Thesis Project Portfolio

DARA: Development of a Chatbot Support System for an Anxiety Reduction Digital Intervention

(Technical Report)

Analyzing and Implementing Codesign Benefits and Trading Zone Challenges to Conversational Agent Feasibility Study

(STS Research Paper)

An Undergraduate Thesis

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Bachelor of Science, School of Engineering

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My thesis focuses on analyzing the efforts being done in my capstone project. Specifically, myself and a team spent the year working with the MindTrails team, created through the Program for Anxiety, Cognition, and Treatment (PACT) Lab in the Psychology department. MindTrails is an existing UVa digital program to reduce anxiety through a cognitive bias intervention method, and our job in the project was to create and assess a virtual conversational agent that replaces a human coach during a session.

The technical and STS theses play hand in hand as I start by explaining what is being done in my capstone research project in the technical thesis. The STS portion follows by using my experiences with MindTrails as a case study assessing collaboration methods between my capstone team of engineers and the psychologists managing MindTrails. The frameworks and tools used for assessment include codesign and trading zones. Trading zones are areas in which there are problems with communication, where the miscommunication can be classified into one of four trading zone quadrants. The codesign toolkit comes into play to show how positive codesign efforts can have a positive impact in overcoming the trading zones that may exist.

In the capstone project with Mindtrails, we noticed that as time went on, the trading zones/issues began to become more detrimental to the advancements in our project. The main reason behind this in the end was that our problems began to snowball since we were not considering improvements at the moment, so they began to have worse impacts. Reflecting back on our progress, I wish we were active in using lessons learned from the codesign framework to pull the issue from its root. However, the actions we took in terms of trying to implement positive codesign efforts through research and existing casework immensely helped us bounce back from issues.

Through the course of the project, we learned many valuable lessons not only in the technical work being done, but also in how to collaborate effectively with a team, especially with differing opinions and feedback. Trading zones may initially hinder the progress being done in work, but they provide a learning curve. One positive outcome of the collaboration experience and the resulting trading zones described by Collins, Evans, and Gorman include that they “show that there is not just one best way of organizing interdisciplinary collaborations and that, even within the same collaboration, different relationships will develop at different times. Secondly, and perhaps even more importantly, thinking about trading zones as places where cultures meet, languages are learned and tacit knowledge shared, emphasizes the difficult and time-consuming nature of the work” (Collins et al., 2007). This quote does a great job at explaining how understanding the type of problem at hand can be more important than finding a solution, which is a huge takeaway that I will continue to consider when working with any team.