Collective Narrative: Scaffolding Community Storytelling through Context-Awareness

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Sharing mutual experiences on the same topic is an effective way to increase members' sense of belonging to the community, but existing approaches are insufficient in building such a narrative when a community tries to connect remotely, due to barriers in sharing and organizing content. In this paper, we present Collective Narrative (CN), a context-aware system that facilitates users in identifying share-worthy moments through in-context prompting, and automates the organization process through informed section assignment to a narrative structure. A preliminary study testing the CN iPhone app demonstrates that CN can potentially scaffold in-the-moment sharings and form narratives that are comprehensive yet diverse, thereby presenting contributions in a way that users could easily identify mutual experiences and feelings by reading the narrative.

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1 INTRODUCTION

Going through community experiences in-person makes people feel more connected with each other. While in-person, people can easily share their experiences and feelings through casual conversations with other community members. They can also immerse in mutual atmospheres through engaging in shared physical spaces where other community members are present–such as studying for exams at the school library or grabbing late-night caffeine from a popular coffee shop–even when there are no deliberately planned group activities. While co-location allows people to feel togetherness by taking advantage of coincidental opportunities and low-effort engagement, physical distance makes connecting over a shared experience difficult, because it requires the user to actively share and learn about multiple aspects of the mutual experience.

Many communities resort to social networking sites to connect with one another. Yet, these platforms are limited in supporting a collective account of shared experiences for two main reasons. First, most existing platforms rely on voluntary sharing. The user needs to discern and decide what to post by themself, which leaves out many relevant and share-worthy moments. In needfinding, we found that people did not often share in social media groups because they did not realize the value of the current moment, or often worried that their posts would not be appreciated by their community. Second, current platforms hardly support the user to piece together a collective theme through posts from

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different people, because the platforms promote individual content and present posts as disconnected from each other. For example, an Instagram user can easily notice a well-composed post, but struggle to extract a community theme out of multiple posts, because they would need to scroll through all updates, identify relevant ones, and make sense out of them. While mechanisms like Twitter hashtags attempt to tie community sharings together, they are often so broad in terms of either participants or topics, that they disappoint community members who seek more exclusive togetherness.

To bridge the gaps in in-the-moment sharing and connecting individual contributions, we propose Collective Narrative (CN), a context-aware technology that helps people within a community to connect more closely with one another, through reading and contributing to a multi-faceted narrative about the community's mutual experience. CN involves (1) a context-aware iPhone app that prompts users in relevant scenarios to identify their specific contexts and share their current moments, (2) a narrative structure of "side-by-side timelines" that supports a comprehensive, diverse and cohesive community story, and (3) a backend engine that automatically fits individual user contributions into the narrative structure to form the final artifact. For example, when running a story about "life during the last week of college" among seniors at Northwestern University (NU), CN prompts the user in relevant contexts to the finals week theme, from visiting an NU landmark, to studying at the school library. CN then asks the user to contextualize whether they feel they are thriving or surviving in their finals week, and invites them to share in-the-moment through multimedia contributions. Lastly, the engine leverages its knowledge of specific contexts and categorizes individual contributions into a community narrative with two contrasting timelines, "Thriving" and "Surviving."

CN makes sharing less intimidating by helping community members realize the value of their common life moments. CN's context-aware prompting actively identifies the user in contexts relevant to the narrative theme and invites in-the-moment sharings. The invitation not only reminds the user to pay attention to the current moment, but also recognizes the value of their experience to the community and increases the user's confidence to share. The narrative artifact with the "side-by-side timelines"structure overcomes disconnectedness by chronologically organizing user contributions in a week and largely preserves diversity by showing two contrasting facets–"Thriving" and "Surviving". It sheds a more balanced light on experiences that are typically hidden on social media, such as people's low moments during finals week.

The main conceptual contribution of this work is the idea of increasing community togetherness with a more engaged way of collective storytelling. We argue that through context-awareness, CN empowers and scaffolds the user to become a valuable contributor to a collective narrative, which increases the bond between the user and their community. To test the argument, we ran a 4-day pilot deployment study with 13 users, which shows the early promise of CN to connect communities through contributing to a collective story about a mutual theme.

