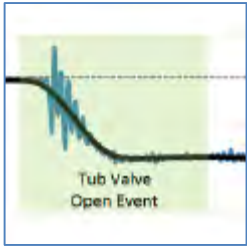
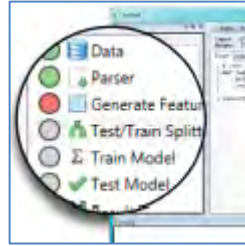
CSE 441: Advanced HCI

CSE 510: Advanced Topics in HCI

CSEP 510: Human-Computer Interaction

CSE 332: Data Structures

# Who We Are



Computing

You

# Who We Are

## Kailey Chan

Prefer: Kailey / She / Her

## Background

BA, Psychology, UW, 2016

MS, HCDE, UW, 2018



## Research

Social Psychology (Social-Identity, Social Media)

Contextual Interfaces

## Interests:

Cooking, Traveling, DIY Crafts, Dogs



# Who We Are

Dhruv Jain

Prefer: DJ / He / Him

Background

B.Tech, IIT Delhi, 2013

MS, MIT Media Lab, 2016

PhD, UW, 2017 - 🤔



Research

Accessible Technologies

Augmented / Virtual Reality

Interests:

Scuba Diving (ah well...not anymore)

# Who We Are

Nigini Oliveira

Prefer: Nigini / He / Him

Background

BS-MS, UFCG – Brazil, 2007

Entrepreneur/Lecturer, - 2012

PhD, UFCG (+UW), 2017



Research

Cross-Cultural Collaboration Design

Online Experimentation

Interests:

Literature, Bike Riding, Photography, Chatting, Coffee

# Who We Are

Jihoon Suh

Prefer: Jihoon / He / Him

Background

BS, KAIST Industrial Design, 2016

MS, UW HCDE, 2018

Research

Spatial User Interfaces

Tangible Interaction

Interests:

Riding Boards (longboard, paddleboard, wakeboard)

Graffiti, Street Art (legal restrictions)



# Who We Are

## Christopher Seeds

Prefer: Chris / He / Him

## Background:

BFA , Visual Communication Design,  
Kent State University, 2010

Designer in Ohio & NYC, 2010–2016

MDes, UW SoA,AH,&D, 2018

## Research:

Slow Design, Design + Storytelling

## Interests:

Podcasts, My Boston Terrier, Concrete Things



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# Staying in Touch

Web: <http://www.cs.washington.edu/440>

You are responsible for calendar

Email Us: [cse440-staff \[at\] cs.washington.edu](mailto:cse440-staff@cs.washington.edu)

Email: You are responsible for course email list

Office Posted on Calendar

Hours: Also By Appointment

Canvas: I hate Canvas so much but  
we have to use it for some things

Panopto: I will probably mess it up at least once

# Calendar Overview

The screenshot shows a web browser window with the URL <https://courses.cs.washington.edu/courses/cse440/17au/calendar.html>. The page title is "CSE 440 - Introduction to HCI - Autumn 2017". The main heading is "Calendar". A notice states: "This page is still being migrated and developed. All content remains subject to change." The calendar is organized by date, with events listed for each day. Events are color-coded: pink for "Night Away", orange for "Lecture", green for "Project Presentation", yellow for "Office Hour", and blue for "Section".

Date	Event	Location
Sep 25	Night Away	
Sep 26	Night Away	
Sep 27	Night Away	
Sep 28	Introduction, Project Overview, and Personal Informatics	12:00 - 1:20   PAA A110
Sep 28	16 - Project Presentation	(See Night Before Section)
Sep 29	Night Away	
Sep 29	Kailey in All Sections	
Sep 29	Section	9:30 - 10:20   MGH 058 10:30 - 11:20   MGH 058 12:30 - 1:20   MGH 058 1:30 - 2:20   MGH 058
Oct 2	Night Away	
Oct 2	16 - Project Proposal	(See Night Before Class)
Oct 3	Night Away	
Oct 3	Design of Everyday Things	12:00 - 1:20   PAA A110
Oct 3	17 - Introduction Slides	(See End of Day)
Oct 3	James Office Hour	3:30 - 4:30 CSE 632
Oct 4	Night Away	
Oct 4	16 - Project Out	(See Night Before Class)
Oct 4	Kailey Office Hour	2:00 - 3:00 CSE 220
Oct 5	Night Away	
Oct 5	Contextual Inquiry, Design Research	12:00 - 1:20   PAA A110
Oct 5	Dhruv Office Hour	1:30 - 2:30 CSE 021
Oct 6	Night Away	
Oct 6	Section	9:30 - 10:20   MGH 058 10:30 - 11:20   MGH 058 12:30 - 1:20   MGH 058 1:30 - 2:20   MGH 058
Oct 6	20 - Project Issues	(Same as Section)
Oct 9	19 - Design Research Plan	(See Night Before Class)
Oct 9	Night Office Hour	3:30 - 4:30 CSE 021
Oct 10	Oct 10	
Oct 10	Lecture	12:00 - 1:20   PAA A110
Oct 10	James Office Hour	3:30 - 4:30 CSE 632
Oct 11	Kailey Office Hour	2:00 - 3:00 CSE 220
Oct 12	Lecture	12:00 - 1:20   PAA A110
Oct 12	21 - Design Research: Check In	(See Night Before Section)
Oct 12	Dhruv Office Hour	1:30 - 2:30 CSE 021
Oct 13	Section	9:30 - 10:20   MGH 058 10:30 - 11:20   MGH 058 12:30 - 1:20   MGH 058 1:30 - 2:20   MGH 058
Oct 16	20 - Design Research Review	(See Night Before Class)
Oct 16	Night Office Hour	3:30 - 4:30 CSE 021
Oct 17	Lecture	12:00 - 1:20   PAA A110
Oct 17	James Office Hour	3:30 - 4:30 CSE 632
Oct 18	Kailey Office Hour	2:00 - 3:00 CSE 220
Oct 19	Lecture	12:00 - 1:20   PAA A110
Oct 19	20 - Task Review	(See Night Before Section)
Oct 19	Dhruv Office Hour	1:30 - 2:30 CSE 021
Oct 20	Section	9:30 - 10:20   MGH 058 10:30 - 11:20   MGH 058 12:30 - 1:20   MGH 058 1:30 - 2:20   MGH 058
Oct 23	James Away	@ CDD Symposium
Oct 23	21 - Design Check-in	(See Night Before Class)
Oct 23	Night Office Hour	3:30 - 4:30 CSE 021
Oct 24	James Away	@ CDD Symposium
Oct 24	Lecture	12:00 - 1:20   PAA A110
Oct 25	Kailey Office Hour	2:00 - 3:00 CSE 220
Oct 26	Lecture	12:00 - 1:20   PAA A110
Oct 26	20 - Design Review	(See Night Before Section)
Oct 26	Dhruv Office Hour	1:30 - 2:30 CSE 021
Oct 27	Section	9:30 - 10:20   MGH 058 10:30 - 11:20   MGH 058 12:30 - 1:20   MGH 058 1:30 - 2:20   MGH 058
Oct 30	19 - Getting the Night Design	(See Night Before Class)
Oct 30	Night Office Hour	3:30 - 4:30 CSE 021
Oct 31	Lecture	12:00 - 1:20   PAA A110
Oct 31	James Office Hour	3:30 - 4:30 CSE 632
Nov 1	19 - Presentation	(See Night Before Class)
Nov 1	Kailey Office Hour	2:00 - 3:00 CSE 220
Nov 2	Presentations	12:00 - 1:20   PAA A110
Nov 2	Dhruv Office Hour	1:30 - 2:30 CSE 021
Nov 3	Presentations	9:30 - 10:20   MGH 058 10:30 - 11:20   MGH 058 12:30 - 1:20   MGH 058 1:30 - 2:20   MGH 058

