CommunityClick: Towards Improving Inclusivity in Town Halls

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ABSTRACT

Despite the lack of inclusive participation from attendees and civic organizers struggle to capture their feedback in reports, local governments continue to depend on traditional methods such as town halls for community consultation. We present CommunityClick, a community-sourcing system that uses modified iClickers to enable silent attendees' to provide real-time feedback and records meeting audio to capture vocal attendees' feedback. These feedbacks are combined to generate an augmented meeting transcript and feedback-weighted summary, incorporated into an interactive tool
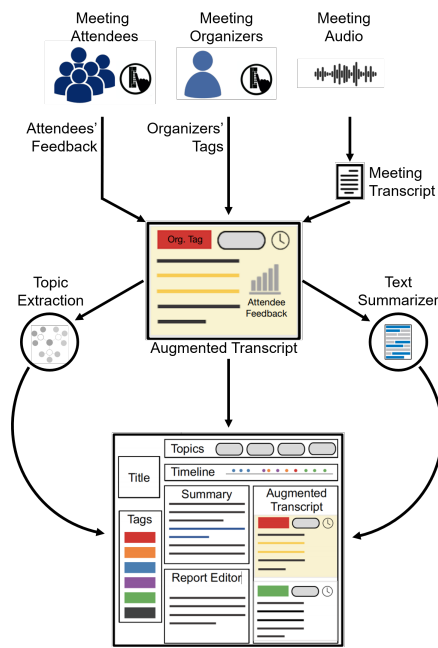
Figure 1: A snapshot of CommunityClick's workflow. During the meeting, attendees and organizers can use iClickers to share feedback and tag the meeting. The meeting is also audio-recorded. The recordings are transcribed automatically and then augmented with the organizer's tags and attendees' feedback. Furthermore, we generated the feedback-weighted discussion summary and extracted the most relevant topics. The interactive interface enables the exploration and utilization of augmented meeting discussions, which is available online for organizers to examine and author meeting reports.

for organizers to author reports. Our field deployment at a town hall and interviews with 8 organizers demonstrate CommunityClick's utility in improving inclusivity and authoring more comprehensive reports.

CCS CONCEPTS

• **Human-Centered Computing** → **Human Computer Interaction (HCI)**.

KEYWORDS

Town hall, automatic transcription, iClicker, community feedback

INTRODUCTION

Community members' feedback is critical for inclusive civic decision-making [6], which is primarily solicited via traditional community consultation methods such as town halls, public forums, and workshops [3, 6]. However, traditional methods rarely provide opportunities for inclusive public participation [7] as reticent meeting attendees struggle to speak up and articulate their viewpoints for reasons such as fear of confronting outspoken and dominant individuals [8]. As a result, these methods often fall short of capturing and exchanging broader perspectives between government officials and the community. Furthermore, meeting organizers grapple with simultaneously facilitating often contentious discussions and taking meeting notes to capture attendees' broader perspectives [4, 7]. These shortcomings further obstructs inclusivity and may lead to ineffective decisions that can significantly impact people's lives [6, 7]. Computer-mediated tools can address this predicament.

Commonly, feedback from meeting is gathered using voting or polling attendees [5] or taking notes during the meeting [5]. However, voting often restricts attendees to only agreeing or disagreeing, leading to a lack of inclusivity in the captured feedback from attendees [6]. To help alleviate this problem, prior work mostly focused on automatic speech recognition [1] and interactive annotations [9] to help organizers take notes for creating reports. However, these methods rarely preserve the discussion context or improve the inclusivity of attendees' feedback in meetings.

