

Grace Yu-Chun Yen

Research Overview (selected projects)

PhD Candidate | Department of Computer Science
University of Illinois Urbana-Champaign



EDUCATION

- 2013- PRESENT PhD in Computer Science, HCI Group
University of Illinois at Urbana-Champaign
- 2009- 2011 M.S. in Computer Science, Intelligent Robot Lab
National Taiwan University
- 2005- 2009 B.S. in Computer Science,
National Taiwan Normal University

WORK EXPERIENCE

- 2013- PRESENT UIUC, Doctoral Graduate Researcher
- 2019 Summer Adobe Inc. HCI Research Intern
- 2018 Summer Adobe Inc. HCI Research Intern
- 2011-2013 National Science Council, Software Engineer

Honor and Award

- 2020 Special Recognition of Outstanding Reviewer, *ACM CSCW2020*
- 2019 Dissertation Completion Award, *College of Engineer, UIUC*
- 2017 Grace Hopper Conference Grant
- 2013 Muroga Endowed Fellowship, *UIUC*
- 2011 The Best Master's Thesis Award, *Taiwanese Association for Artificial Intelligence*
- 2009 Outstanding Undergraduate Research Proposal, *NSC (Taiwan)*
- 2005-2009 Distinguished Undergraduate Scholarship, *NTNU, Taiwan*

MENTORING/TEACHING

- PURE Undergraduate Research Program
- UIUC CS Graduate Ambassador
- CS 565 Human-Computer Interaction
- CS 465 User-Interface Design

RESEARCH METHODS

Qualitative Methods

- Interview
- Survey design
- Field study
- Iterative prototyping
- Thematic coding
- Literature Review

Quantitative Methods

- Statistical testing
- Behavior analysis
- Machine learning

PROGRAMMING

Python, R, MySQL, Javascript, JAVA

Sketching Tool

Balsamiq, Adobe XD, HTML/CSS

Dissertation

Table of Content

Design thinking tools for creative practitioners

- Interpreting feedback from multiple stakeholders
- Effective Feedback Acquisition in Online Spaces
- Integrating Reflection for Iterative Design
- Design for tracking revision process (Skip)

Master Thesis

Human-centric and situation-aware pervasive healthcare system in the hospital for elderly People



National
Taiwan
University



UC San Diego

Northwestern University



Dissertation Research

Design Thinking Tools for Creative Practitioners

Address problems and opportunities triggered by the user of software tools for design thinking



Source: <https://medium.theuxblog.com/the-thing-about-design-critiques-fc498a058245>

Interpreting feedback from multiple stakeholders



Getting feedback from diverse audience
is critical for creative work

...because people with different backgrounds
and expertise may perceive the same work
differently

However, **interpreting** feedback that differs in *structures*, provides various *topics*, and *contradicts* each other is hard

Research Overview



Stage 1

Semi-structured Interview

Identify the common strategies and criteria experts employed for managing feedback from multiple providers

Stage 2

Prototyping / System Development

Designing Decipher, an interactive feedback tool that embodies expert strategies identified from formative study

Stage 3

Moderated Usability Testing

Evaluate Decipher using a controlled experiment (within-subjects study)

Stage 4

Writing Report (Accepted in ACM CHI2020)

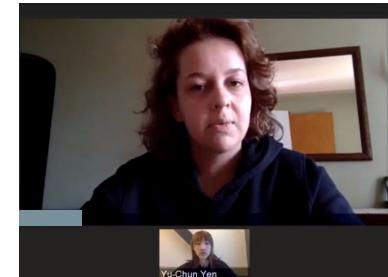
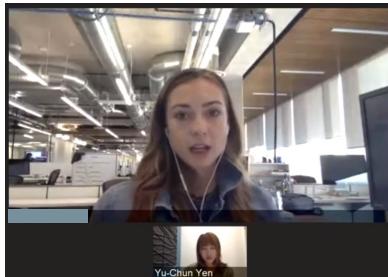
Stage 1: Semi-structured Interview (N=10)

Participants

- Creative Director (N=3), UX designer (N=4), Full-time freelancers in design (N=3)
- All participants receive design feedback regularly as part of their job

Interview Setup

Four in-person and six remote interview
through video conferencing tools



Interview Protocol

Part 1: Interview

- Describe a recent experience for which you received feedback on a design project from more than one person.
- How do you manage/organize the feedback you received?
- How do you decide where to start?
- How do you resolve contradictions between feedback providers?
- How has your method of feedback interpretation changed over time?

Part 2: Think-aloud feedback interpretation task

- Given a flyer and a feedback document, the designers demonstrated how they would annotate and organize the feedback to devise a revision plan for that flyer

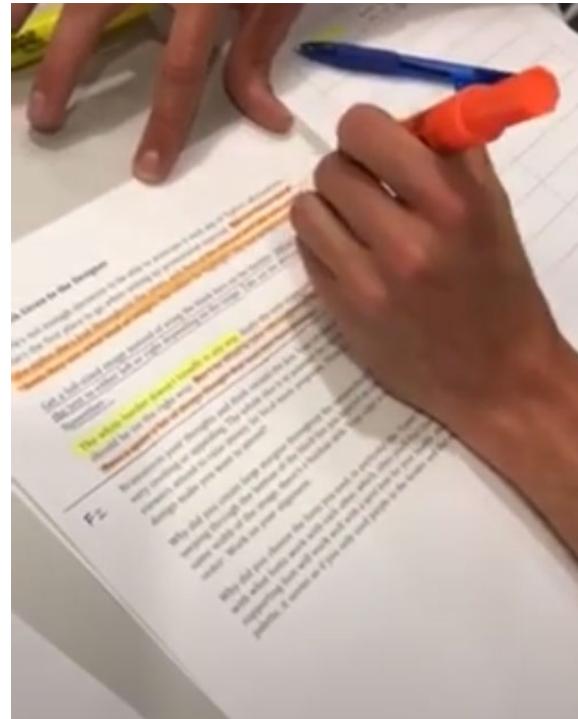
Qualitative Data Analysis

Iterative open coding approach

- Observations of the participant behavior
- Interview scripts (using Rev.com)

Discover **three strategies** for processing feedback written by multiple providers

Identify **three criteria** for organizing feedback sets



Strategy 1: Identify valuable feedback

“The criteria is usually, is this person giving the feedback that he or she is qualified to give? Like I don't really care if a technical advisor doesn't like the color of something.”

- P1, Female, Creative Director

Strategy 2: Categorizing feedback

“ The way we have been organizing feedback is on a spreadsheet so that we can put the people that we’re communicating with on one column, and then the questions we’re asking in rows above so that you can go through each question and say, like, the majority of the people felt this way, and summarize things at the bottom, ”

- P5, Female, UX Designer

Strategy 3: Prioritize action items

“ There's the issue of how heavy the feedback is. Is that feedback appropriate for where we are in the process? For example, if it's something that's going to change the whole fabric of the project, I will see where in the timeline is this happening.. ”

- P3, Female, UX Designer

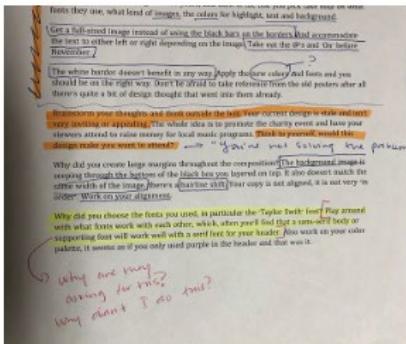
Strategies for Organizing Feedback

[1] I would rate the overall concept of the design to be quite good. I like the runner which adds something motivational to me. One downside is the tag shadow link site and don't like your copied in the "since you're again on the bottom right but normal like the other sentences. Other good and appealing.

[2] I enjoy the image itself and the font variation and overall color/motion and highlights very well what the topic is as well. I really like standard Sans Serif type fonts that you see pretty routinely. It helps it fact. They have a nice contrast as well that makes them easy to read aside.