# GitHub Repository

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

<https://github.com/uwcse440/web-cse440-au17/>

You will contribute when posting your projects

You can otherwise contribute if you see the opportunity



# 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”

# Grading

Group Project: 65%

3% Assignment 1

21% Assignment 2: Getting the Right Design

Final Report 15%, Milestones 6%

14% Assignment 3: Getting the Design Right

Final Report 10%, Milestones 4%

15% Assignment 4: Communicating the Design

Website 5%, Video Prototype 5%, Poster 5%

12% Presentations

Getting the Right Design 5%,

Getting the Design Right 5%, Individual 2%

Exam: 25%

Individual Readings: 5%

Participation: 5%



# Submissions

Many assignments are due “night before class”

Canvas will operationalize this as 11:59pm

A bit more slack, but definitely “before I wake up”

We need your submissions as part of our preparation for in-class feedback

“Day of class”, “just before class”, or “in class” are all unacceptable, risking zero credit

Do not use this to undermine team work

# “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 assignment

Additional resources will be made available

- If you find others you want to share, email us

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Assignment 1a: Due for Friday

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Self-Tracking and Relevant Background

# Project Proposal Schedule

Project Brainstorm Due Tonight

Brainstorming in Section Friday

Project Proposal Due Monday Night

Sponsored Projects Posted Tuesday

Project Bids Due Wednesday Night

Groups Assigned Thursday

Group Brainstorming in Section Friday

# Assignment 1a: Project Brainstorm

You have an assignment due tonight:

<https://courses.cs.washington.edu/courses/cse440/17au/assignments/assignment1/>

Propose 3 project domains, problems, goals:

These are starting points for brainstorming

Submit online:

This proves that you did your preparation

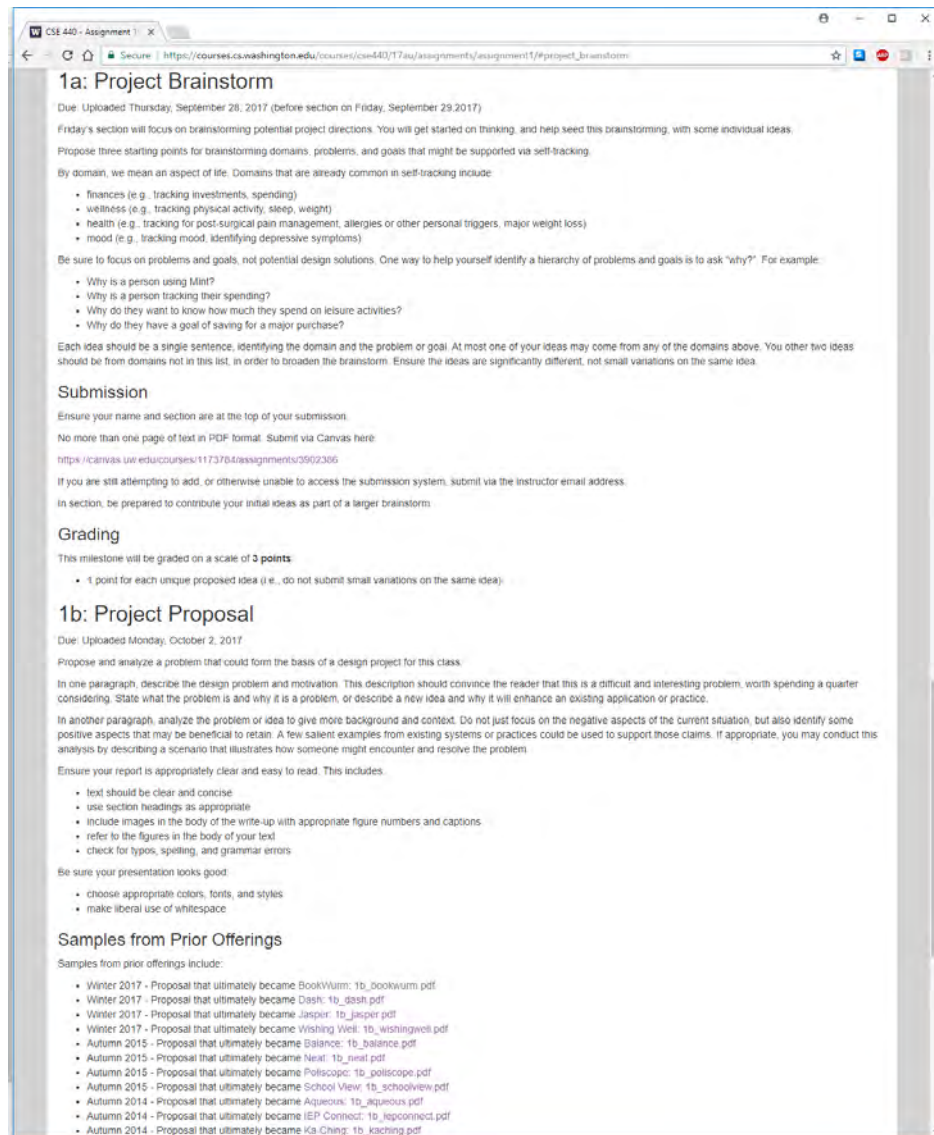
If unable to access Canvas, submit via email

Bring to section Friday:

You have a lot more brainstorming ahead of you



# Assignment 1a: Project Brainstorm



CSE 440 - Assignment 1a

## 1a: Project Brainstorm

Due: Uploaded Thursday, September 28, 2017 (before section on Friday, September 29, 2017)

Friday's section will focus on brainstorming potential project directions. You will get started on thinking, and help seed this brainstorming, with some individual ideas.

Propose three starting points for brainstorming domains, problems, and goals that might be supported via self-tracking.

By domain, we mean an aspect of life. Domains that are already common in self-tracking include:

- finances (e.g., tracking investments, spending)
- wellness (e.g., tracking physical activity, sleep, weight)
- health (e.g., tracking for post-surgical pain management, allergies or other personal triggers, major weight loss)
- mood (e.g., tracking mood, identifying depressive symptoms)

Be sure to focus on problems and goals, not potential design solutions. One way to help yourself identify a hierarchy of problems and goals is to ask "why?" For example:

- Why is a person using Mint?
- Why is a person tracking their spending?
- Why do they want to know how much they spend on leisure activities?
- Why do they have a goal of saving for a major purchase?

Each idea should be a single sentence, identifying the domain and the problem or goal. At most one of your ideas may come from any of the domains above. You other two ideas should be from domains not in this list, in order to broaden the brainstorm. Ensure the ideas are significantly different, not small variations on the same idea.

### Submission

Ensure your name and section are at the top of your submission.

No more than one page of text in PDF format. Submit via Canvas here:

<https://canvas.uw.edu/courses/1173784/assignments/3502306>

If you are still attempting to add, or otherwise unable to access the submission system, submit via the instructor email address.

In section, be prepared to contribute your initial ideas as part of a larger brainstorm.

### Grading

This milestone will be graded on a scale of **3 points**:

- 1 point for each unique proposed idea (i.e., do not submit small variations on the same idea)

## 1b: Project Proposal

Due: Uploaded Monday, October 2, 2017

Propose and analyze a problem that could form the basis of a design project for this class.

In one paragraph, describe the design problem and motivation. This description should convince the reader that this is a difficult and interesting problem, worth spending a quarter considering. State what the problem is and why it is a problem, or describe a new idea and why it will enhance an existing application or practice.

In another paragraph, analyze the problem or idea to give more background and context. Do not just focus on the negative aspects of the current situation, but also identify some positive aspects that may be beneficial to retain. A few salient examples from existing systems or practices could be used to support those claims. If appropriate, you may conduct this analysis by describing a scenario that illustrates how someone might encounter and resolve the problem.

