

Introduction to HCI

Guest Lecture

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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

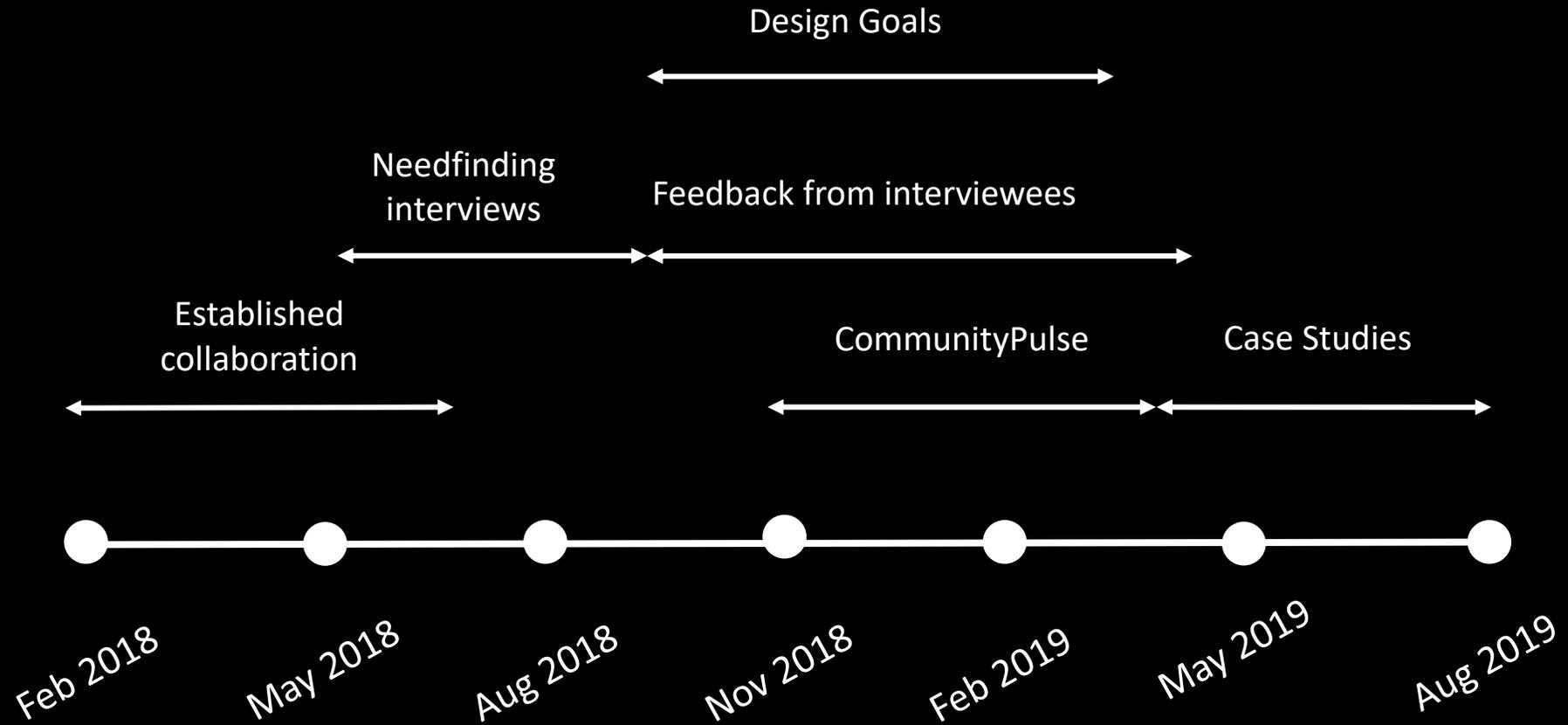
- What did you learn?
- What surprised you?
- How can you use this knowledge for your project?



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

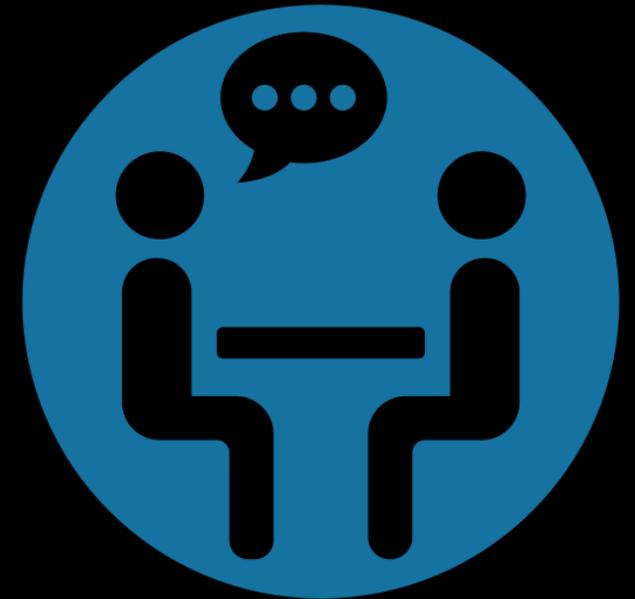




CommunityPulse Timeline

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



* Goodman, Leo A. "Snowball sampling." *The annals of mathematical statistics* (1961): 148-170.