[3] The Picture shown a woman running in a highway type of road, v. interesting. Also, the runner seems to be shrunk a little bit. The fonts used in this poster kind of not very professional. I would add (Run@NYC) to make it bigger and put it in the middle top rather than the bottom small and again I would use a different font for it. I would use char

(a) Sentiment Highlight



(d) paper highlights

Park) of this race. Also, the girl seems to be shrunk a little bit, the shape I used in this poster kind of not very professional. I would adjust the size of it make it bigger and put it in the middle top rather than the left. **Hierarchy**. To small and again I would use a different font for it. I would use sharper color too. Overall, it's not a very good design.

[2] I enjoy the image itself and the font variation and overall color scheme motion and highlights very well what the topic is as well. I really like the for standard Sans Serif type fonts that you see pretty routinely. It helps it stand fact. They have a nice contrast as well that makes them easy to read even side.

[3] The design is good but would have been much better if there was more used should be more bold and good looking. The information should be more Copy issues. The graphics used should be more appealing. The girl looking might be avoided. There is a lot of space which could be better utilized. font of people running is better to be shown than just a single girl running. The appealing to make the flyer looking good.

(b) Topic Highlight

Deep-level issues	
—	Surface-level issues e.g. / fix - x - ore
—	Spotlight
—	Disagree
—	Not sure
	improvement
O	Follow-up: what do you mean?
	Defend → <u>never mind</u> for next time
	Decide (contradiction)

(e) annotation description

aking. The runner looks as if it's looking effect to silhouette what the runner is doing. I

isn't fit the location (Central looks not right). I found the fonts the main title (Run@NYC) to be...? Line is very too small and are black and white too.

or it lacks a visual appeal. I think I also believe that can be included to attract them to look sync and a better balanced look.

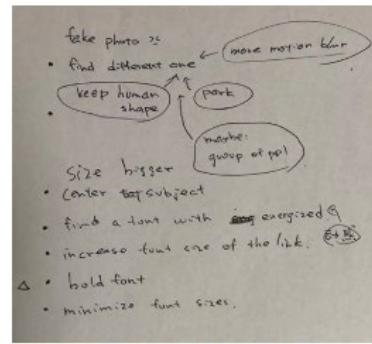
a picture with the sun behind is the very small letter size for item - maybe better to be that, I think it looks quite

Vic Jul 20, 2018 **Reserve**
change to something better

Vic Jul 20, 2018 **Reserve**
look for a more accurate stock photo

Vic Jul 20, 2018 **Reserve**
maybe mess with the shape

(c) Recordings of intended actions



(f) a summary view

Stage 2: Iterative Prototyping

Show Only: Fix (3) Keep in mind (1) Needs clarification (11) Disagree (2)

Font
Image
Color
Overall
Information
Layout

(b)

System Implementation

HTML/CSS, Python Django
jQuery, PostgreSQL

FeedbackPanel Show consensus

Positive Negative Suggestion

Image layout copy issue

Estimated effort Low effort Middle effort High effort

Criticality Low Middle High

Other

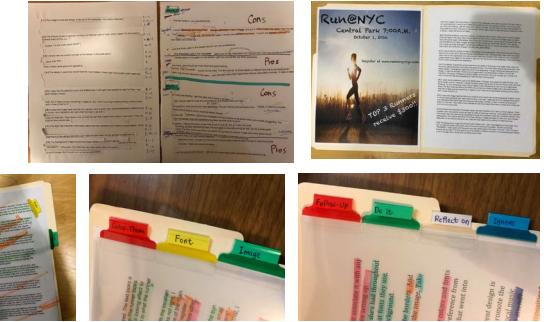
DECIPHER

Sketching Tools

Adobe XD, Balsamiq



Paper Prototype



Final: Map Feedback Collection

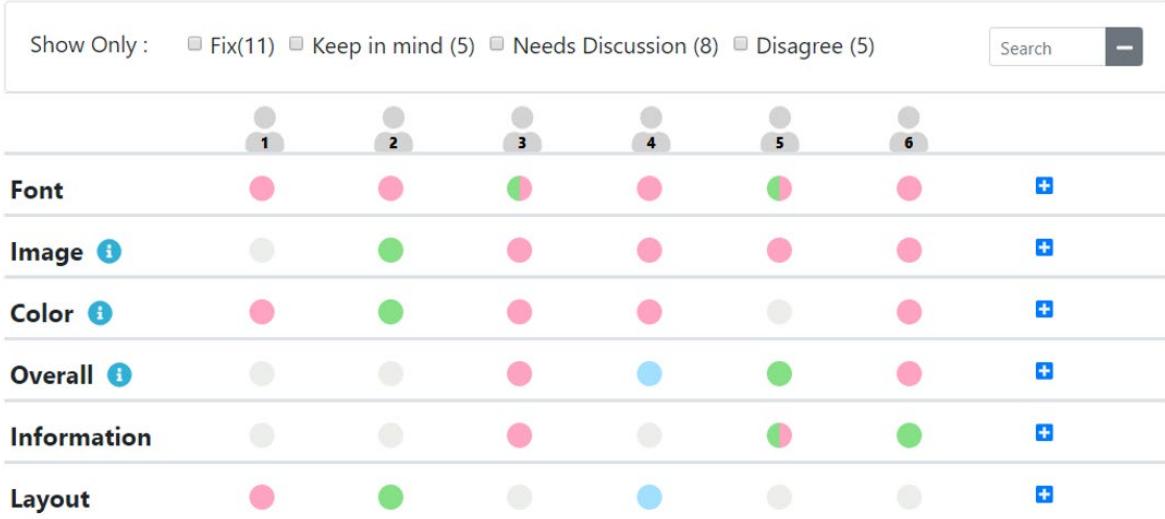


(a) A creative project

Reviewer 1: The selected font doesn't seem
at all like the overall
plan.
Reviewer 2: Overall, I really like the overall
plan.
Reviewer 3: The first issue I noticed upon
initially comparing the goals to the product was that the
charity never mentions the charity. That is an
important detail that has been entirely omitted.
Reviewer 4: The font is appropriate for the
topic, though it's a bit off-putting. The font for the
charity is very easy to read, but the @NYC seems
a bit off-putting.
Reviewer 5: The font used on the background photo is a little
off-putting, though. Most of it isn't bad except for
the purple text, the color distorts the
runners' faces, such as the purple gentleman on
the left side of the poster.

(b) A collection of feedback
for that creative project.

Descriptions



In (a) the user has created an in-progress solution for a creative project and in (b) has received unstructured feedback written by multiple providers (only a sample of the feedback is shown). In (c), the user has imported the feedback into Decipher to visualize the topic and sentiment structure within the collection of feedback. The user can identify strengths and weaknesses of different aspects of the work (row-wise comparison) and compare opinions between providers (column-wise comparison) without having to revisit the details of the content. The user can also annotate statements in the collection of feedback that identify issues that need to be corrected in a revised solution or need further clarification. The figure is best viewed in color.

User interactions in Decipher

Enable users to navigate feedback using its topic and sentiment structure

The screenshot shows a feedback unit for the 'Image' topic. At the top, there are three rows of colored circles representing sentiment: 'positive' (green), 'neutral' (blue), and 'negative' (pink). A yellow circle labeled 'a1' with a blue plus sign is positioned above the positive row. Below the circles, a section labeled 'Idea Units' contains a 'View Original' button. On the left, there are tabs for 'Color', 'Concept', 'Information', and 'Layout'. The 'Color' tab is selected, showing a detailed comment: "However, the vector tracing of the image leaves a lot to be desired. All the detail of the image is lost and the colours look drab and bleed into each other. Maybe use the original photo instead." At the bottom, there are buttons for 'Fix', 'Keep in mind', 'Need clarification', and 'Disagree'.

(a) Jun can expand a topic row by clicking the blue plus button (a1) and hovering over each circle to review the feedback details in (a2). Jun can mark the feedback unit using one of the four interpretation labels at the bottom of the window.

