

MAPPING INSTABILITY: Building an Intelligent Community Agent Platform for Understanding the Impact of Large Scale Crisis on Small Town Communities

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Problem Statement: Collecting rich, multifaceted data from the community is vital for understanding and responding to the manifestation, depth, and breadth of a crisis impact on the built environment and small town communities. Online data collection methods such as surveys and questionnaires often do not sustain dialogue that encourages people to provide deeper insights into their issues and requirements, resulting in ineffective data collection for critical decision-making.

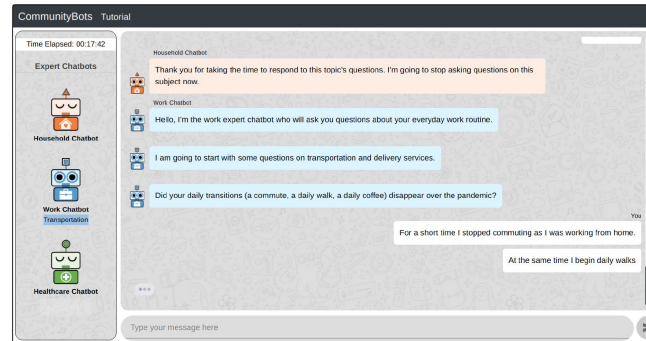
Method:

We designed, developed, and evaluated a novel multi-agent chatbot platform, CommunityBots, to collect rich data across various domains during major societal crises. We used CommunityBots to gather data about people's life during COVID-19. To maintain a natural conversational flow, we developed a Conversation and Topic Management (CTM) mechanism that can detect topic switching between different topics and chatbot switching between two chatbots.

Published Work:

- [1] Jiang, Z., Rashik, M., Panchal, K., Jasim, M., Sarvghad, A., Riahi, P., Dewitt, E., Thurber, F. and Mahyar, N., 2022. CommunityBots: Creating and Evaluating A Multi-Agent Chatbot Platform for Public Input Elicitation. Proceedings of the ACM on Human-Computer Interaction (CSCW), 30 pages (To appear).
- [2] Dewitt, E., Jiang, Z., Rashik, M., Panchal, K., Jasim, M., Thurber, F., Quinteros, C., Sarvghad, A., Mahyar, N. and Riahi, P., 2022, Mapping Instability: The Effects of the Pandemic on the Civic Life of a Small Town, AMPS proceeding Series 26.2, ISSN 2398-9467, pp. 170-181, 2022.

Screenshot of CommunityBots - a Multi-Agent Chatbot



Results & FW:

We conducted a between-subject study with 96 participants. CommunityBots participants were significantly more engaged and provided better quality responses compared to the baseline single-agent chatbot participants. We will deploy CommunityBots at Amherst, Holyoke, and Pittsfield. The collected data will help to identifying vulnerable, underserved, and underrepresented groups for allocation of resources and materials in small communities.