Introduction to HCI

Guest Lecture

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October 29, 2019
S120, ILC, UMass
Today

• Quiz [10 min]
• Reading Discussion [10 min]
• Case Study – CommunityPulse [35 min]
• Project Milestone Discussion [15 min]
QUIZ

• Moodle
• Password – falcon
• Total points – 5
• Total time – 7 min
Discussion on pre-reading

• What did you learn?
• What surprised you?
• How can you use this knowledge for your project?
Case Study - CommunityPulse

• Aftermath of CommunityCrit
  • Increased participation
  • Increased community input
  • Analyzing and understanding Large-scale information is challenging
    • Lack of time
    • Lack of Expertise with data analysis and visualization tools
    • Diverse requirements
Feedback from interviewees

Needfinding interviews

Design Goals

CommunityPulse

Established collaboration

Case Studies

CommunityPulse Timeline

Needfinding Interviews

• Over 4 months
• 14 domain experts (Civic Leaders) through snowballing *

• Participants included
  • Decision-makers who are in charge of key decisions
  • Community leaders who work to foster change on behalf of a community
  • Researchers who play a dual role in leading engagement efforts as well as analyzing and interpreting the results

Needfinding Interviews

- Semi-structured interviews
- Interviews lasted 45 – 55 minutes
- Audio recorded and transcribed
- Questionnaire:
  - “What do you want to learn from the community comments and why?”
  - “What method or technology do you use to analyze the data?”
  - “What could help you in analyzing community data?”
“We aren’t usually thinking positive, neutral or negative, we are usually thinking: what are people’s rational, [and] what are the different categories in the way people are thinking about something” (P11).
“It takes a lot of time and energy to boil down into something that is useful for decision-makers because they certainly don’t have time to go through all of that data [...] but we only have so much manpower to analyze the data and put it out there.” (P8).
“Summaries can suppress minority viewpoints” (P8).
Criteria Coding

Feasibility  Safety  Mobility  Quality of Life

Art

Public Art

Interactive Art

Structure

Roundabout

The Lyre

Category

All  Art  Structure

Criteria

All  Feasibility  Safety  Mobility  Quality of Life
Task analysis

• T1 – Extract community reactions
• T2 – Provide visual summary of community input
• T3 – Support inspection of individual comments
• T4 – Allow comparison between proposals
• T5 – Support tech-unsavvy domain experts
CommunityPulse

• Text Analytics
  • Reaction Classification
  • Topic Modeling
  • Keyword Extraction

• Visual Analytics
  • Aggregate View
  • Detail View
  • Compare View

• Text Analytics
  • LSTM + CNN
  • LDA
  • Graph-based ranking

• Visual Analytics
  • Stacked bar charts & emoticons
  • Forum style comments
  • Side by side comparison
A snapshot of CommunityPulse. (A) A list of Proposals (‘Roundabout’ is selected), (B) the number of participants and comments for each proposal, (C) a list of topics for each proposal (‘Traffic’ is selected), and (D) emoticons for sorting and stacked bar charts for Reactions. (The proposals are sorted by Angry reactions and Angry comments from Roundabout’ are selected). (E) Meta-information, and (F) user information for each individual comment.
A snapshot of Compare View which contains two sections with identical components: (A) proposal dropdowns to select proposals (‘Interactive Art’ and ‘Platform connected with bridges’ are selected), and (B) stacked bar charts representing reactions of the selected proposal (‘Happy’ is selected for both proposals), (C) a list of topics for each proposal (‘East Village’ is selected from both proposals) and (D) comments based on the selected filters.
Case study interviews with experts

• Deployed on a public server – communitypulse.cs.umass.edu

• Provided access to case study participants weeks ago to make them familiar with the interactions and interfaces

• Captured interaction logs to supplement think aloud* session

• Participants with diverse roles
  • Decision Makers (DM)
  • Researchers (R)

Case study interviews with experts

• Semi-structured interview
• Zoom conference was audio recorded
• Case study interviews lasted around 45 minutes.
• Questionnaire:
  • What are your goals when analyzing community input?
  • How did CommunityPulse help you achieve these goals?
  • What features did you find useful and why?
  • How does CommunityPulse compare with the analysis methods you currently use?
  • Would you use CommunityPulse in future to analyze community engagement data?
Case Study I: Taking the Pulse of the Community (DM1)

• Traffic problem at the Roundabout

• “I can see that they are not happy about the traffic situation. It’s useful to have a quick and dirty way to see what they are thinking, without even reading any comment”

• “[CommunityPulse] is useful for experienced decision-makers to make proper interpretation and assessment of the results based on their contextual knowledge. [...] Clearly, there is a time-saving advantage of using this tool.”
Case Study II: Surfacing Hidden Anomalies (DM2)

• The curious case of User-44

• “While every opinion matters, some people might direct the discussion in a particular way by being vocal and suppressing others. It’s important to identify that you don’t have a biased sample”
Case Study III: Finding Similarities between Proposals (R1)

• The East Village connection

• “I use separate files [for different proposals] and flip through them, [...] but this [Compare View] solves that problem”

• “It does most of the stuff automatically that I use Excel for, and it is very clean and intuitive”
Case Study IV: Discovering the Community’s Priorities (R2)

- Dynamic meta-information

- “It’s really helpful to have the aggregation of data for categories and common trends done for you automatically. This is something that I have to do manually.”

- “Although the topic modeling could use some refinements, I think it is [CommunityPulse] very useful to have a glimpse of the opinions, especially if the community is large”
Challenges faced and lessons learned

• Scarcity of labeled data in the civic domain
• Insufficient approaches for analyzing civic data
• Challenges of undertaking real-world problems
On Deck

• Working Class on Thursday, Oct 31st
  • Prototypes
  • MVP

• 3rd Project Milestone
  • Due Oct 31st
Project Milestone Discussion

- Task examples
- Task analysis
- List of features
- Final conceptual model and storyboard