Ensure your report is appropriately clear and easy to read. This includes:

- text should be clear and concise
- use section headings as appropriate
- include images in the body of the write-up with appropriate figure numbers and captions
- refer to the figures in the body of your text
- check for typos, spelling, and grammar errors

Be sure your presentation looks good:

- choose appropriate colors, fonts, and styles
- make liberal use of whitespace

### Samples from Prior Offerings

Samples from prior offerings include:

- Winter 2017 - Proposal that ultimately became BookWurm: 1b\_bookwurm.pdf
- Winter 2017 - Proposal that ultimately became Dash: 1b\_dash.pdf
- Winter 2017 - Proposal that ultimately became Jasper: 1b\_jasper.pdf
- Winter 2017 - Proposal that ultimately became Wishing Well: 1b\_wishingwell.pdf
- Autumn 2015 - Proposal that ultimately became Balance: 1b\_balance.pdf
- Autumn 2015 - Proposal that ultimately became Next: 1b\_next.pdf
- Autumn 2015 - Proposal that ultimately became Poliscop: 1b\_poliscop.pdf
- Autumn 2015 - Proposal that ultimately became School View: 1b\_schoolview.pdf
- Autumn 2014 - Proposal that ultimately became Aqueous: 1b\_aqueous.pdf
- Autumn 2014 - Proposal that ultimately became IEP Connect: 1b\_iepconnect.pdf
- Autumn 2014 - Proposal that ultimately became Ka Ching: 1b\_kaching.pdf

# Assignment 1b: Project Proposal

You have an assignment due Monday night:

<https://courses.cs.washington.edu/courses/cse440/17au/assignments/assignment1/>

One page of text:

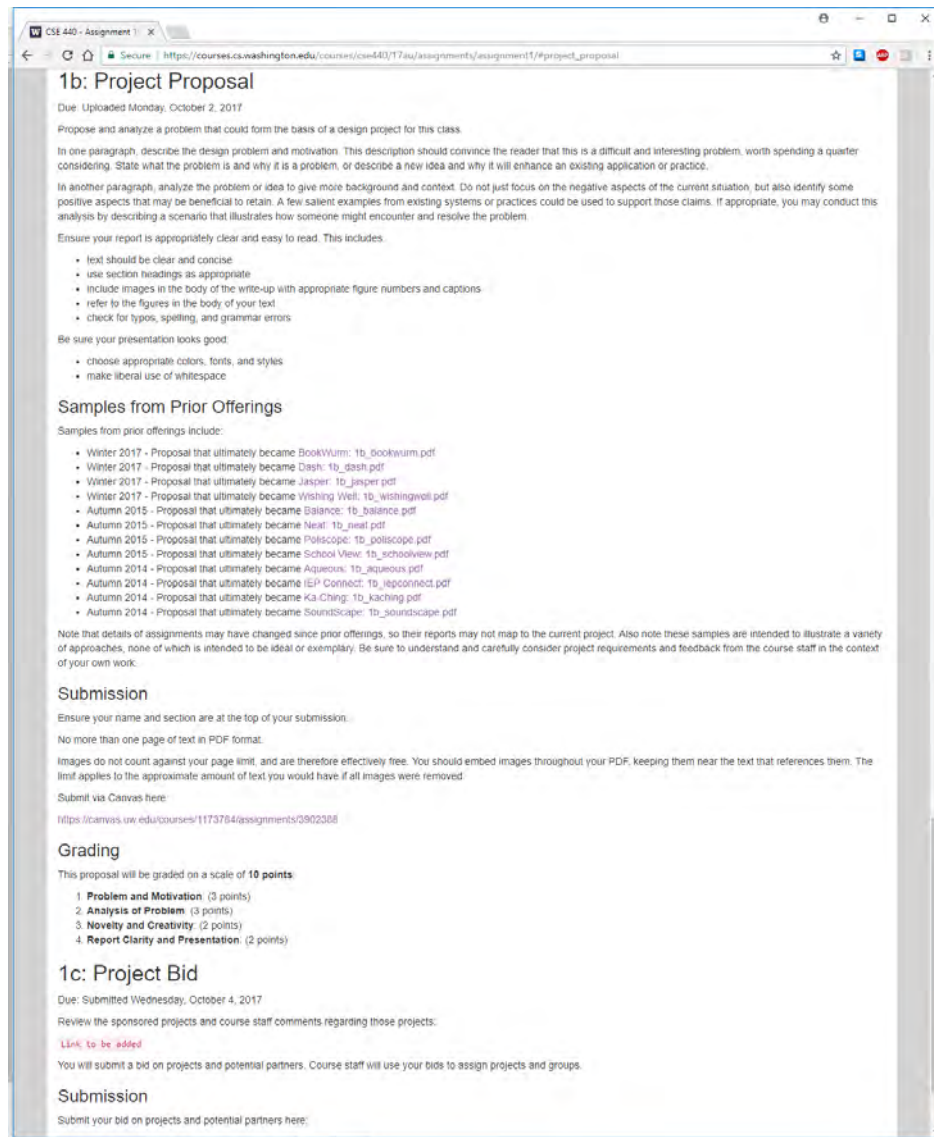
Problem and Motivation

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

Submit online:

Sponsored Projects will be posted for bidding

# Assignment 1b: Project Proposal



CSE 440 - Assignment 1b: Project Proposal

Due: Uploaded Monday, October 2, 2017

Propose and analyze a problem that could form the basis of a design project for this class.

In one paragraph, describe the design problem and motivation. This description should convince the reader that this is a difficult and interesting problem, worth spending a quarter considering. State what the problem is and why it is a problem, or describe a new idea and why it will enhance an existing application or practice.

In another paragraph, analyze the problem or idea to give more background and context. Do not just focus on the negative aspects of the current situation, but also identify some positive aspects that may be beneficial to retain. A few salient examples from existing systems or practices could be used to support those claims. If appropriate, you may conduct this analysis by describing a scenario that illustrates how someone might encounter and resolve the problem.

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- Winter 2017 - Proposal that ultimately became Jasper: 1b\_jasper.pdf
- Winter 2017 - Proposal that ultimately became Wishing Well: 1b\_wishingwell.pdf
- Autumn 2015 - Proposal that ultimately became Balance: 1b\_balance.pdf
- Autumn 2015 - Proposal that ultimately became Nest: 1b\_nest.pdf
- Autumn 2015 - Proposal that ultimately became Polscope: 1b\_poliscope.pdf
- Autumn 2015 - Proposal that ultimately became School View: 1b\_schoolview.pdf
- Autumn 2014 - Proposal that ultimately became Aqueduct: 1b\_aqueduct.pdf
- Autumn 2014 - Proposal that ultimately became EIP Connect: 1b\_eipconnect.pdf
- Autumn 2014 - Proposal that ultimately became Ka-Ching: 1b\_kaching.pdf
- Autumn 2014 - Proposal that ultimately became SoundScope: 1b\_soundscope.pdf

Note that details of assignments may have changed since prior offerings, so their reports may not map to the current project. Also note these samples are intended to illustrate a variety of approaches, none of which is intended to be ideal or exemplary. Be sure to understand and carefully consider project requirements and feedback from the course staff in the context of your own work.

### Submission

Ensure your name and section are at the top of your submission.

No more than one page of text in PDF format.

Images do not count against your page limit, and are therefore effectively free. You should embed images throughout your PDF, keeping them near the text that references them. The limit applies to the approximate amount of text you would have if all images were removed.