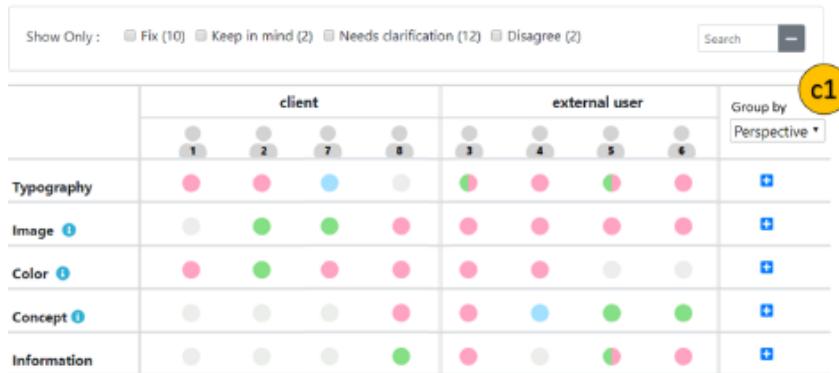
Read ideas in the context of the whole piece of feedback

The screenshot shows the same feedback unit for 'Image', but with the 'View Original' tab selected. This tab displays the full comment from the 'Color' section: "The poster is bold and would catch the eye. Most of the relevant information is there. The text could also look more professional to show they mean business! The colours and font are easily readable. However, the vector tracing of the image leaves a lot to be desired. All the detail of the image is lost and the colours look drab and bleed into each other. Maybe use the original photo instead. I think the font could be changed to a sans serif font to make the overall design look cleaner and less childlike. I also don't see any mention of the charities that will benefit from the race. Overall, the poster is easily readable and actionable." The rest of the interface remains the same, with tabs for 'Color', 'Concept', 'Information', and 'Layout' visible on the left.

(b) Switching to the “View Original” tab will show the unit of feedback (highlighted) in the context of the whole piece of feedback written by that provider .

User interactions in Decipher

Support feedback comparisons by user archetypes



(c) Jun can group the feedback providers by selecting an attribute in the drop-down list in (c1). In the example, the providers are grouped by their perspective (i.e., client or external user).

Allow users to record intended actions for feedback statements

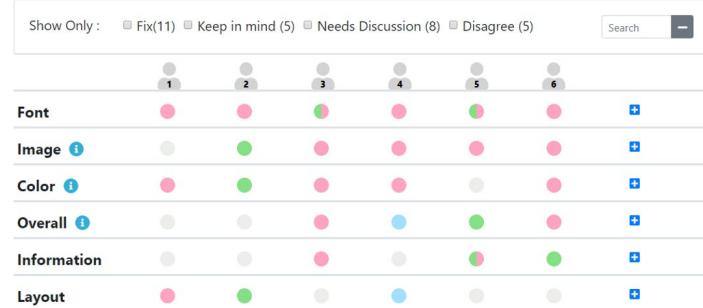


(d) The feedback units can be filtered by interpretation labels and keyword. Above, Jun highlights the feedback units that contain the keyword "font" and are marked as "Fix".

Usability Testing (N=20)

Each participant used both Decipher and Google Document to review a set of feedback

- Compare user **strategies** for reviewing feedback
 - *survey responses, interview data, behavior observation*
- Collect **insights** users identify in the feedback
 - *task responses*
- Compare **perceived effectiveness** of the feedback interpretation process
 - *survey responses, interview data*



VS.

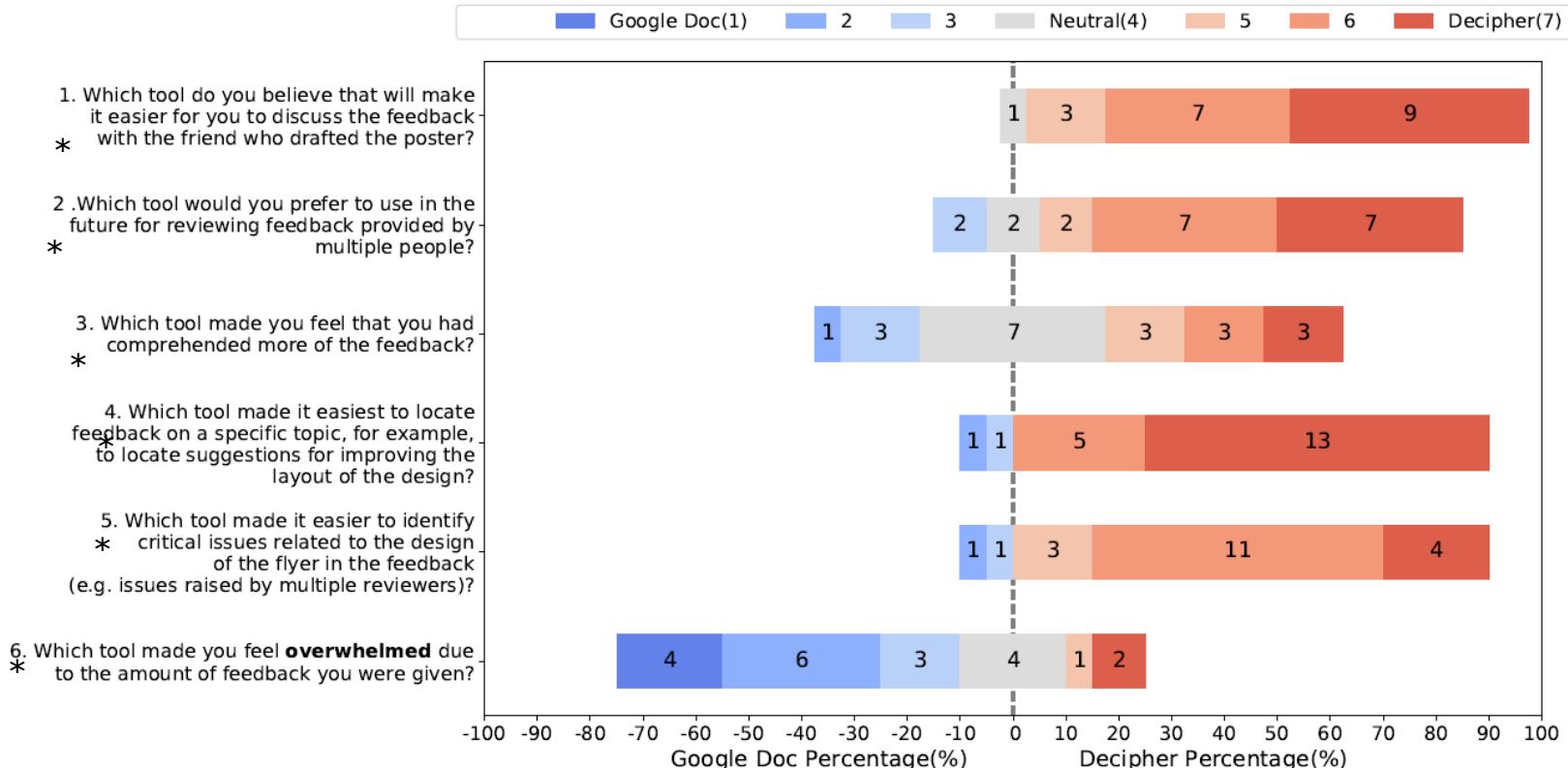


Note : Feel free to take notes, highlight, and edit the page

Reviewer 1: The selected **font** doesn't seem appropriate for the subject matter or the audience. I would recommend considering a sleek or strong sans serif font. A vital piece of information is missing; it should be emphasized that **proceeds** for the event go toward funding cancer research; this will encourage **participation**. The **typography** is clear and readable, but could use a more defined hierarchy. Also, although there is a **prize** for the fastest finishers, the flyer itself does not invoke speed, and is quite calm for a competition. The **background** image does efficiently communicate what the poster is about, but it is not visually appealing or eye-catching; it appears to be a photo that has been 'live-traced' in Illustrator, producing an amateurish look. I would either use a photo or an actual illustration. Colors are also quite bland and not engaging.

