# Project Sketch for a Masters Thesis

## Evaluating Politeness in Conversational Human-Computer Interaction

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Gummersbach, 23. April 2024

**Abstract**

When interacting with voice assistants and large language models, it is unclear whether using polite formulations is productive or problematic. However if conversational interactions are used for entertainment purposes like video games, treating the computer like a person could serve the direct purpose of immersing the user into the game world. During this project a prototype for a video game, that allows for free-form input during dialogues and reacts based on the politeness of the player, will be created. The goal is to use this prototype to test how big of an influence these methods have on the players immersion.

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# Inhaltsverzeichnis

# 1 Context

With the rise of large language models like ChatGPT and voice assistants like Siri and Alexa, users start to communicate with various systems in a more open way. They can voice commands and questions to their assistant in anything from speaking a few keywords like „Alexa, Timer 5 Minutes“ to using elaborate sentences like „Alexa, please set a timer for 5 minutes“.

While it is unclear whether politeness in interaction with voice assistants has positive or negative consequences, it is potentially beneficial in a different context. Contexts that serve primarily as entertainment, like video games, rarely utilize free-form conversational inputs like with voice assistants. However especially in video games, speaking to NPCs (Non Player Characters) does not serve an immediate purpose like a command to an assistant. Instead the purpose is to simulate normal human-human interactions, which creates a different dynamic between user and computer.

In these cases being polite and treating the computer like a human being is no longer a tedious extension of a short command, but instead a willing participation in the world that is being presented. Most games handle dialogue with a more restrictive dialogue-tree giving the player a list of things they can say, turning the players attention more towards the content and less towards the tone of each option. By giving players a method to speak directly to characters as they would to voicebots, they receive more control over what exactly they say and how they say it, thus turning the player from a spectator of the conversation into an active participant.

# 2 Goals

This project aims to find out whether free-form dialogue input and a reaction to the players politeness has an impact on their immersion in a video game. For this purpose a functional prototype for a game with these features will be developed during this project.

# 3 Work Packages

The work in this project is separated into four main tasks. In preparation for the rest of this project separate levels of politeness will be defined. After which a prototype will be developed, the writing for which will happen in parallel to the preparation and early stages of development. Finally the prototype will be used in several user tests which will be supplemented with a questionnaire to analyze the influence of deliberate politeness on immersion.

## 3.1 Preparation

The preparation for this project includes gaining a concrete understanding of polite speech and to create a suitable scale of politeness. This will define how many distinct levels of politeness the prototype should differentiate and react to, as well as what separates these

levels. The Cornell Conversational Analysis Toolkit (ConvoKit) [Cha+20] will be the main tool to detect politeness for this project. Part of these preparations is setting up a pipeline to use ConvoKit in the desired context and potentially solving compatibility issues.

## 3.2 Prototype Development

The development of the prototype will happen in three distinct steps. The first step will be a simple text-based proof of concept in python. This will help find out how to best sort potential responses and to implement a method to evaluate and react to the politeness of the players input. The rest of the prototype will be developed in the Unity game engine.

The second part of the prototype development will be to implement the core mechanics in Unity. This includes setting up the basis for the dialogue trees and their interface, as well as integrate the politeness evaluation into Unity. The basic controls, like moving and looking around and interacting with the game, will also be implemented during this step.

The last part will happen once the previous step and task 3.3 are sufficiently completed. This will be to add the characters and necessary environments to the prototype and setup the dialogues written in task 3.3.

## 3.3 Prototype Writing

The story and dialogues for the prototype will be written in parallel to the first and most of the second task. First will be a general outline for scope, setting and plot of the prototype. Part of this process will be getting a grasp of how long the user tests should be and what their tasks during the tests will be.

After the outline is set this task revolves around detailing the setting for the prototype and writing the keyword-based dialogue trees needed to set and complete the tasks for the user tests. All conversation partners within the prototype will get several keywords they will respond to and multiple alternatives per response that will later be selected based on the players politeness.

## 3.4 Immersion Testing

When the prototype is complete, it will be used in multiple user tests over the span of one month which will each be coupled with a questionnaire. The questionnaire will be prepared before the testing starts and will potentially be based on The Game Experience Questionnaire [IDP13] from the Eindhoven University of Technology.

During the test each subject will be given a set of tasks to complete within the prototype and after completing the tasks they will be asked to fill out the questionnaire. If the subject agrees to this, the gameplay should be recorded for further analysis.

After the testing period the answers from the questionnaires and potential recordings will be used to analyze whether the free-form dialogue input and reactions to politeness have an influence on the players immersion in the game world.

# 4 Preliminary Timeline

The duration for the full project, including finishing the thesis paper, will be 6 months. The estimated time span and order for the work packages in section 3 is as follows.

| | | | |
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| Preparation | | 2 weeks | |
| | Define Scale of Politeness | 1 week | |
| | Adapt ConvoKit | 1 week | |
| Prototype Writing | | 4 weeks | (parallel) |
| | Create Outline | 1 week | |
| | Write Script | 3 weeks | |
| Prototype Development | | 8 weeks | |
| | Proof of Concept | 1 week | |
| | Implement Core Mechanics | 4 weeks | |
| | Finalize Prototype | 3 weeks | |
| Immersion Testing | | 7 weeks | |
| | Prepare Questionnaire | 1 week | |
| | Conduct User Tests | 4 weeks | |
| | Analyse Responses | 2 weeks | |
| Total | | 17 weeks | |

# References

[IDP13] Wijnand A IJsselsteijn, Yvonne AW De Kort und Karolien Poels. „The game experience questionnaire“. In: (2013).

[Cha+20] Jonathan P. Chang u. a. *ConvoKit: A Toolkit for the Analysis of Conversations*. Last accessed 23 April 2024. 2020. URL: https://www.cs.cornell.edu/~cristian/ConvoKit_Demo_Paper_files/convokit-demo-paper.pdf.