VisOHC: Designing Visual Analytics for Online Health Communities

Raymond Ferrell

Authors

- Bum Chul Kwon is with University of Konstanz
- Sung-Hee Kim is with University of British Columbia
- Jaegul Choo, Korea University.
- Jina Huh is with Michigan State University
- Sukwon Lee with Purdue University
- Ji Soo Yi are with Purdue University

Abstract

- Online Health Communities OHCs
  - Allow patients to share their experiences
  - Allows administrators to monitor patients
  - Allows patients to receive faster help in emergencies
- The Problem
  - There are many different conversation threads
    - Making it difficult for administrators to organize the information
    - Decreasing productivity

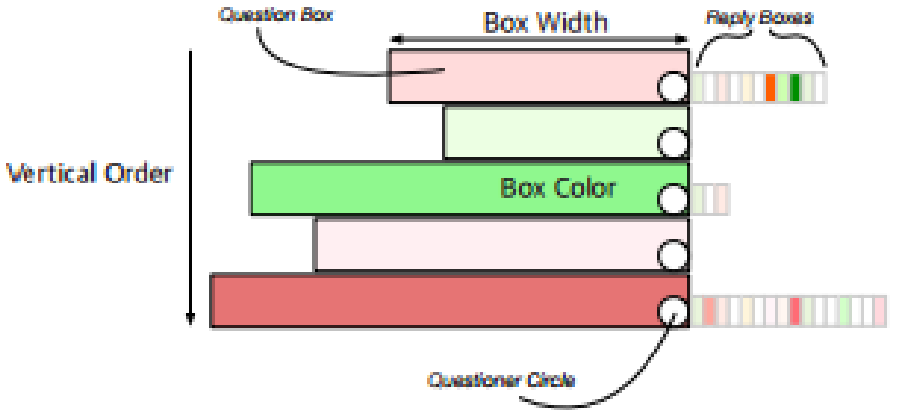
Design Study

- The researchers listed the domain goals of OHC admins and created tasks to achieve these goals
- The researchers created a system called VisOHC
  - Visualizes individual OHC conversation threads as individual collapsed blocks
  - The blocks can be expanded to show other patients that replied to the thread and see the latest responses
  - Improved the system for replying to patients making it more easy to interpret

User Interface Design

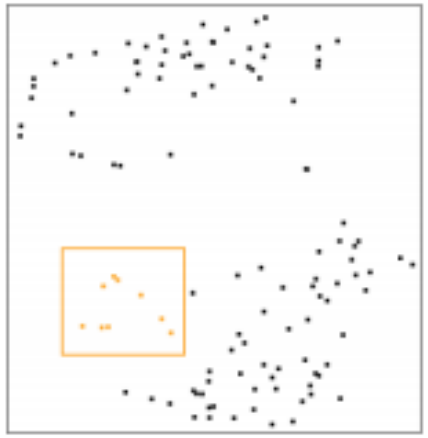
- Conversations are colored based on their context
  - Red or green conversations were patient's expressing their opinion
  - White or yellow was used for patients describing how they were feeling
  - Personal conversations were about patients discussing their experience at their hospital
- The conversations were designed based on how popular they were in the forums
  - The replies are based on smaller blocks in the back

Fig. 3: Color scales for Sentiment, Anomaly, and Personal Scores.



Designing Analytics for the Admins

- A scatter plot was used to show how conversations on the platform were related to one another
  - The cosine between conversations represented their popularity on the forums
  - The Y axis represented the time the first message was posted for that thread
  - The X axis represented how many messages were posted on that thread
- The histogram showed messaging statistics



(a) Similarity View shows cosine distances between threads.

(b) Histogram View shows the distribution of measures of discussion threads.

Results

- The software received positive responses from users and administrators
- The analysis revealed habits of users that were not noticed before, which allowed even better UX development
- An API was attached to the service to allow other data analytical experts to study the researcher’s methods

In Summary

- Creating a welcoming environment for patients is one of the best ways to ensure their safe recovery
- Using visualization of information the researchers improved these patients lives by
  - Allowing them to heal together and share their pain and progress
  - Giving administrators more power when addressing a patient's problem