2 RELATED WORK

Social networking technologies, such as Instagram, aim to connect people over distance through content sharing. Despite the abundant information on these platforms, there is hardly a sense of togetherness, because even on the same topic, each sharing is highly individualized [7] and disconnected. These platforms also implement additional mechanisms to tie community sharings together, such as Facebook groups, Snapchat's themed filters, and Twitter hashtags. Yet, when users need more exclusive togetherness, as in the senior year use case, these mechanisms are lacking because their groupings are all solely based on one dimension of collectiveness (shared identity for Facebook Group, shared context for Snapchat filters and shared topic for Twitter hashtags).

Many existing approaches to collective storytelling for communities present a tradeoff between accessibility and quality of the narrative. With collaborative storytelling on a voluntary basis, such as using context-based filters in

Instagram or Snapchat Stories, deciding when to share and what to share can be a struggle for users [6]. For example, when most posts feature the shiniest aspects of the senior year, it is hard for a user to realize that all the ups and downs during the process are also valuable experiences that would be welcomed by the community. On the other hand, journalists have the training and tools to identify interesting trends and surfacing hidden perspectives from user-generated content (UGC). However, their outputs are often short of abundance and diversity compared to social media, because all the work relies on a highly-skilled anecdote seeker.

Earlier research introduced crowdsourcing to reduce the burden of skilled storytellers and create organized narratives. Kim et al's Storia system [4] summarizes existing social media content of a widely-viewed event (e.g., a sports event) by organizing posts using narrative structure. Agapie et al's Eventful system [1] recruits crowdworkers to report, curate, and write field reports of local events (e.g., town halls, festivals). While these systems effectively employ groups of people to compose structured stories, they are limited to narrating individual events occuring at a single moment. In contrast, we aim to create community narratives that weave multiple events happening across multiple moments in people's lives; CN does this by considering situations which people might be in (e.g., multiple contexts capturing distinct aspects of their final week before graduation), and prompting community members to participate as situations arise.

Recent work on social technologies for connecting [3, 5] has explored how a person's context can create coincidental opportunities to interact across moments in time. Opportunistic Collective Experiences is one example considered by Louie et al [5] that identifies moments when users share situations across distance and facilitates shared experiences and activities in these moments (e.g., stomping in puddles when it's raining in users' respective cities). Unlike this previous work where opportunities for interacting were primarily grounded in a shared situation, CN explores how opportunities to contribute arise from multiple, distinct situations; in doing so, it expands the use-cases for context-aware social technologies by effectively weaving diverse perspectives from these situations into a broader community-theme.

3 SYSTEM DESCRIPTION

The Collective Narrative iPhone app allows a user in a relevant context to easily join a community narrative by sharing their experiences and feelings in the moment; see Figure 1. It is a working system and has a narrative, "Thriving or Surviving? Northwestern Seniors in Finals Season," designed specifically for Northwestern seniors use-case, where contexts and prompts were catered to the user population. To contribute to the narrative a Northwestern senior student goes through the following four interfaces:

(1) **Notification**: CN identifies the user in a relevant context using a combination of physical affordances, including weather, location, and time. When the user is in a context relevant to the finals season, such as when they are located in a library at midnight, they would be notified to contribute to the narrative.
(2) **Pre-Story Questions**: A user's emotional state or the atmosphere of a place is hard to detect through physical affordances. Therefore, before the user makes their contribution, they must self-report more details through a set of pre-story questions (inspired by the casting engine in [2]), to help the system understand the user's specific context and themself. For example, the user needs to answer, "Are you feeling WOOO or BOOO towards finals?"
(3) **Story Prompts and Contribution**: The user submits a picture and a text description. Some users struggle to provide in-depth descriptions about the current moment. The dynamically generated story prompts follow up on the user's specific context and scaffold the user to share their experience and feelings. For example, if the user is feeling "BOOO" at a library, one of the prompts would be, "We are so sorry to hear that! Why does studying at the library make you feel 'BOOO' toward finals?"