Reviewer 2: This design is **not visually appealing**, the choice of applying a **filter** over

Results Highlight



Effective Feedback Acquisition in Online Spaces





Online crowd platforms offer unprecedented opportunities for designers to connect with potential users for feedback quickly and affordably

Social Crowds



1



r/design_critiques · Posted by u/sahaironak8 2 hours ago

Can i get some feedback on this poster that I made recently.

<https://www.behance.net/gallery/95088515/Not-Safe-For-Work> ✓

2 Comments ⭐ Give Award ↗ Share ...

100% Upvoted

Enjoyment Crowds



@ · 11m

I wanted to try something new

Simple anime themed Avi
For @gfixisdead

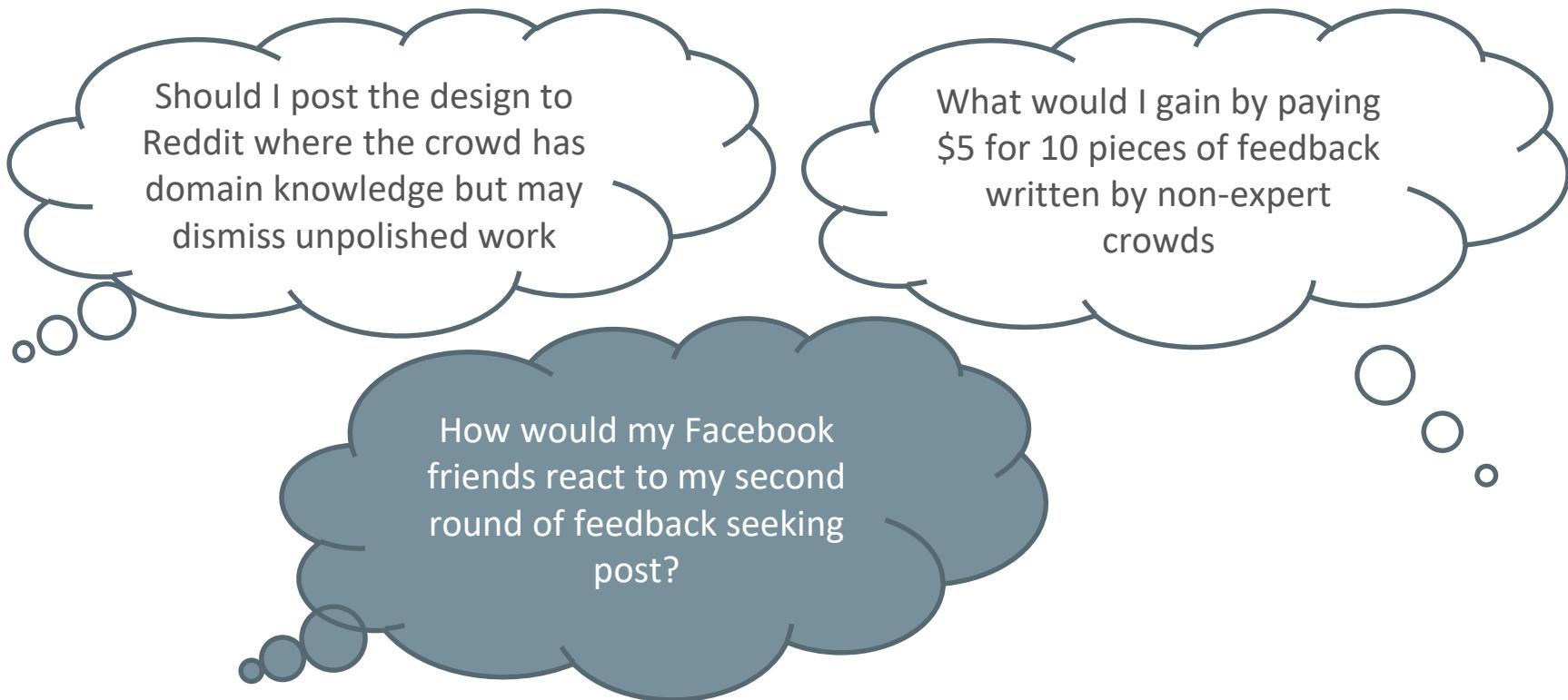
Support and **feedback** is appreciated



Financial Crowds



BUT... No empirical guidance about how to leverage multiple crowds to generate the desired feedback



Research Questions

RQ1: How do different **crowd genres** compare in terms of the quantity, quality, and content of the feedback generated?

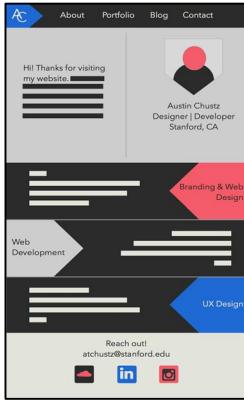
RQ2: How does the **design iteration** (initial vs. revised) affect the feedback generated by the different crowds?

RQ3: What are **designers' perceptions** of getting feedback from the different crowd genres in the design process?

Design Samples (SELECTED)



Web Designs

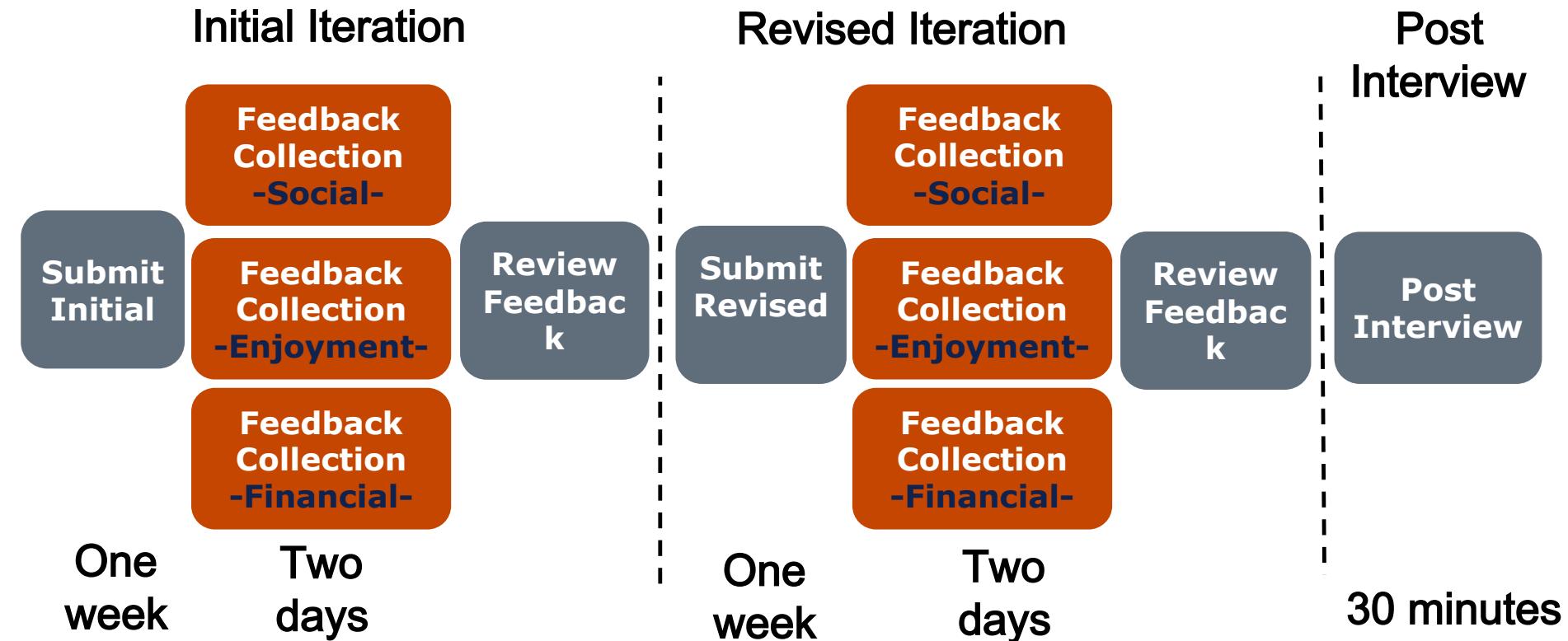


Logo Designs



Poster Designs

Field Experiment (N=22)



Create Anonymous Feedback Forms

- Confirm the provider incentive
- Mitigate social pressure
- Collect demographic information



Austinchutz.me wireframe 1
This is intended to clarify the layout, colors, and general look and feel for my personal website. Eventually this will be the hub for my portfolio and blog as well as a way for people to contact me.