Submit via Canvas here:

<https://canvas.uw.edu/courses/1173784/assignments/3902388>

### Grading

This proposal will be graded on a scale of **10 points**:

1. **Problem and Motivation** (3 points)
2. **Analysis of Problem** (3 points)
3. **Novelty and Creativity** (2 points)
4. **Report Clarity and Presentation** (2 points)

### 1c: Project Bid

Due: Submitted Wednesday, October 4, 2017

Review the sponsored projects and course staff comments regarding those projects:

[Link to be added](#)

You will submit a bid on projects and potential partners. Course staff will use your bids to assign projects and groups.

### Submission

Submit your bid on projects and potential partners here:

# Overview

HCI and the Project Sequence

Course Staff Introductions

Administrivia

Assignment 1: Project Proposal

Assignment 1a: Due for Friday

Assignment 1b: Due for Tuesday

Some Reflection

Self-Tracking and Relevant Background

# 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 some aspects of what the CSE curriculum has taught you is important

It will be what you make it



# People Really Get It

“Very good class that every engineer should have to take. Good perspectives and made me think outside my comfort zone.”

“The focus on projects and fieldwork was very well suited to my learning style. I greatly enjoyed this format. The theory and techniques taught in class were directly applicable to the projects we were doing and were usually timed very well. That is, usually the topics presented in lecture were relevant to the current deliverable or the next deliverable.”

# People Really Get It

“I can't believe I'm saying this, but I found the lectures a huge part of what I learned in this course. They were useful and organized, and each one had a clear message and topic. The assignments were an excellent extension of these themes.”

“Fieldwork and iterative assignments really taught me how important the design process is.”

# Group Work is Hard Work

“the project placed groups in a realistic situation and forced us to work together effectively and practice relevant concepts/strategies”

“The group work was distracting because of the lack of unity and sense of purpose. We all had different priorities and purposes for taking the class and this made it really hard to be on the same page for the project which was the biggest part of this class.”

# Group Work is Hard Work

“Have groups do a team charter - outlining what they expect from one another as teammates. I took a project management course and when working in a group with individuals you've never worked with, the team charter may help break the ice easier when everyone can say what their expectations are.”

“... I think that working effectively as a team was the most challenging part of this class ...”

# And 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

# Adding and Dropping

## Attempting to Add

Must talk to me after class

Will email today, attempt to finalize quickly

Must enforce a hard enrollment cap

## Considering Dropping

Do so before we assign teams, and tell us

## Section switch availability

We may need help in balancing sections



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# Thousands of Health Monitoring Apps

Top Paid iPhone Apps

Paid Free Top Grossing

Rank	App Name	Category	Price
1.	Run with Map My Run+ - GPS...	Health & Fitness	\$0.99
2.	7 Minute Workout...	Health & Fitness	\$1.99
3.	CARROT FIT - Talking Weight...	Health & Fitness	\$1.99
4.	Running for Weight Loss PR...	Health & Fitness	\$3.99
5.	Sleep Cycle alarm clock	Health & Fitness	\$0.99
6.	Smart Alarm Clock: sleep...	Health & Fitness	\$1.99
7.	Map My Ride+ - GPS Cycling...	Health & Fitness	\$0.99
8.	Fitness for women: worko...	Health & Fitness	\$2.99
9.	7 Minute Workout - Quic...	Health & Fitness	\$0.99
10.	Map My Fitness+ ...	Health & Fitness	\$0.99
11.	Couch...	Health & Fitness	\$1.99
13.	Fitness Buddy : 1700+ Exercise...	Health & Fitness	\$1.99
14.	Tone It Up	Health & Fitness	\$0.99
15.	5K Runner: 0 to 5K run traini...	Health & Fitness	\$2.99
16.	Yoga.com Studio: 300 Pos...	Health & Fitness	\$4.99
17.	Moves	Health & Fitness	\$2.99
18.	Period Tracker Deluxe	Health & Fitness	\$1.99
19.	Yoga Studio	Health & Fitness	\$2.99
20.	White Noise	Health & Fitness	\$1.99
21.	Ultra Fitness	Health & Fitness	\$0.99
22.	Sleep Pillow Sounds: white...	Health & Fitness	\$1.99
23.	All-in Fi...	Health & Fitness	\$2.99
25.	Instant Heart Rate - Heart Rat...	Health & Fitness	\$1.99
26.	Paleo Central	Health & Fitness	\$0.99
27.	Calorie Counter PRO b...	Health & Fitness	\$3.99
28.	The Wonder Weeks	Health & Fitness	\$2.99
29.	Log For P90X3 Workout	Health & Fitness	\$0.99
30.	Simply Being - Guided...	Health & Fitness	\$0.99
31.	myWOD - All-in-One WOD Lo...	Health & Fitness	\$1.99
32.	P90X	Health & Fitness	\$2.99
33.	Runtastic PRO GPS Running...	Health & Fitness	\$4.99
34.	Points Calculator for...	Health & Fitness	\$2.99
36.	30 Day Challenges	Health & Fitness	\$2.99
37.	The Fast Metabolism Die...	Health & Fitness	\$2.99
38.	10K Runner: 0 to 5K to 10K ru...	Health & Fitness	\$3.99
39.	Sleep Times Alarm Clock an...	Health & Fitness	\$1.99
40.	Full Term - Labor...	Health & Fitness	\$0.99
41.	tabata pro	Health & Fitness	\$2.99
42.	Diet & Food Tracker ...	Health & Fitness	\$3.99
43.	Seconds Pro - Interval Timer	Health & Fitness	\$4.99
44.	Sleep Machine	Health & Fitness	\$1.99
45.	Relax Melodies...	Health & Fitness	\$2.99
46.	7-Minute Workout (High...	Health & Fitness	\$1.99
47.	Ultimate Value Diary	Health & Fitness	\$3.99
49.	buddhify 2	Health & Fitness	\$1.99
50.	Instant Fitness : 600+...	Health & Fitness	\$0.99
51.	SworKit Pro	Health & Fitness	\$0.99
52.	Pocket Yoga	Health & Fitness	\$2.99
53.	BabyBump Pregnancy Pro...	Health & Fitness	\$2.99
54.	Situps 0 to 200: Sit Ups...	Health & Fitness	\$2.99
55.	LIVESTRONG.C...	Health & Fitness	\$2.99
56.	Insight Timer Deluxe ...	Health & Fitness	\$2.99
57.	Daily Workouts	Health & Fitness	\$2.99
58.	Boot Camp Challenge	Health & Fitness	\$2.99
59.	Pls. Plus	Health & Fitness	\$1.99

