Enhancing the Usage of Crowd Feedback for Iterative Design

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Abstract

Online crowd platforms (e.g. social networks, online communities, task markets) enable designers to gain insights from large audiences quickly and affordably. However, there is no guidance for designers to better allocate their social capital, time, and financial resources for acquiring feedback that meets their own needs. Also, feedback received online can be ambiguous and contradictory, making it difficult to interpret and act on. These limitations hinder the utility of crowd feedback, making designers hesitant to actively make use of feedback received. The goal of my dissertation is to 1) formulate a framework that suggests which crowd genres to solicit feedback according to individual needs, 2) develop lightweight activities that promote deeper interpretation on a large volume of feedback, and 3) design and deploy an experimental platform that collects long-term user data, and reduces the burden of conducting online studies of design feedback.

Author Keywords

Creativity; iterative design; feedback; reflection; crowdsourcing

ACM Classification Keywords

H.5.3 [Information interfaces and presentation]: Group and Organization Interfaces – Collaborative computing.
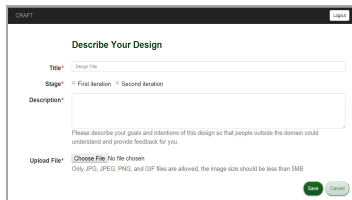
Figure 1. The user interface for a designer to upload a design, select the iteration, and describe its goals
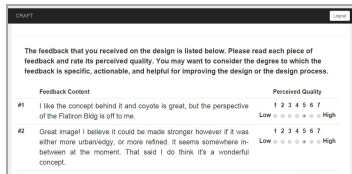

Figure 2. The user interface used by the designer for rating the perceived quality of the feedback responses.
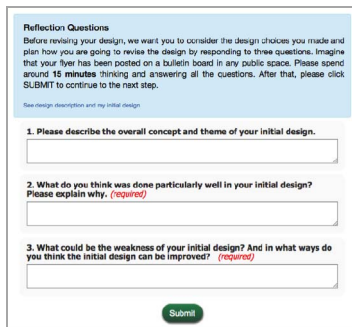

Figure 3. The user interface for a designer to write their responses to the reflection prompts.

Motivation

Educating the next generation of design innovators has received tremendous interests from educators and researchers. To prepare students for careers in innovation, instructors teach students the importance of connecting with potential users during the design process so they can understand real-world needs and acquire feedback on ongoing projects[3].

Online crowd platforms such as social networks, online communities, and task markets offer unprecedented opportunities for novice designers who have limited resources to access potential stakeholders, gather feedback, and tighten evaluation cycles [10]. However, feedback received online can be ambiguous, contradictory, and of variable quality because the providers typically have different motivations, expertise, and perspectives for writing helpful feedback. If a designer could not interpret the content of the feedback, learn from it, and formulate an effective action plan, the feedback becomes ineffective [2, 6].

Existing crowd feedback platforms provide no guidance on how the choices of the use of crowd platforms affects feedback generation, and offer limited mechanisms to help designers generate effective action plans according to the feedback received. My dissertation aims to address this challenge by researching and developing different approaches for enhancing the usage of crowd feedback for iterative design. To conduct a series of studies of crowd feedback, I have built an online platform, CRAFT, for hosting designs, collecting feedback, and allowing designers to perform sense-making around feedback (See Figure 1-3). All the experiments in my dissertation will be built on the CRAFT system.

Study 1: Help Designers Better Allocate Financial, Social Resources, and Time for Feedback Acquisition

As a starting point, I want to answer two questions: *(1) How do different crowd genres compare in terms of the quantity, quality, and content of the feedback generated?* and *(2) How does the design iteration (initial vs. revised) affect the feedback generated by the different crowds?* Answers to the questions are critical for designers to better allocate their financial resources, social capital, and time for acquiring feedback that best suits their individual needs.

In [10], twenty-two professional designers used the CRAFT site to collect feedback on their own project from three genres of crowd platforms. They were asked to rate the perceived quality of each piece of feedback, and then revised the initial design based on the feedback they received. We repeated the same process for the revised design so that we can compare the feedback received at different iterations.

Among many findings, we found that a paid task market provided feedback that contains more design suggestions, is longer, and has more positive valence. A Web forum provides more process oriented feedback and the most responses without payment, while social networks provide more design suggestions. Surprisingly, all three crowds produced feedback of similar quality according to the designers' ratings. During the post-study interviews, designers reported that they appreciated the crowd-sourced feedback because it was more open and honest than face-to-face discussion, and they could make evidence-based arguments from a large volume of feedback.