* Click on the image to enlarge

Please provide feedback (in English) for how to improve the design (required) *

Please rank the following reasons for why you provided the feedback. (required) *

(1= Most Relevant, 3=Least Relevant or you can select Not Relevant.)

Not Relevant Because I am interested in this design or design in general.

Not Relevant Because of my relationship with the person who created the design.

Not Relevant Because I am being paid.

How would you rate your level of design expertise?

1 2 3 4 5
Novice Expert

What gender do you identify with?

Male Female Other

What is your age range?

under 18 18-25 26-35 36-45 46-55 56 or Older

Submit

Result Highlight 1

Medium

Applause from you and 1 other



Braňo Šandala [Follow](#)
#design #business #love
Feb 15 · 6 min read

Designing a Rusyn book with the help of crowds, prototypes, and JavaScript



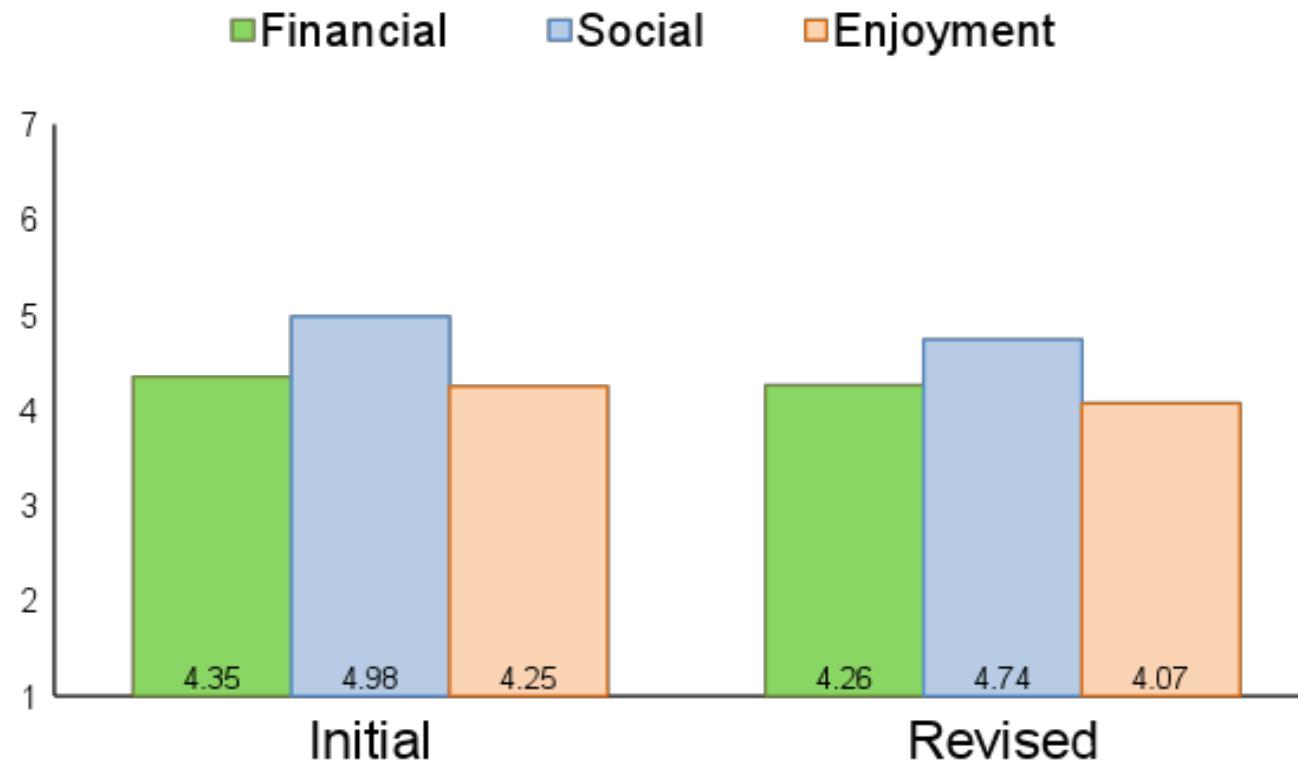
Bringing crowds to critique the design

I started to work on the book cover way earlier than I anticipated. I got invited to take part in the [research study](#) on the *effectiveness of online crowd-based design critique*. As a part of the game, I got to present the work-in-progress visual design. And other participants around the world would give me a feedback on it. I didn't have anything to share at that time, so I decided to start working on the book cover instead.

I sketched a couple of variants and picked the promising ones to get early feedback. I provided a bit of context as well—the book plot, the intended audience and a thought process behind the initial ideas.

I got to admit, I was a bit skeptical about the concept of anonymous critique, and the outcome surprised me. Within a couple of days, I've received 30+ well-aimed design reviews. Reviewing all that feedback, I realized that my early sketches were a step in the wrong direction. I stepped on the wrong foot because I made a rookie mistake. I dwelled on one of the initial ideas and did not explore the other ways. I got hooked on it as it was a minimalistic concept, but it was missing the human aspect of the book.

Result Highlight 2: Feedback Quality



$\chi^2(1, N=120)=30.0; p < 0.0001$



Result Highlight 3: Frequencies of Idea Units by Genre and Iteration

Category	Initial Iteration				Revised Iteration			
	Financial	Social	Enjoyment	Total	Financial	Social	Enjoyment	Total
Judgment	54.1% (156)	54.8% (107)	50.9% (52)	53.8% (315)	62.6% (206)	58.9% (66)	48% (36)	59.6% (308)
Recommendation	35.7% (103)	24.1% (47)	21.5% (22)	29.4% (172)	29.1% (96)	25% (28)	13% (10)	25.9% (134)
Investigation	0.7% (2)	4.6% (9)	4.9% (5)	2.7% (16)	0	1.7% (2)	4% (3)	0.9% (5)
Interpretation	2.7% (8)	2.5% (5)	0.9% (1)	2.4% (14)	1.5% (5)	2.6% (3)	0	1.5% (8)
Brainstorming	3.1% (9)	3% (6)	2.9% (3)	3% (18)	3% (10)	2.6% (3)	0	2.5% (13)
Process	0	7.6% (15)	13.7% (14)	5% (29)	0.9% (3)	3.5% (4)	20% (15)	4.2% (22)
Comparison	0	0	0	0	1.2% (4)	0	5.3% (4)	1.5% (8)
Association	2.7% (8)	0.5% (1)	2.9% (3)	2% (12)	0.6% (2)	1.7% (2)	4% (3)	1.4% (7)
Identity-invoking	0	0	0	0	0	0	0	0
Total Idea Units	288	195	102	585	329	112	75	516

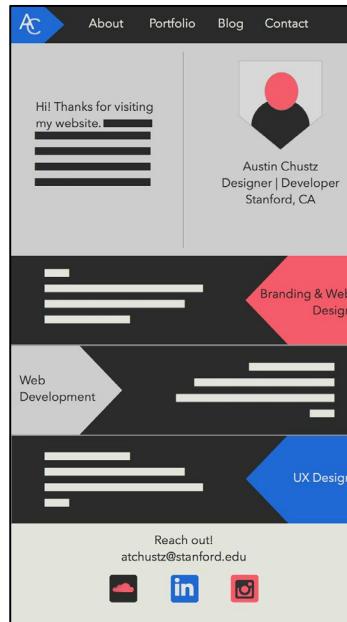
More investigation on concept stage design, More judgment on revised

Investigation

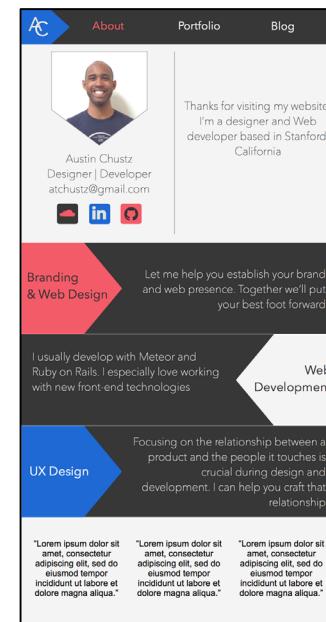
Will there be links to your past projects?