# Activity and Medical Sensing Devices



Thermometer



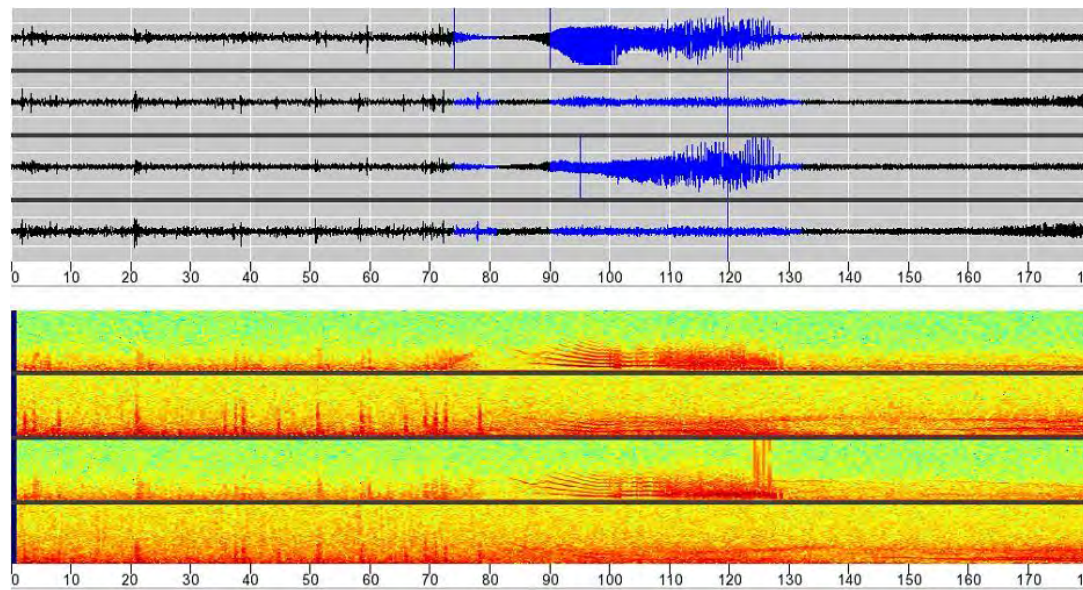
Heart rate monitor



Blood glucose meter

Blood pressure monitor

# Medical Implants



NeuroPace



# Sustainability Tracking



Kill A Watt



Belkin  
WeMo Water



Automatic

# Location and Activity



FitBit



Garmin



FitBark



Moves

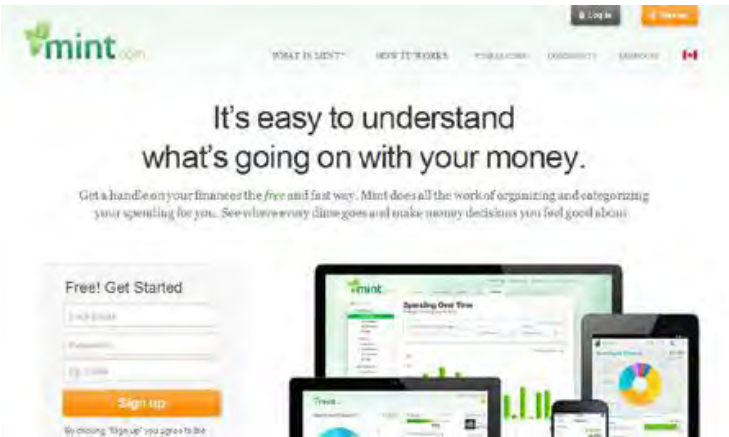


# Time Tracking



RescueTime

# Finances



Mint



You Need a Budget

# Background in Personal Informatics

## Some Definitions

## What is the Point?

## What is the Problem?



Chester, T. (2013). *The Sunday Times*.  
“You Are Just a Number”

# 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.”

Wolf G. (2009). *Wired Magazine*.

“Know Thyself: Tracking Every Facet of Life, from Sleep to Mood to Pain, 24/7/365”



# What is the Point?



Gnothi seauton  
“Know thyself”



# 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.	T.	F.	S.
T.							
S.	*	*		*		*	
O.	**	*	*		*	*	*
R.			*			*	
F.		*			*		
L.			*				
S.							
J.							
M.							
C.							
T.							
C.							
H.							

# Manpokei



交通巡査  
11260歩=6.7<sup>キ</sup>(8時間)



さん(20) 東京、有楽町のビヤホール  
客席は約50行、大休二十人前後でサービスに当る  
満員になれば、ちよつと立ちまわる時もない

ビヤホールのウェイトレス  
12550歩=5.5<sup>キ</sup>(8時間)

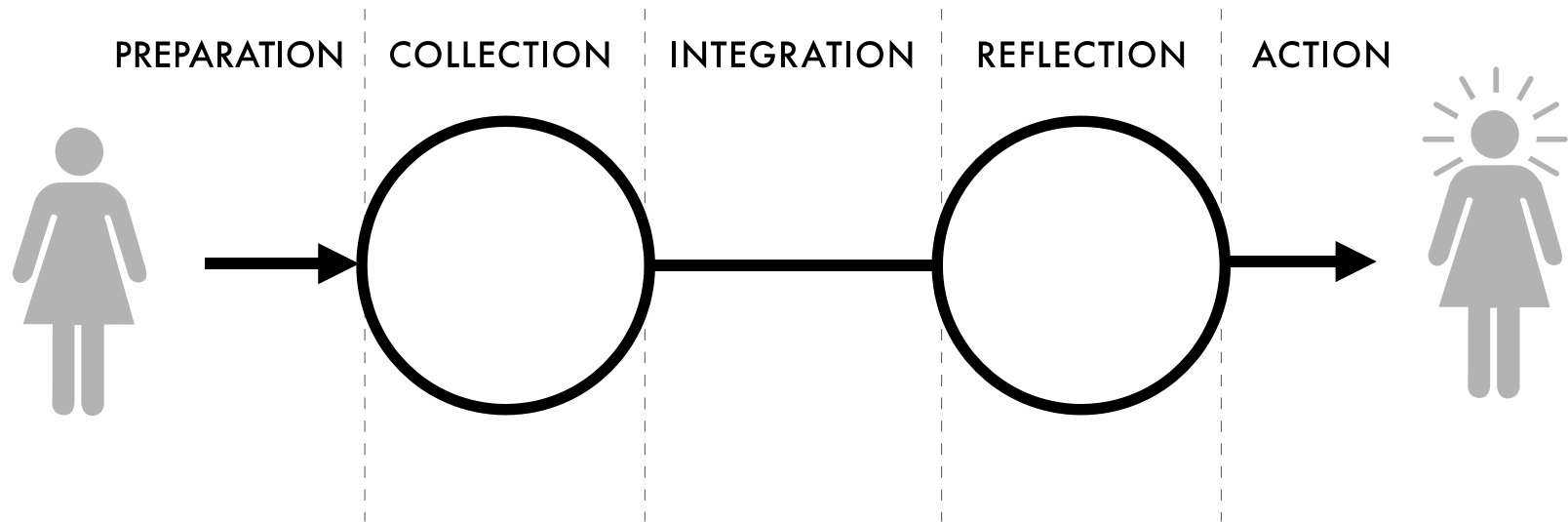


さん(22) 東京 大  
阪の幹線を二往復、タバコや飲み  
物のサービスで機内を動き回る  
乗客は少なく寒だったという

エアホステス  
9000歩=4.1<sup>キ</sup>(6時間半)