However, prior work has shown that feedback recipients may not always act on the feedback even when the feedback had high quality [7]. This motivated my second study, where I designed and tested a lightweight intervention to help designers better incorporate the feedback into the ongoing design.

Study 2: Using Reflection as a Strategy to Promote Feedback Interpretation

In the study, I tested how including and ordering a reflection activity in a feedback loop affects the design performance and the perceptions of performance [9]. The reflection activity was designed based on Schön' theory of reflection-on-action [8]. I hypothesized that by engaging in a reflection activity, designers would establish a deeper understanding of the current design situation and could better transform crowd feedback into coherent actions for improving that design.

Each designer (N=90) created a design and revised it after experiencing one of the four scenarios: reviewing feedback only, reflecting only, reflecting before reviewing feedback, and reflecting after reviewing feedback. We controlled the feedback generation in a way that designers across all the conditions rated the feedback as reasonably useful.

We found that when coupling reflection with feedback review, the resulting designs had the most extensive revision compared to those from the reflecting only or reviewing feedback only scenarios. In addition, performing reflection *after* reviewing feedback yielded a higher quality design according to the experts' ratings. Designers reported that the reflection activity helped them recall their design goals, question their choices, and plan and prioritize their revisions.

However, we noted that the degree of change between the interactions was low across all the conditions (i.e. below three on a seven-point Likert item). Self-reflection may not be able to resolve feedback that contains conflicting or vague viewpoints. An illustrative quote from a designer was: "*Everything was almost conflicting, so I just decided to go with my gut as a designer.*" Additionally, we found that designers tended to only address objective critique, and ignored feedback seemed to be subjective: "*I found the critiques that were objective to be useful and I disregarded critiques I thought to be purely subjective.*"

Study 3: Using Collaborative Interpretation as Approach to Enhance Feedback Interpretation

My next attempt to enhance the usage of feedback is to investigate the effects of collaborative feedback interpretation on iterative design. Collaborative sense-making processes have been used to enhance information-sharing tasks [1, 4]. I speculate that attending to such practices could also help increase the effectiveness of feedback.

I will follow a mix-methods approach by first surveying designers' current strategies for seeking people for interpreting feedback together. Second, I will perform a series of factorial experiments to investigate the beneficial effects of different pairing mechanisms for feedback interpretation. Third, I will implement a lightweight collaborative activity into the CRAFT system and test it in a design-oriented class where the students are required to produce a design project.

For the survey, I plan to ask two questions: *(1) Think of a time you received feedback but could not interpret*

it properly. Please describe the situation, and *(2) Think of one person that you would like to discuss that feedback with. Outside of personal relationship with the person, how would you describe his or her characteristics?* Survey responses will be analyzed using open coding method [5]. The goal of the survey is to identify the features of a person designers take into account when deciding whether to share the feedback with.

Following the survey, I will perform a factorial experiment to investigate the benefits of performing collaborative interpretation over self-interpretation. Participants will be categorized into two groups: *self* and *with-helper.* Each participant will be given a sample design and six pieces of feedback that are of high quality yet conflict with each other. In the *self* condition, participant will be asked to read the feedback and write down an action plan for improving the design. In the *with-helper* condition, participants will be paired together to work on the same feedback interpretation task. I will perform quantitative analysis on the behavioral data and qualitative analysis on the content of the generated action plan. I will then conduct another factorial experiment comparing different pairing mechanisms for feedback interpretation. The outcome of the experiments will serve as the empirical knowledge about how to pair people to best improve the performance of feedback interpretation. I will interview the participants to gain insights about how to develop such collaborative interpretation practice into the CRAFT system.

Finally, I will develop a lightweight activity in the CRAFT system supporting collaborative interpretation. I plan to test the platform in the User Interface Design class offered at the University of Illinois, as the students will have design projects to work on during the semester.

Dissertation Status and Future Plans

So far, I have explored two approaches for enhancing the usage of crowd feedback [9, 10]. I am currently working on the third component of my dissertation which is to investigate how to leverage pairing technique to promote deeper feedback interpretation. I have completed a pilot survey within my institution (N=12) and found interesting patterns about how people chose a peer to interpret feedback with. I will complete the survey study and factorial experiment by June 2017. For the platform development, I will build on the CRAFT system which already supports individual interpretation. I plan to incorporate the collaborative activity into the system from July to August 2017, and deploy the system in the UI Design class offered in Fall 2017.

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