Is the color at the very bottom different from the color in the topmost grey part?

Initial



Revised



Judgment

The background color combination and design is good.

I like the layout of the design so far. However, the font choices need to be varied.

User Insights from Interview

Enable to make evidence-based design decisions

“...with external feedback, I can finally convince my boss to remove the unnecessary background image.”

- P1065, Female, Web Designer

Initial



Revised



Prioritize feedback based on the popularity of an issues

“I see multiple people mention the same thing, and that to me, I think just not like a single person give me the same feedback, but many people think the similar way, and kind of carries more weight to me to consider it.”

- P1036, Male, Book Cover Designer

User Insights for Design Implications

“ I feel that in the revised iteration there were a lot more general feedback than specific suggestion, which I got a lot from my first design, and I don't know if that's necessarily because people thought that it was a completed work and they just wanted to give me general feedback. ”

- P1022, Female, Logo Designer

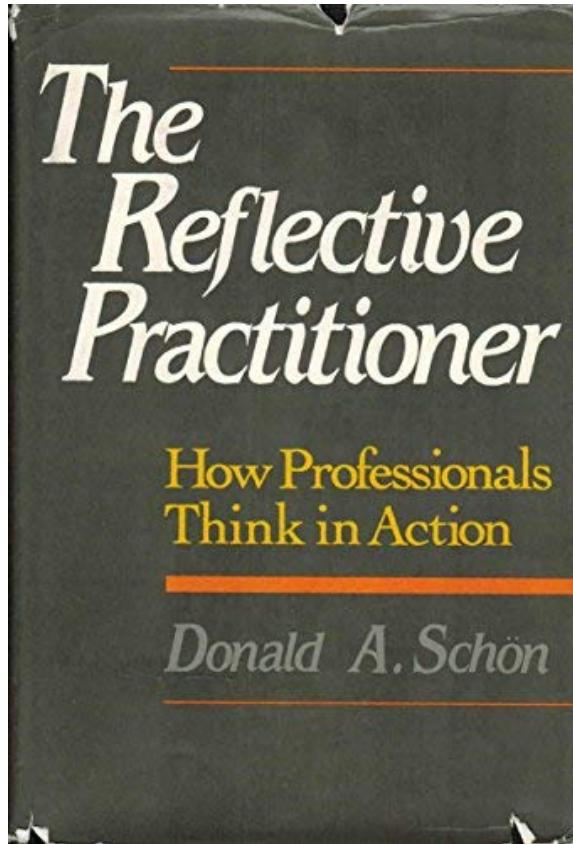
User Insights for Design Implications

“ It is important to have feedback for the initial design rather than the revised one. But it would be nice if you can find people reviewing the previous iteration to view the current one. ”

- P1026, Male, Logo Designer

Designing Reflection Activity for Iterative Design





Research Questions

RQ1: How does **integrating a reflection activity** into an iterative design process affect perceived design quality, degree of revision, and perceptions of design performance?

RQ2: How does **the sequence** in which the reflection activity is performed – either before or after reviewing external feedback – affect these same measures?

RQ3: What are the **perceived benefits and limitations** of integrating a reflection activity into the design process?



Reflection Activity

1. Please describe the overall concept and theme of your initial design.

2. What do you think was done particularly well in your initial design?
Please explain why. *(required)*

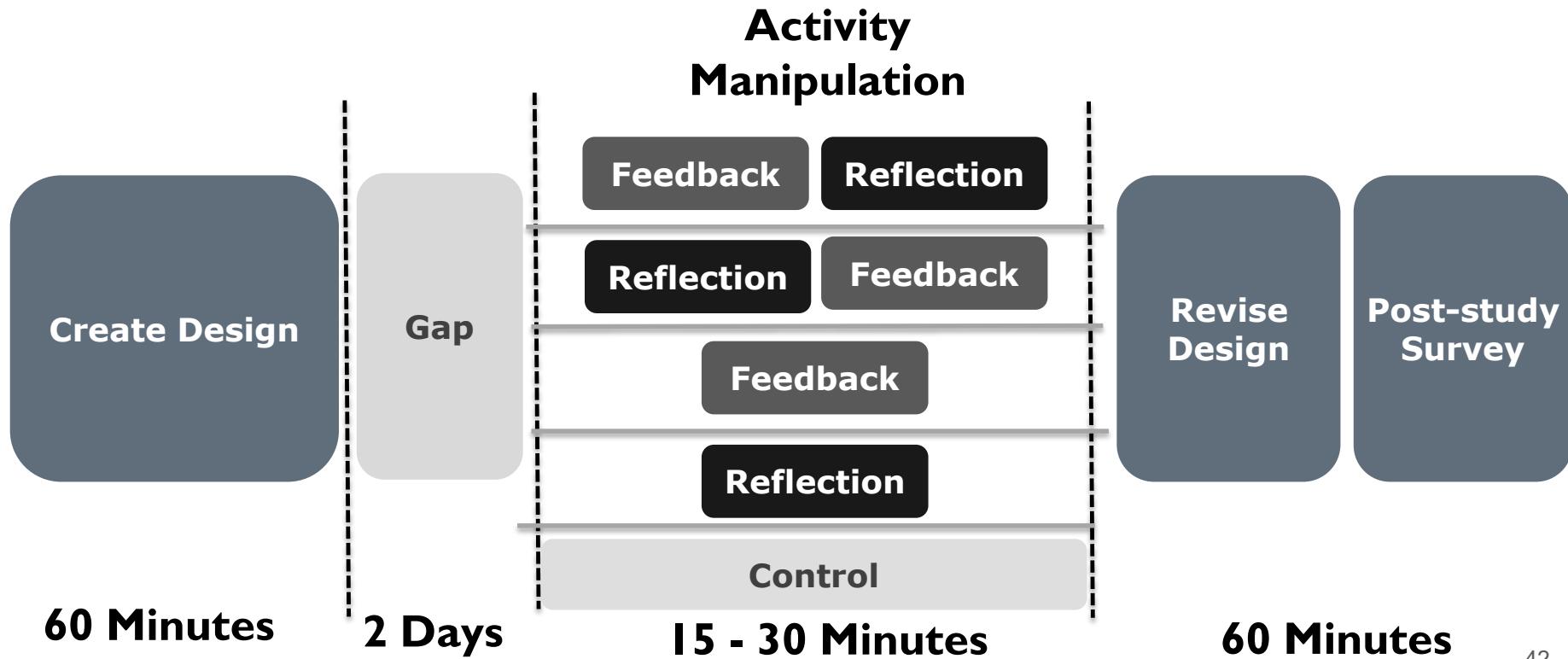
3. What could be the weakness of your initial design? And in what ways do
you think the initial design can be improved? *(required)*

Based on Donald Schön's
Reflection Theory

Submit



Online Study (N=90)



Design Examples

Control



Before: After

Reflect Only



Reflect then Feedback



Feedback Only



Feedback then Review





Coupling Feedback Review and Reflection Yielded Highest Degree of Change (7-point Likert item)

Activity	Experts' Ratings	Designers' Ratings
R	2.53 (1.7)	3.9 (1.5)
F	2.57 (1.4)	4.1 (1.7)*
RF	2.89 (1.7)*	3.4 (1.6)
FR	2.67 (1.1)*	4.7 (1.3)*
C	1.90 (1.1)	2.6 (1.6)

R: Reflect-only
F: Feedback-only

RF: Reflect-before-Feedback
FR: Reflect-after-Feedback

C: No Activity

Master's Thesis

Human-centric and Situation-aware Pervasive Healthcare System in the Hospital for Elderly People