万歩計

# 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





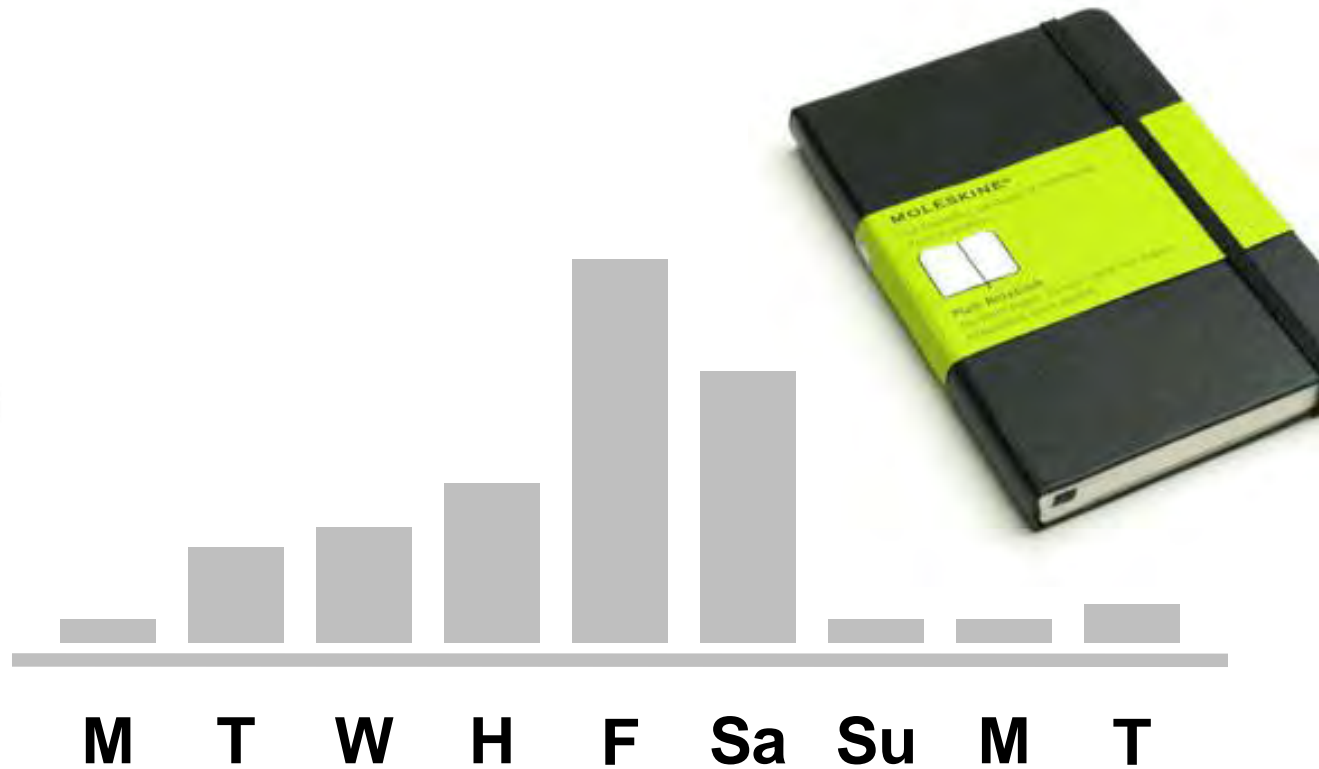
# Preparation



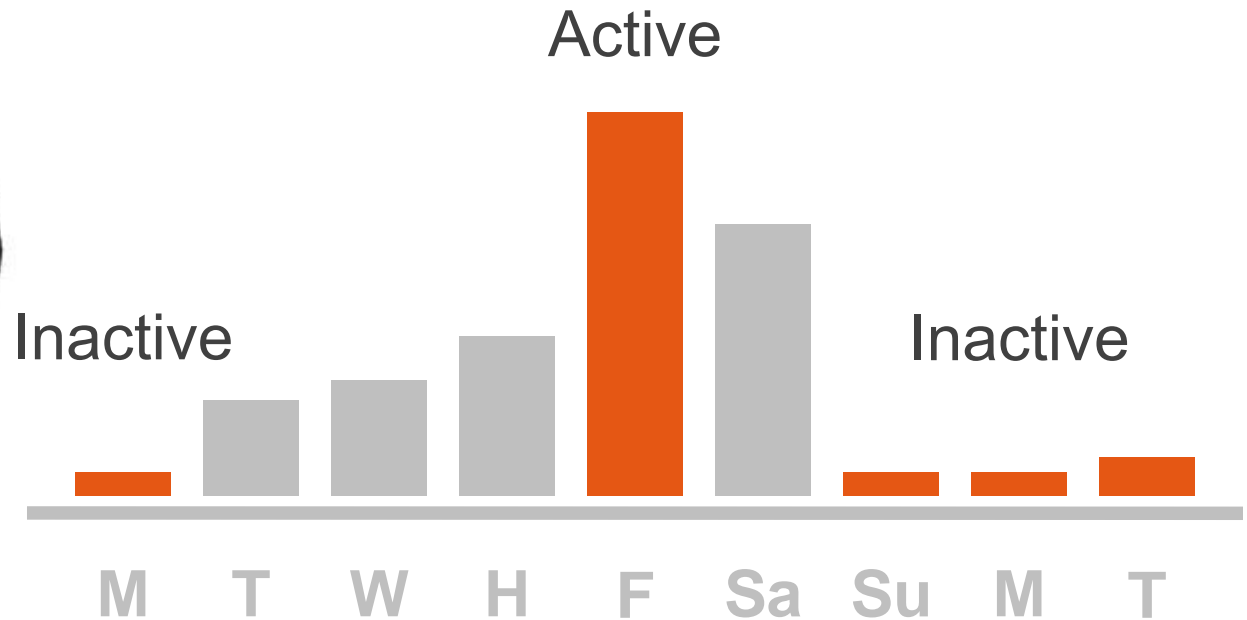
# Collection



# Integration



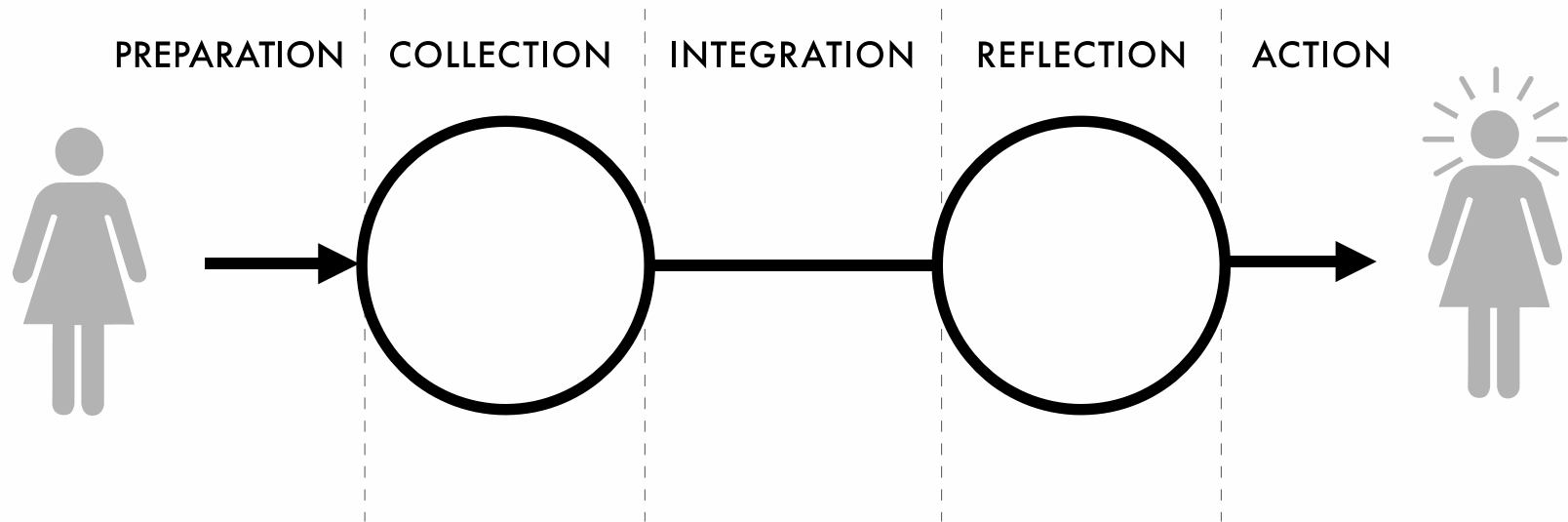
# Reflection



# Action



# Five-Stage Model of Personal Informatics



# What is the Problem?

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

The screenshot shows a webpage from Quantified Self. The header includes the logo 'QS Quantified Self' with the tagline 'self knowledge through numbers', a search bar, and navigation links for 'ABOUT', 'VIDEOS', and 'FORUMS'. The main article is titled 'Mark Moschel on Tracking and Dunking', posted on January 30, 2014, by Ernesto Ramirez. The text describes how Mark Moschel, a basketball fan, decided to learn to dunk a basketball and how he used self-tracking for this goal. Below the text is a video player showing Mark Moschel speaking at a podium. The video player includes a play button, a progress bar at 11:24, and 'HD' and 'vimeo' logos. Below the video are social sharing options for Twitter, Facebook, Google+, Tumblr, LinkedIn, and Email. The right sidebar features a banner for the 'Quantified Self Europe Conference' (May 10-11, 2014, Amsterdam), a 'Make a Sparktweet' button, and a list of 'QS Meetup Groups' for various cities including Toronto, Vancouver, Montreal, Ottawa, London, and San Diego.