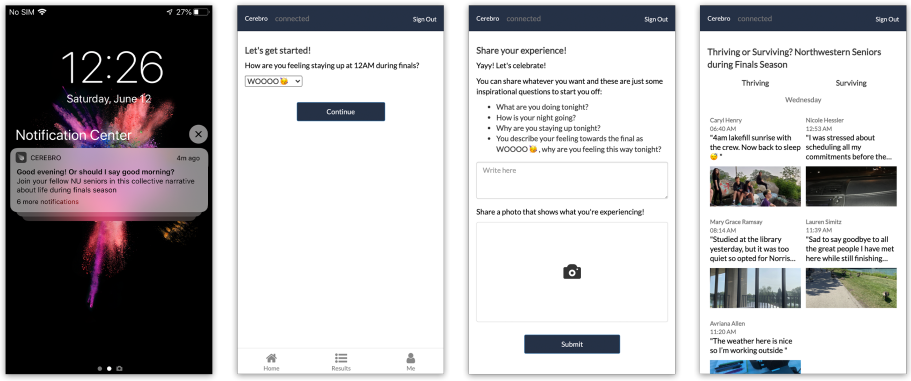

Fig. 1. Screenshots of the Collective Narrative app that show the four key interfaces, including notification, pre-story questions, story prompts and contribution, and the narrative artifact.

(4) **Narrative Artifact**: After contributing, the user sees a collective narrative artifact, which organizes all current contributions from the community using a narrative structure. The system uses its knowledge of the user's context to categorize their contribution into a certain section. For example, the "senior finals" artifact features a "side-by-side timelines" structure, which categorizes and organizes content based on the user's indicated emotional state (whether they are feeling WOOO or BOOO), and the time of contribution.

4 PILOT DEPLOYMENT STUDY

In our user study, we aim to understand if Collective Narrative can bring senior students at Northwestern University closer by sharing context-specific experiences. Specifically, we aim to address the following research questions: *How can context-aware prompting and context-specific questions increase users' awareness of and confidence to share their current moments?* And *how can reading an organized community narrative strengthen users' feeling of togetherness with their community over a shared theme?*

We recruited through word-of-mouth 13 seniors to participate in a study about their lives during their final week of college. Participants answered a pre-study survey with multiple-choice and short-answer questions, which helped us understand the landscape of how seniors students connect with one another. Then, the seniors interacted with CN over four days. In the post-study survey, they described their experience using the app and answered a set of questions similar to pre-study to measure changes in their relationship with the senior class community. In addition, we interviewed five most active participants, where they walked through the narrative artifact and shared in-depth insights on how CN influenced their actions and feelings. We identified feedback that related to both the motivation to share raw moments in their life and changes in the feeling of togetherness with other community members.

5 RESULTS

After the study, 8 out of 13 participants rated their togetherness with other seniors higher, demonstrating that CN has helped participants to connect more closely with the broader senior community. A participant compared the togetherness they felt on CN with an in-person party with some seniors, *"it was sweet because everyone was chatting and catching up despite not really being friends! CN gives me that same vibe"* (P1).

Participants shared aspects of their lives that they wouldn't normally post on other social media, because CN's context-aware prompting increased their confidence and awareness to share the current moment. One participant was more motivated to post about mundane life moments, such as doing homework and shopping, because they felt that their contribution would be valued, *"it's a struggle for me to convince myself that it's worth other people's time and effort to read my stuff, whereas CN...made me feel like someone (even if it was bot) cared about what I was doing"* (P2). Participants also enjoyed how CN's context-specific prompts allowed them to be more aware of their current moment. One participant described posting on CN as, *"little snippets of facilitated reflection [that] encouraged and captured how I was feeling both in the moment and as a senior...and to come up with texts and photos that represent that"* (P3).

Besides easing the sharing process, the spontaneity and authenticity of posts on CN helped the audience feel connected with other seniors. *"I didn't feel particularly constricted [to the theme],"* one participant said, *"there is a common thread of seniors graduating, which give me some ideas, and seeing other [non-graduation specific] posts gave me more ideas"* (P4). Another participant felt that surfacing these spontaneous moments *"humanises the experience, [and allows me to] know what others are feeling similarly about the end, combining the stress of finals with last goodbyes"* (P3).