In this work, we present CommunityClick, a system to capture more inclusive feedback from meeting attendees and enable organizers to author more comprehensive meeting reports. To evaluate CommunityClick, we deployed it in the wild, followed by eight semi-structured interviews with experienced organizers. Our results demonstrate the efficacy of CommunityClick to give voice to
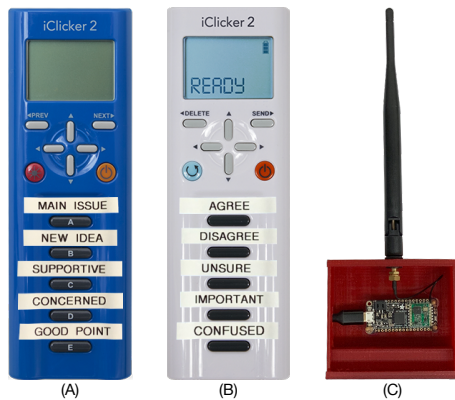
Figure 2: The apparatus used to capture organizers' tags and attendees' feedback. (A) The iClicker for organizers to tag the meeting. (B) The iClicker for attendees to add their feedback. We used different sets of tags for organizers and attendees based on our formative study. Each iClicker was labeled with the respective set of tags to reduce the cognitive load of mapping options to the iClicker buttons. (C) The iClicker recorder. We used an Adafruit Feather M0 with the 900 MHz RFM69W/RFM69HW transceiver to capture iClicker clicks with timestamps in real-time to synchronize tags and feedback with meeting audio.
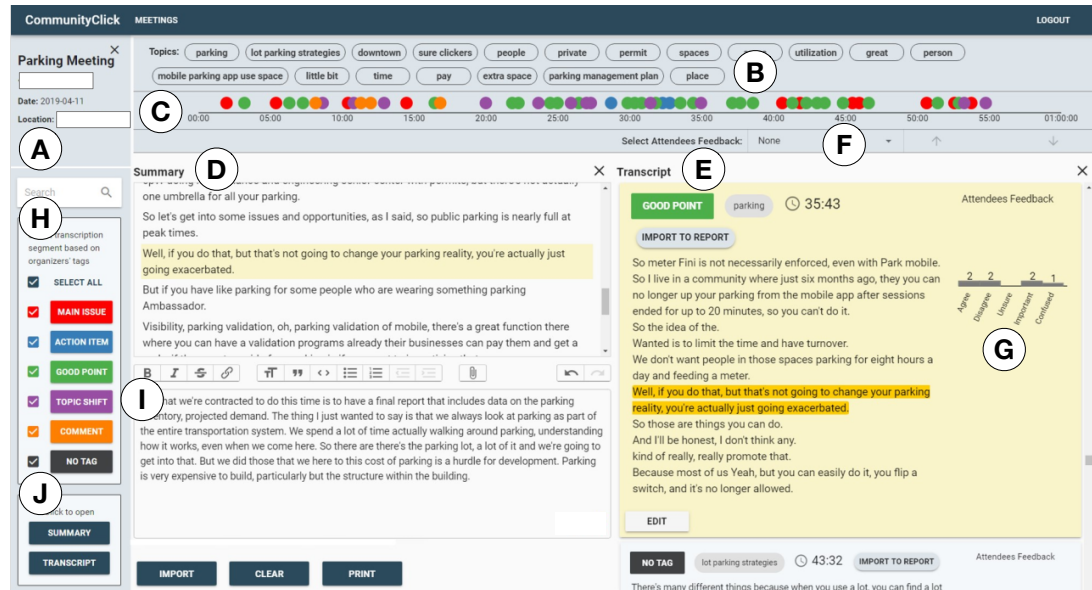

Figure 3: A snapshot of CommunityClick's interface depicting it's various components.

reticent participants, increase their involvement in town halls, capture attendees' feedback, and enable organizers to compile more inclusive, comprehensive and accurate meeting reports.