Research Overview

Stage 1

Survey On User Need

Stage 2

Design Non-obtrusive Sensing Environment

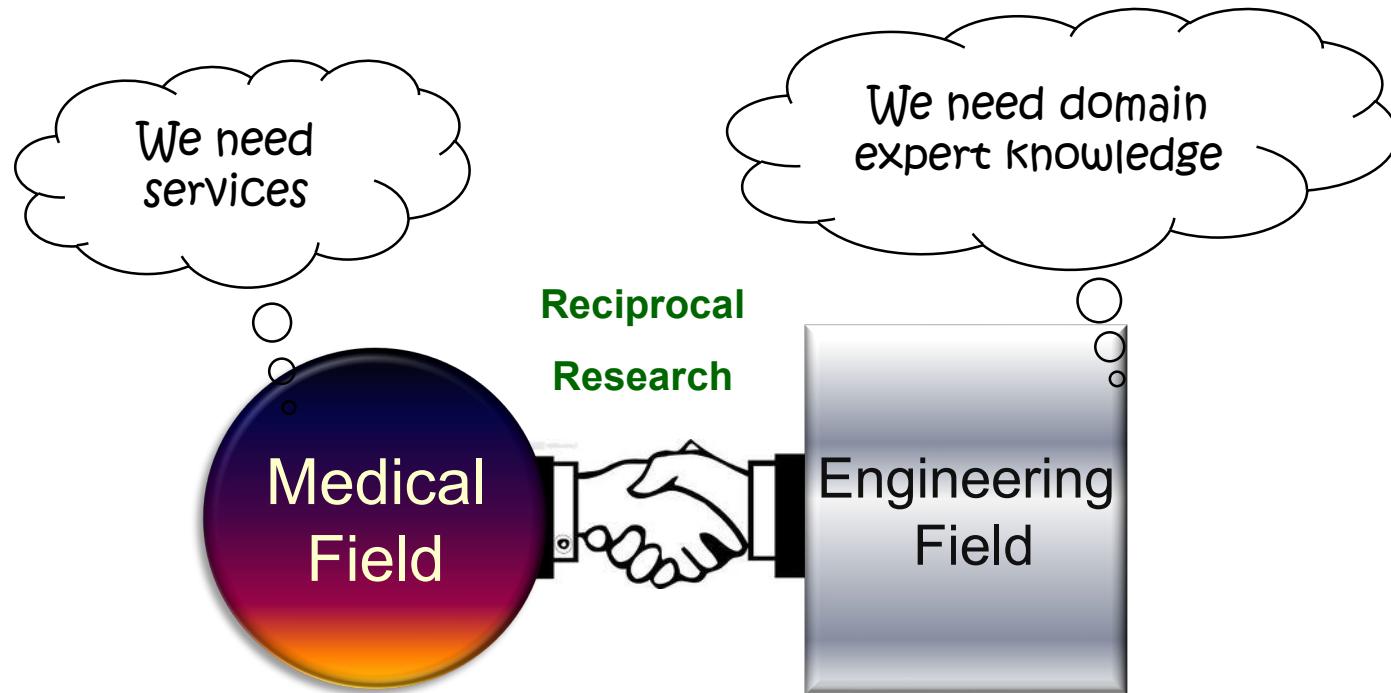
Stage 3

Construct Situation Recognizers (Skip)

Stage 4

Design Persuasive Technology

Multi-disciplinary Research



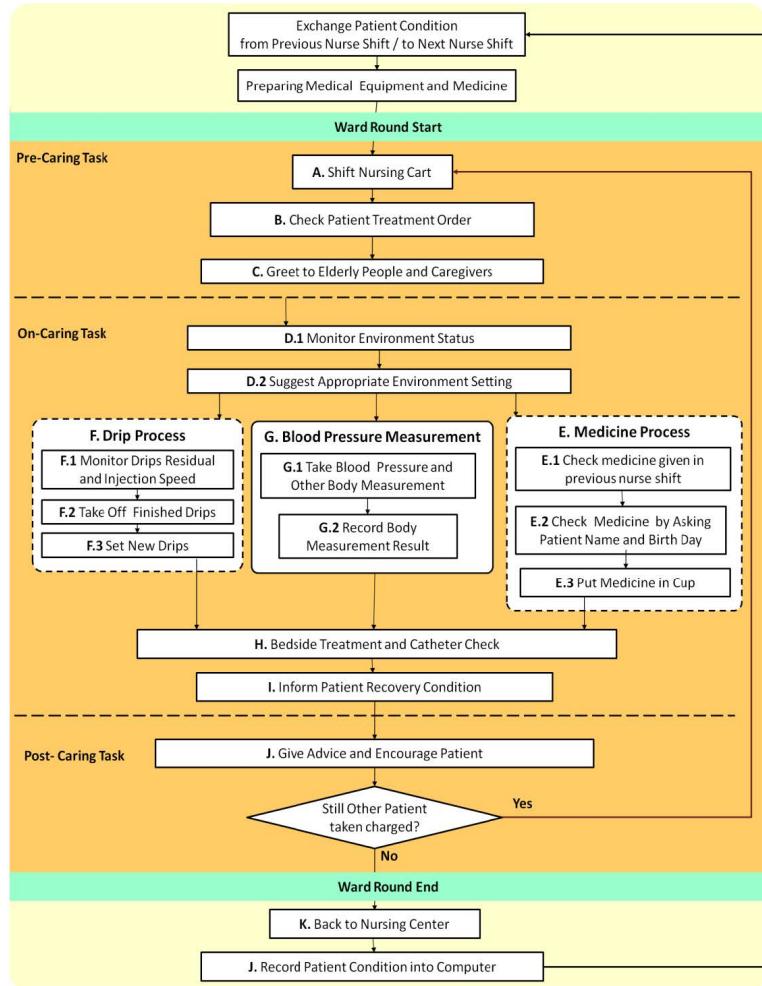
Stage 1: Survey on User Need

- Identified the key Activity of Daily Life concerned by clinicians and caregivers
 - Two domain expert interviews
 - Field observation in National Taiwan University Hospital (Shadowed 10 work shifts)
 - Monthly cross-functional team meeting
- Developed trust with caregivers, patients, and medical staff after field observation
 - Two domain expert interviews



Prof. Shih-Dai Li





Key Situations to be monitored

Bed-area Situation Monitoring

- Leaving bed, Turning Body Over

Bathroom Situation Monitoring

- Hygiene, Toilet usage

Social Engagement Monitoring

- Watch TV, Talk

Caregiver Absent Monitoring

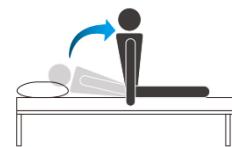
- Safety

Stage 2: Sensor Deployment

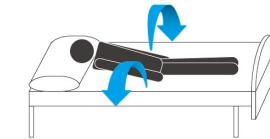
Considerations

- Damage of sensors
- Reduce the number of sensors needed

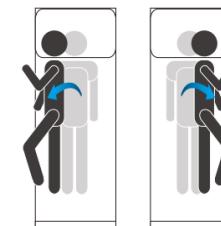
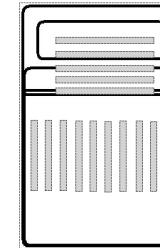
Lengthwise movement



Leaving bed



Lateral movement



Solutions

- Portable
- Waterproof
- Efficient Sensor arrangement



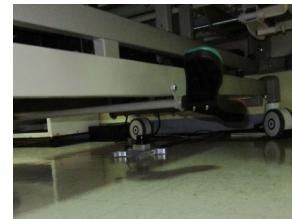
Sensor Deployment: Caregiver Presence

Considerations

- Avoid vision-based and wearable RFID or other sensors.
- Active and non-active movements are both monitored

Solutions

- Active status: Motion sensors
- Non-active status (or active status): Laser range finder



Sensor Deployment: Social Engagement

Considerations

- Human interaction: Chatting
- Involve appliance : Watching TV

Solutions

- Human interaction: Low-resolution sound sensor
- Involve appliance or instruments: Current sensor