Furthermore, we found that the narrative structure used in the study, "side-by-side timelines," allowed participants to easily identify commonalities between individual posts, which allows users to recognize the cohesiveness and diverse perspectives within the narrative. P5 commented: *"The narrative makes me feel connected to the senior community because we are all going through similar experiences (finals week) but all persevering in various ways."* When sharing their feelings about the artifact, many participants referred to the whole narrative rather than individual posts. For example, some started to extract patterns, *"People probably had a good week given the amount of posts on the thriving side far outnumber those on the surviving side"* (P4), and some picked up the overall tone, *"I like the casual tone of CN and the joking and cheerful tone people use. It feels very NU"* (P2).

While most participants enjoyed the process of building a collective narrative together during the study, a few of them indicated that they did not feel a change in their connection with the broader senior community because CN did not support subsequent interactions with other users after seeing the narrative. For example, one participant said, *"I don't feel like it really connected us because we couldn't follow or interact with people"* (P6). We also observed a demand for further interaction in the narrative artifact, which currently does not have commenting or reacting features: one participant echoed another participant's post in their own post, saying *"I'm also partaking in some Mod [pizza]!"*

6 DISCUSSION AND FUTURE WORK

The study results demonstrate that CN provides an innovative, context-aware approach to connect communities through contributing to a collective story about a mutual theme. CN identifies users in contexts relevant to the shared theme, prompts them to self-report their specific contexts and share their post, and then automatically organizes the narrative using the system's knowledge of the users' specific context. Through context-aware prompting and an organized narrative artifact, CN especially benefits community members who are physically distant, because it may recreate some of the togetherness they could easily feel in-person through observation and engagement.

Future evaluations will explore more closely how CN compares to existing or emerging forms of social media across various use cases. While the current use case is designed for NU seniors, it can potentially extend to other communities, although one may need to adjust the theme and the specific questions to cater to a different community. Additionally, we would like to explore the possibility of adding a new layer of interaction, such as commenting or reacting to posts. We also seek to incorporate in the app more accurate ways to identify users' contexts, richer context-based prompts, and improved interfaces based on user-centered design guidelines.

REFERENCES

[1] Elena Agapie and Andres Monroy-Hernandez. 2015. Eventful: Crowdsourcing Local News Reporting. *arXiv preprint arXiv:1507.01300* (2015).

[2] Gabriel Caniglia. 2020. Cast: A Context-Aware Collaborative Storytelling Platform. In *Extended Abstracts of the 2020 CHI Conference on Human Factors in Computing Systems*. 1–7.

[3] Justin Cranshaw, Andrés Monroy-Hernández, and SA Needham. 2016. Journeys & notes: Designing social computing for non-places. In *Proceedings of the 2016 CHI Conference on Human Factors in Computing Systems*. 4722–4733.

[4] Joy Kim and Andres Monroy-Hernandez. 2016. Storia: Summarizing social media content based on narrative theory using crowdsourcing. In *Proceedings of the 19th ACM Conference on Computer-Supported Cooperative Work & Social Computing*. 1018–1027.

[5] Ryan Louie, Kapil Garg, Jennie Werner, Allison Sun, Darren Gergle, and Haoqi Zhang. 2021. Opportunistic Collective Experiences: Identifying Shared Situations and Structuring Shared Activities at Distance. *Proceedings of the ACM on Human-Computer Interaction* 4, CSCW3 (2021), 1–32.

[6] Sarah McRoberts, Haiwei Ma, Andrew Hall, and Svetlana Yarosh. 2017. Share first, save later: Performance of self through Snapchat stories. In *Proceedings of the 2017 CHI conference on human factors in computing systems*. 6902–6911.

[7] Mor Naaman, Jeffrey Boase, and Chih-Hui Lai. 2010. Is it really about me? Message content in social awareness streams. In *Proceedings of the 2010 ACM conference on Computer supported cooperative work*. 189–192.