

Introduction

Victor the Scrabble-playing Gamebot is an embodied conversational agent that receives text-based input. Victor has the ability to express a range of emotions verbally, using his speech capabilities, and non-verbally, using his graphical face and a system of dramatic expression. Most interactions are in a question-answer format, with Victor unable to carry on a conversation. The aim of my project was to make Victor more interactive and engaging. The bulk of my project consisted of creating a system for Victor to actually hold a conversation with a user. In addition, I developed a system for Victor to respond to users based on how much they know about the conversation topic.

Conversations

The existing question-answer format served as the foundation for the new conversation system. Although it allowed Victor to respond to any number of user inputs, once a response was given the conversation was effectively ended. With the new conversation system, this limitation no longer exists. Victor is capable of continuing a conversation, and not just for yes or no responses. Conversations will follow a tree structure, where the conversation branches off in different directions depending on the user's responses.

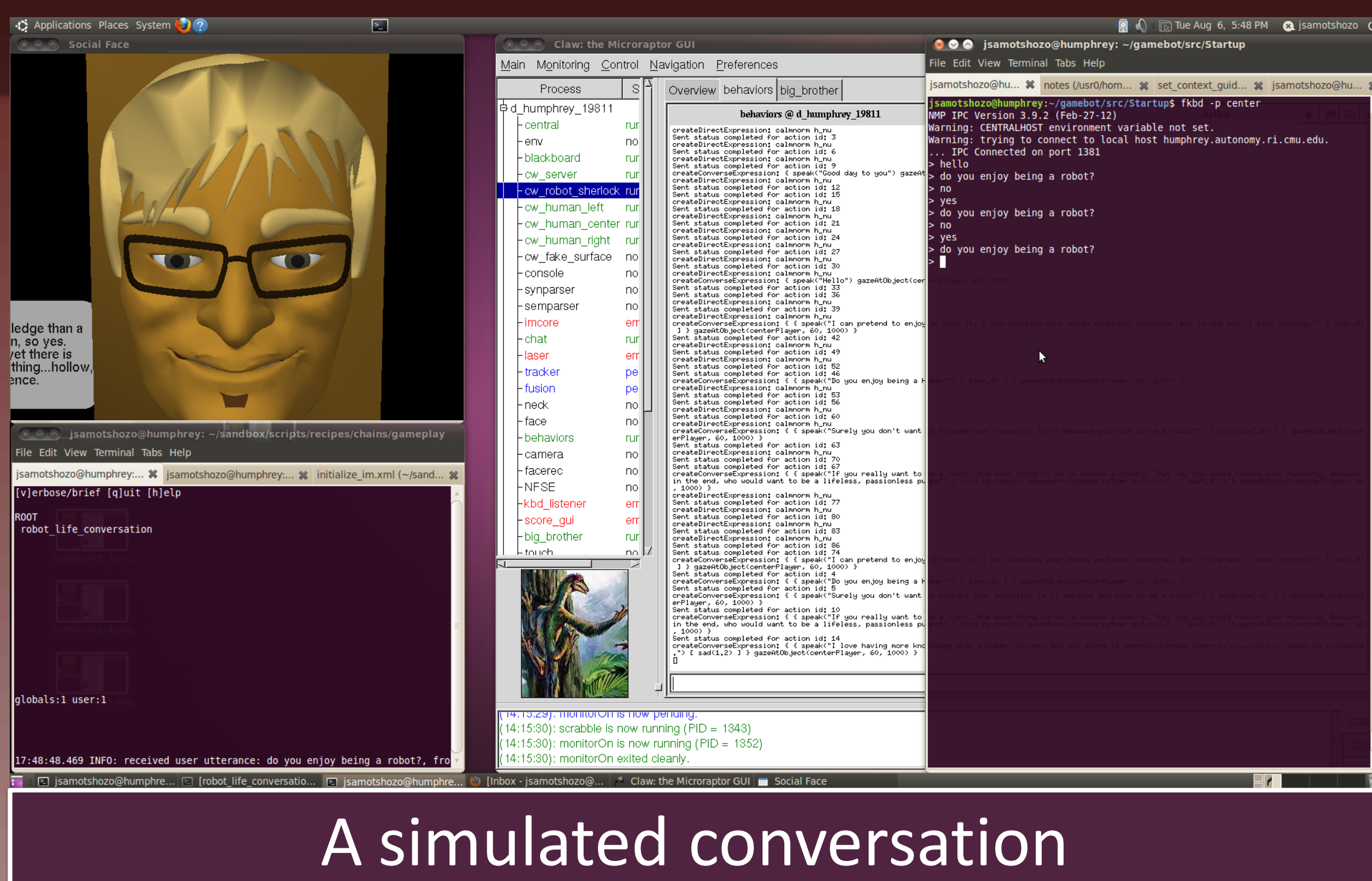


Victor the Gamebot

Context-based responses

The context-based response system allows more nuance in Victor's responses. This system allows his responses to vary based on a user's inferred level of knowledge about a subject. For example, if Victor just described a topic X to user A and user A asks about the same topic again, Victor will respond differently, because the user has a greater knowledge base for the topic. However, if user B was also present during Victor's explanation to user A, user B's knowledge base for topic X will also have increased, though slightly less than that of user A. This is because they may not have been paying full attention to the explanation, as they were not the focus of the conversation. There are currently four different levels of knowledge about a topic used for the context-based response. Level 0: as the 0 implies, this is when a user has no knowledge about a topic.

Level 1: this level is reached when a user was present for the explanation but was not the focus. Level 2: this level is reached when a user received a direct explanation about a topic from Victor, making them the focus of the conversation. Level 3 is when a user applied the knowledge of a topic to complete an action. It is only really applicable to queries related to Scrabble. For example, if a user asks about how to end their move during a game of Scrabble, their knowledge level will be raised to 2 after Victor gives an explanation. If they then proceed to end their move, their level will be further raised to 3.



A simulated conversation

Conclusion

Victor's expanded conversation skills coupled with his ability to personalize conversations should lead to more engaging interactions. Interaction times should also increase and more people will be enticed to sit down and play a game of Scrabble with Victor. In the future, a persistent memory of past conversations will be implemented using an underlying system already in place. He will be able to recall past conversations and other basic information about a user, such as their name, to further enhance conversations and improve the quality of interactions.