Sensor Deployment: Bathroom

Considerations

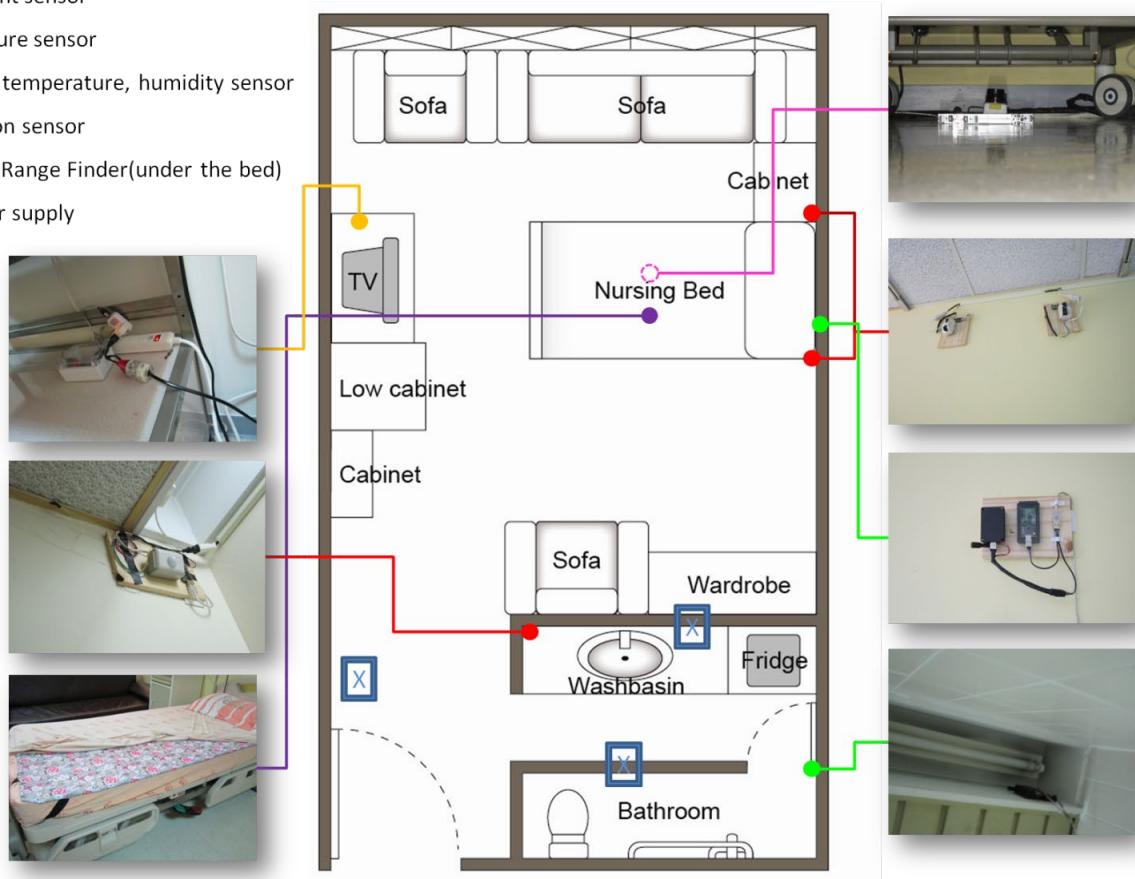
- Highly privacy concerns
- Various environment states in the bathroom
- Noise in the bathroom

Solutions

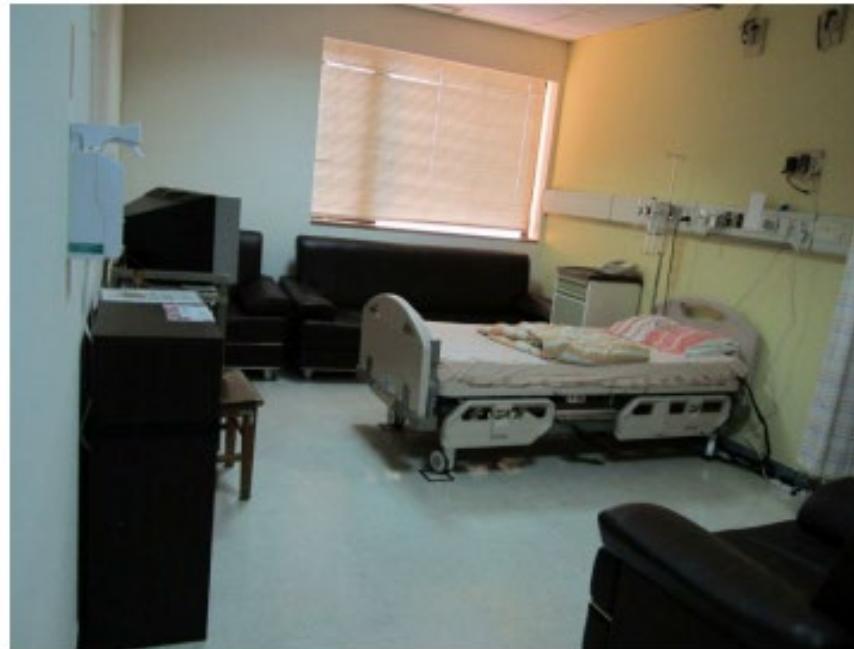
- Low-resolution sound detector
- Light, temperature, and humidity sensors
- Motion sensor



- Current sensor
- Pressure sensor
- Light, temperature, humidity sensor
- Motion sensor
- Laser Range Finder(under the bed)
- Power supply



Snapshots of Environment



Data Annotation and Sensor Monitoring

Elderly Activity

Laser scanner for number of people around the bed

Left Side of Bed Right Side of Bed Bed Tail

PlaceLayout

Room Light Bath Light
Room Temperature Bath Temperature
Room Humidity Bath Humidity

Room Talking B2_1 B3_1

Right Left

C1_1

Messages

Clear ActiveMQ URL failover://localhost:61616/(tcp://localhost:61616)

tabPage1 tabPage2

grace_123_2011_07_25_12

groupBox3 紀錄人編號 grace 病患編號 123 確定資料 開始紀錄 暫停紀錄

照護人員狀態

- 在左側
- 左側及右側
- 在右側
- 右側及尾側
- 在床尾
- 尾側及右側
- 房內無照護者

房內家屬人數

如廁行為

- 病患一人如廁
- 無人如廁
- 家屬如廁
- 洗澡
- 家屬協助病人如廁

社交行為

- 房內交談
- 看電視
- 看電視加交談
- 無社交行為

床上資訊

- 平躺 (床平放)
- 坐臥 (床抬起)
- 移向床右側
- 移向床左側
- 坐在床右側
- 坐在床左側
- 由床右側起身
- 由床左側起身
- 右翻身
- 左翻身
- 床上沒人
- 有其他家屬在床上
- 其他

Persuasive Strategy

Concept testing with 9 elderly person

Table 1. Timely reminders or encouragement for target activities

Detected Activities	Description of system feedback
<i>Sleeping</i>	If a sleeping behavior is detected, the system automatically plays music for a while.
<i>Sitting on bed</i>	When the elderly wakes up and sits on the bed from sleeping, the <i>Home Keeper Rabbit</i> performs an animation with a cheerful greeting.
<i>Using Walking Cane</i>	Current number of steps will be shown at upper right corner of the screen.
<i>Leaving bed</i>	When the user is about to leaving the bed, the <i>Home Keeper Rabbit</i> reminds its potential hazards (i.e. tripping) and inspires the elderly to do more exercise.

Table 2. Persuasion policies supported for interested activity episode

Activity episode	Description of system feedback
<i>Sleeping</i>	When an elderly sleeps more than one hour in the <i>daytime</i> , the <i>Home Keeper Rabbit</i> speaks loudly to wake him/her up
<i>Walking</i>	Four levels of walking states are evaluated. Higher level means more steps the elderly has walked via the walking cane. <i>Home Keeper Rabbit</i> encourages the elderly when the elderly reaches a higher level



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