COMMUNITYCLICK

Figure 1 shows the workflow of CommunityClick. We used iClickers [2] for both organizers and attendees to enable them to respond at any time during the meeting without taking notes or speaking up to share opinions. We modified the iClickers to allow organizers and attendees to respond to enable attendees to provide real-time feedback using five customizable options as opposed to polling. We used automatic speech recognition to create the meeting transcript and combined it with the timestamped tags and feedback to transform the recorded meeting audio into timestamped text. Furthermore, we used the organizers' tags to divide the meeting transcript into manageable segments. We created a 30 second time window around the tag (2 seconds before the tag and 28 seconds after the tag) for each organizer's tag to divide the meeting transcript is into managable 30-second segments.
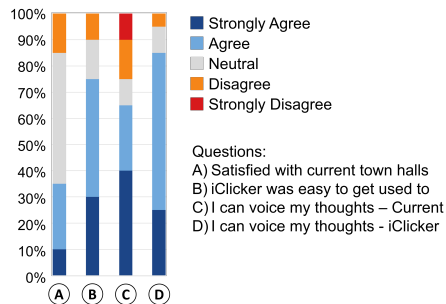
Figure 4: The results from the field experiment. Attendees' responses show that the majority of meeting attendees were not satisfied with the status quo of town halls and found iClickers easy to get used to. It also displays the number of attendees who thought they could share their voices by speaking up versus using iClickers.

"*It provides a way of ensuring that voices and reactions are reflected as people speak and click. It is a huge step towards having a more honest reflection of what really went on in the meeting.*"

"*Note-takers have varying abilities and the notes vary in quality. Instead, as you are writing reports in CommunityClick, you can see and add the reactions to what [attendees] discussed right away, it builds credibility for the process.*"

"*The automatic summaries can be used as a starting point of the report, [...] and then I can delete things that might not be very useful and build up the report by adding more and formatting it.*"

We developed CommunityClick's interface as a web application. The title contains the meeting title, date, and location (Fig. 3(A)). The filters allow organizers to explore the transcript segments according to the selected feedback or tags of interest (Fig. 3(F, H)). We also provide the list of most relevant topics and the timeline of the meeting discussion (Fig. 3(B, C)) that displays the organizers' tags using circles in a chronological manner, where each circle represents a tag, and the color corresponds to organizers' tags (Fig. 3(C)). This provides the organizers with a temporal distribution of tags that demonstrates how the conversation progressed during the meeting. The interactive feedback-weighted extractive summary is presented in a textbox (Fig. 3(D)) that can be used to navigate to the corresponding transcript segment. We added a rich text editor for authoring the meeting report with rich formatting options (Fig. 3(I)). Once the report is created, it can be printed in PDF format directly, without switching to other external printing applications.

Finally, we present the augmented transcript divided into transcript segments (Fig. 3(E)). The segments are ordered chronologically. Each transcript segment contains the transcript text, associated organizer's tag, the most relevant extracted topic, time of the segment, option to import the summary of the selected transcript to the text editor, and aggregated attendees' feedback in the form of a bar chart. Organizers can edit the segments to assign or change tags and topics. However, they do not have control over attendees' feedback to mitigate bias injection.

EVALUATION

To evaluate CommunityClick, we deployed it at a town hall in Amherst, MA that focused on improving the town's parking condition. We collected 61 minutes of meeting audio, 56 tags from one organizer and 492 attendees' feedback (avg. 22.4 ±6.71 feedback) from 20 attendees. We populated CommunityClick's interface with this data and interviewed 8 meeting organizers. We also collected the post-study questionnaire from the attendees. Figure 4 shows that 75% attendees found iClickers easy to get used to (15 responses) and 85% mentioned (17 responses) they were able to share their thoughts using iClickers compared to only 65% (13 responses) attendees who are comfortable with speaking up to share opinions. We also demonstrated CommunityClick's interface to 8 experienced organizers. All of them thought CommunityClick can create a more inclusive platform to share opinions. The majority of them mentioned that the augmented transcripts can provide evidence of attendees' reflections. They also mentioned that it can provide a simple and easily learnable interface that affords exploration and enable authoring of more comprehensive and accurate reports. We present some quotes from the organizers we interviewed in the sidebar. In future, we will continue to deploy CommunityClick in town halls to study its long-term impact and utility in civic decision-making.

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