# Quantified Self Talk Format

**What I Learned**

- What a good nights sleep looks like and what affects that for me

Your sleep pattern ■ asleep ■ active

zzzz

**YOUR SLEEP EFFICIENCY**  
97%

11pm 12am 1am 2am 3am 4am

Time to asleep  
Times awakened  
5

You were in bed for  
8hrs 27min

Actual sleep time  
8hrs 1min

VS.

1. What I did

2. How I did it

3. What I learned

Analyzed 52 videos

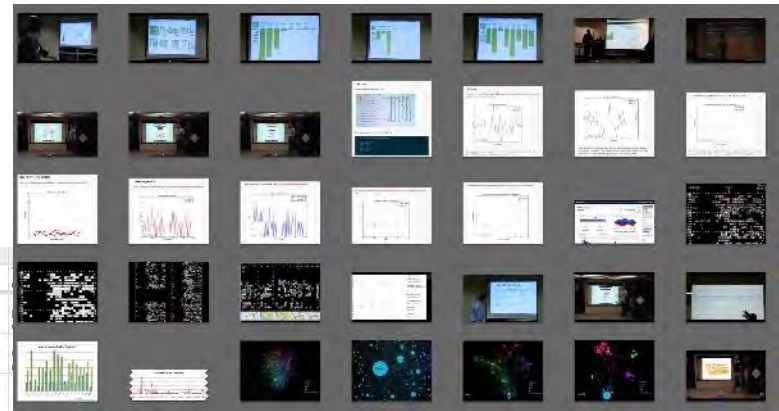
# Analysis



## Themes

	C	D	E	F	G	H				
1	City	Gender	Working in a tech company?	Background	Data type					
2	San Francisco	Male	Microsoft	Data analytics	Activity, Food, Sleep, Weight, Body fat, mood					
3	San Francisco	Male	startup	Data analytics, financial modeling, tech startup	Glucose					
4	London	Male	no	electronics engineer	Exercise, Food, Supplements, Medicine, biomedical data, body fat, weight, blood pressure	heart rate monitor, pen and paper, Excel	cancer	6 years	Commercial	
5	Seattle	Male	startup	interface designer, VP of product, web development	Weight, Food, Sleep, Productivity	scale, Fitbit, RescueTime (productivity measuring tool)		2 years	Commercial	
6	London	Male	startup	software engineer, network engineer, robotics, software, product development	rowing strokes, distance rowed, time rowed, calories	arduino, spreadsheet	overweight	5 months		
7	San Francisco	Male	startup	mechanical engineer	proximity to cars, location	smartphone, sonar		1 year	user-generated	
8	Beirut	Female		engineer	heart rate, food, fitness, cognitive performance, anxiety, media consumption, sleep, location, finance, biomedical data, reading, glucose	custom heart rate monitor			user-generated	
9	Toronto	Male	Rogers	programmer, performance manager, big data				20 years		

## Visualizations



## Profiles

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?

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

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”

# Motivations for Tracking

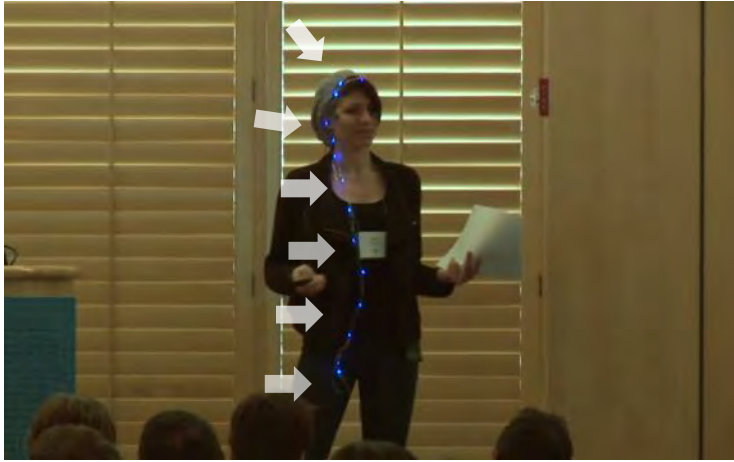
Motivations	Sub-categories
To improve health	To cure or manage a condition
	To achieve a goal
	To find triggers
	To answer a specific question
	To identify relationships
	To execute a treatment plan
	To make better health decisions
	To find balance
To improve other aspects of life	To maximize work performance
	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

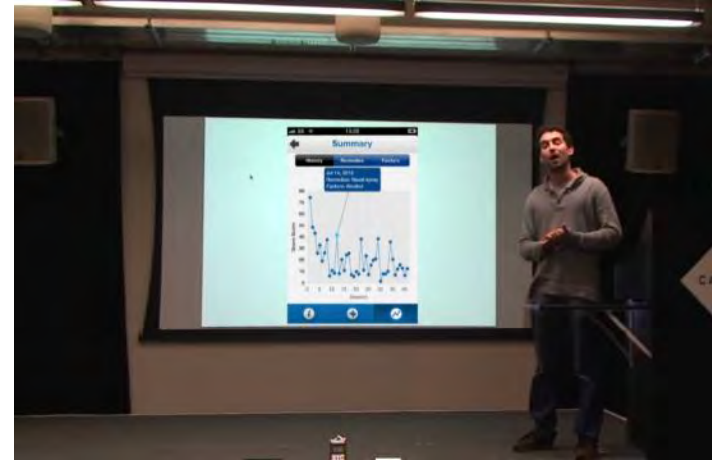
Data Collection Tool	% (#)
Commercial hardware	56% (29)
Spreadsheet	40% (21)
Custom software	21% (11)
Pen and paper	21% (11)
Commercial software	19% (10)
Commercial website	10% (5)
Camera	6% (3)
Open-source platform	6% (3)
Custom hardware	4% (2)
Other	10% (5)