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).

Compare

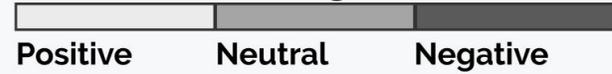
Category

- All
- Art
- Structure

Sentiment

- All
- Positive
- Neutral
- Negative

Sentiment Coding



Art



Public Art



9 10



Interactive Art



6 6

Structure



Roundabout



18 22



The Lyre



16 19

1

Compare

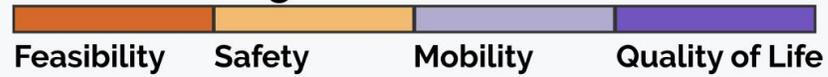
Category

- All
- Art
- Structure

Criteria

- All
- Feasibility
- Safety
- Mobility
- Quality of Life

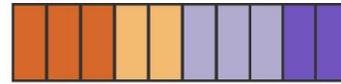
Criteria Coding



Art



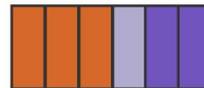
Public Art



9 10



Interactive Art

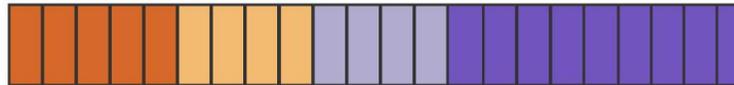


6 6

Structure



Roundabout



18 22



The Lyre



16 19

2

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

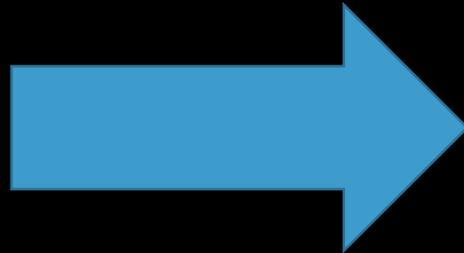
CommunityPulse

- 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

Aggregate View

Proposals

Proposal	Participants	Comments
3 Roundabout	9	26
11 Zipline	7	21
12 Transit Hub	8	21
9 Platform connected ...	12	34
13 Gateway	3	7

Topics

traffic perspective **traffic** similar space ...

Open glass windows feasible idea safety able advertisement ...

feasible information San Diego transit unclear transit hub ...

intersections challenges East Village better model ada provisions ...

Sense Barrio communities families passersby ...

Reactions

Excited Happy Neutral Concerned Angry

Detail View

Roundabout 5 7

The intersection right now is basically just an empty lot. We could easily make it a roundabout with three crosswalks so that traffic from National Ave and Commercial St can still get around but so people can also use the open space in the center.

Evaluate Feasibility

User-32 posted on 8/10/2017 21:55

This doesn't seem that feasible due to the trolley tracks and the need to control traffic here, which is in direct conflict with a roundabout which is supposed to be free flowing for traffic.

Answer Someone Else's Question

author name
posted on 8/10/2017 16:53

How many crosswalks do you think a roundabout at El Nudillo should have?

User-26 posted on 8/10/2017 16:53

I think a roundabout at El Nudillo should have 10 crosswalks. There are currently 3 streets forming the intersection, but 5 areas for pedestrians to come from. If a roundabout were to be created, it should allow for pedestrians to cross from any one of the 5 areas to another of the areas as well as a possible center.

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

Interactive Art

A

Platform connected with bridges

B

East Village

viable market

C

intersections challenges

East Village

better model

ada provisions

D

Interactive Art

4 4

Love to see interactive rotating art with current cultural subjects. A place for exchanging ideas which helps the community grow together.

Evaluate Feasibility

Author name posted on 8/11/2017 17:47

😊 + Brilliant -- love it!

Improve the Idea

Author name posted on 8/10/2017 22:44

😊 + yes as long as it's monitored

Evaluate Impact: Mobility

Author name posted on 8/30/2017 3:21

😊 + It would encourage neighbors to walk around and look at art or installments.

Critique the Idea

Author name posted on 8/30/2017 0:42

😊 + Agreed

Platform connected with bridges

3 3

Instead of making a roundabout we can create a two story triangle platform to avoid a major infrastructure change. It is a platform that works with current traffic, but allows people to walk to get where they need, and creates a green space at the ground level.

Evaluate Impact: Quality of Life

Author name posted on 8/30/2017 3:12

😊 + For the better

Critique the Idea

Author name posted on 8/30/2017 5:56

😊 + She's absolutely correct.

Improve the Idea

Author name posted on 8/30/2017 17:07

😊 +

Th Highline Park in NYC is very successful at connecting existing well established neighborhoods. I doubt would be effective in fostering growth and community.

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