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

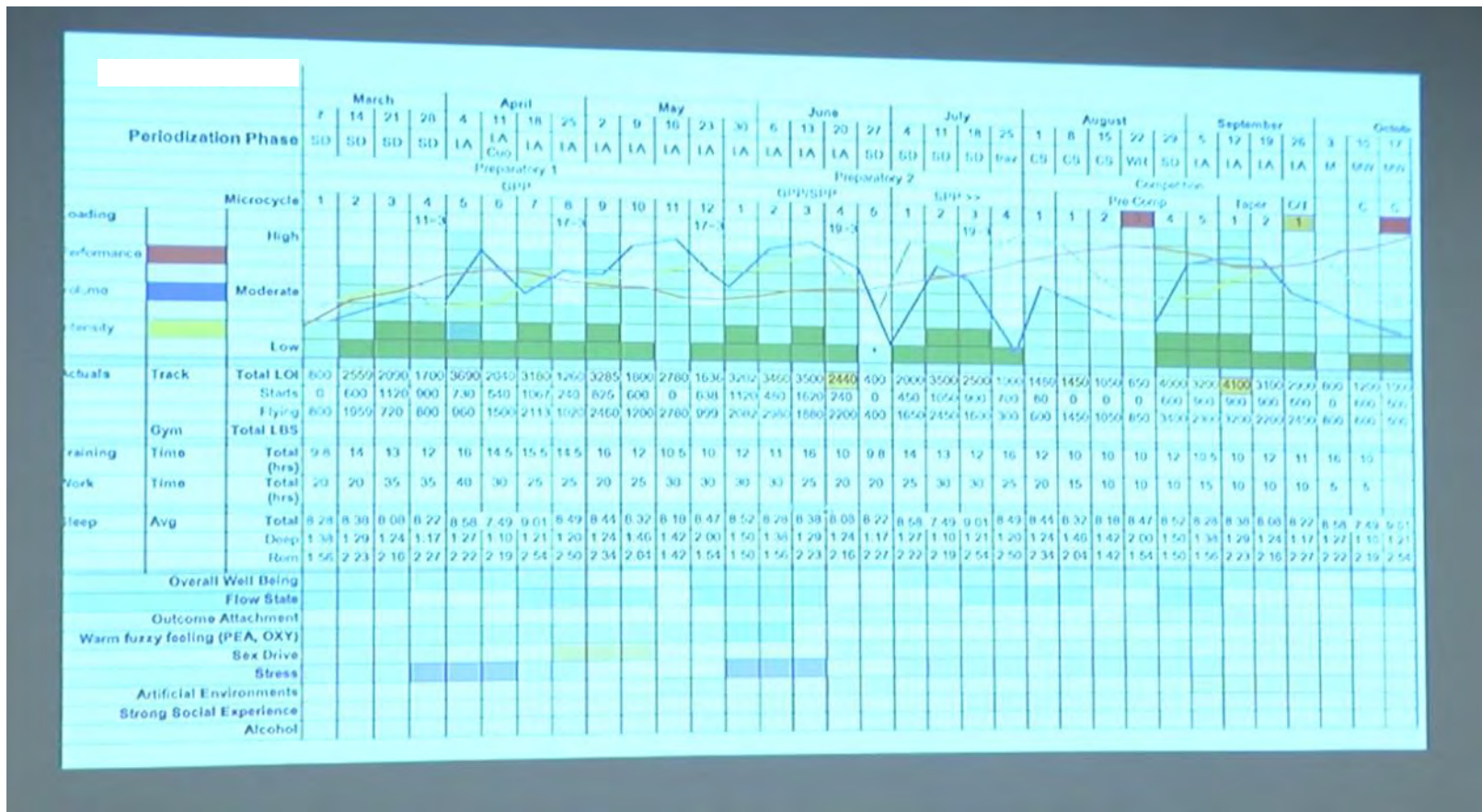


Captures snoring via mobile app  
Provides data visualization

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”



# Custom Visualizations



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”

# 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...”

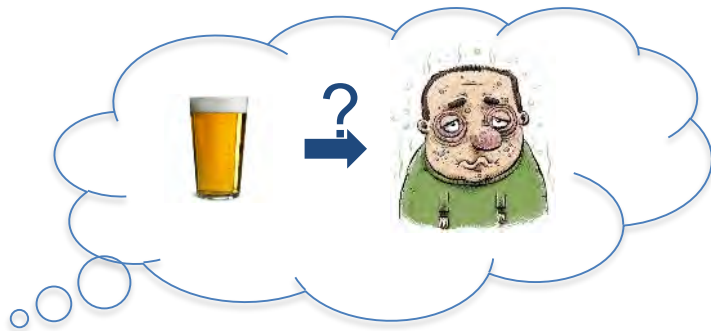
People lack clues on what to track

Missing 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

# Barriers and Negative Nudges



*“It was too time consuming and tedious. I also did not know what to enter if I ate out, so I often did not enter data and that compounded. I also felt embarrassed to do it in front of friends so I stopped.”*

## Negative Nudges:

Contrasting difficulty of entry

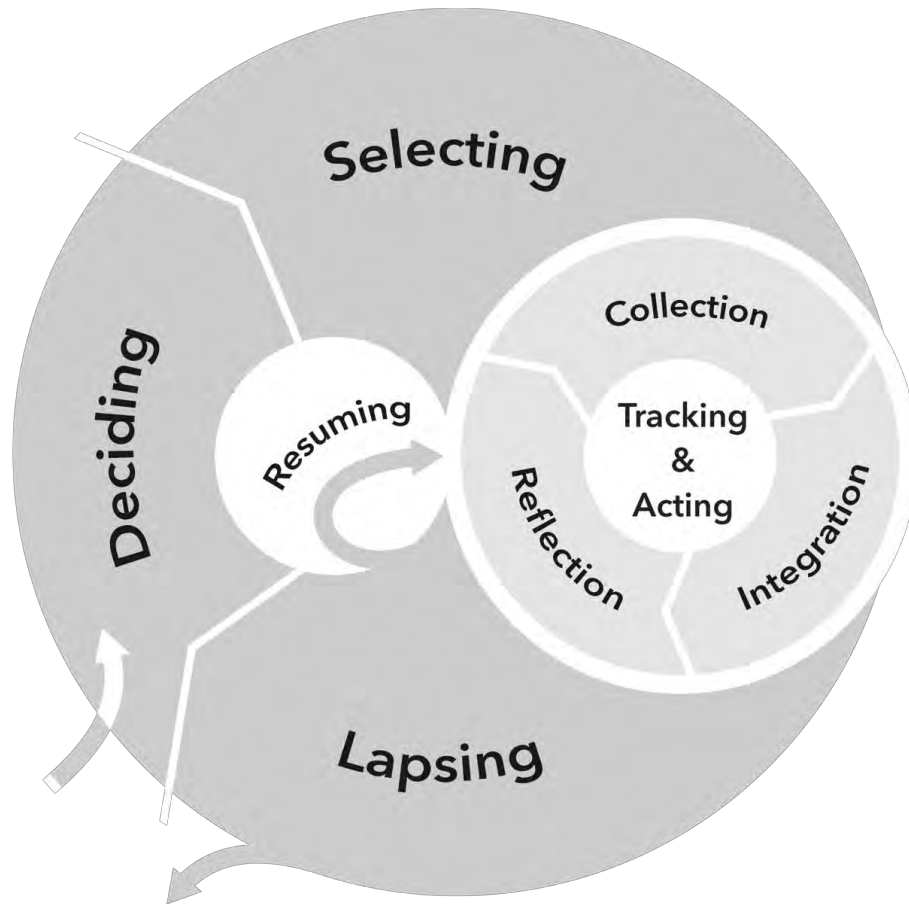
Judgment and choosing not to journal

Stigma and journaling

Lack or decline in social support

Felicia Cordeiro, Daniel A. Epstein, Edison Thomas, Elizabeth Bales, Arvind K. Kagannathan, Gregory D. Abowd, James Fogarty. CHI 2015. Barriers and Negative Nudges: Exploring Challenges in Food Journaling

# A Model of Lived Informatics



Extends 5-stage model to surface additional opportunities and challenges in lifecycle

Returning to a tool (e.g., short/long lapse)

Changing tools (e.g., due to burden)

Changing goals (e.g., due to discovery)



# Your Challenge

People invest tremendous effort for little value, are frustrated by failure

Do better, help people achieve their goals, solve real problems

Go beyond the data fetish

Understand the problems people face

Find the role for interactive technology



# Your Challenge

Explore **tracking beyond the self**:

Many forms:

wearable sensors, phone and watch applications, appliances and artifacts in the environment, hybrid

Many social contexts:

co-located relationships, remote relationships, communities organizing, seeking help from peers, seeking help from experts

New forms of interaction:

conversational interfaces, tangible interfaces, ubiquitous computing interfaces

# 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-staff [at] cs.washington.edu

# Attempting to Add

Submit this form to me:

<http://tiny.cc/UWCSE440>

I will coordinate with  
CSE advising about majors

Be sure that you and I  
have communicated  
before you leave today



# CSE 440: Introduction to HCI

User Interface Design, Prototyping, and Evaluation

Lecture 01:  
Introduction and  
Personal Informatics

Tuesday / Thursday  
12:00 to 1:20

James Fogarty  
Kailey Chan  
Dhruv Jain  
Nigini Oliveira  
Chris Seeds  
Jihoon Suh