Natural Language Interaction in Games

Digital Media Lab

Overview

April 8th 2026

Universität Bremen
digital media lab
TZI

Lecturer and Tutors

Prof. Dr. Rainer Malaka
malaka@tzi.de

Laura Spillner
laura.spillner@uni-bremen.de

Leon Dratzidis
dratzidi@uni-bremen.de

Johanna Rockstroh
rockstro@uni-bremen.de

Leandra Thiele
le_th@uni-bremen.de

You can find us on the 6th floor of the MZH
or check our website: dm.tzi.de

The **video game industry** is the biggest entertainment industry, surpassing *film* and *music* in terms of revenue and audience size.

Popularity of video games has brought a lot of attention to this domain (both academia and industry)

Focus is on making games:

- More engaging
- More entertaining
- More natural and realistic
- More intuitive
- More immersive

Why do players enjoy multiplayer games?

- Communication
- Strategizing
- Camaraderie
- Team Spirit
- Collaborative Aspects

Social Interaction

Social Interaction in Single-player Games

- Communication with NPCs (companions, villagers, etc.)
- Indirect social interaction with other players (asynchronous sharing) using messaging systems or scoreboards

Issues are:

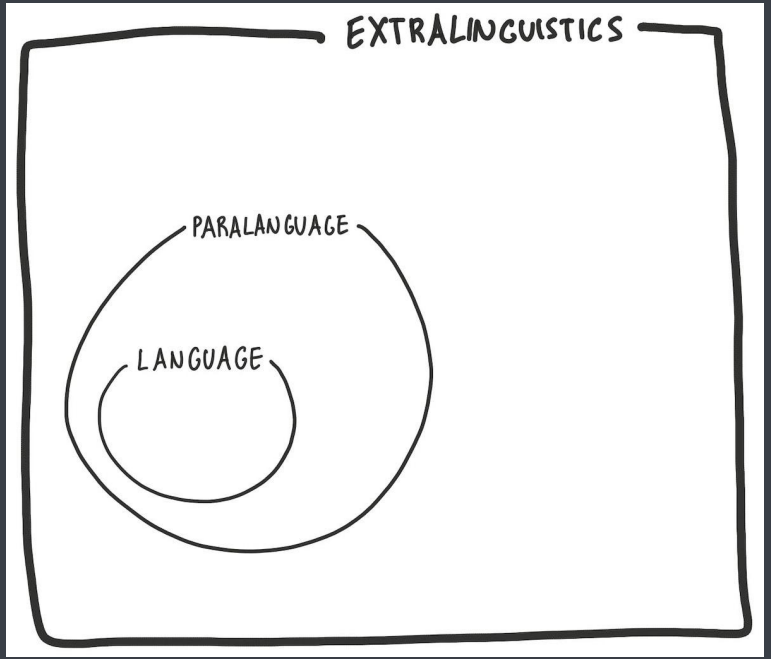
- Highly limited interactions
- Using dialog boxes
- Everything is pre-scripted
- Lacks the dynamic and responsive nature of real-time interactions

Natural Language Interaction In Video Games

- Social connection
- Higher engagement
- Feeling of belonging, part of a team (in collaborative scenarios)
- Enhanced immersion

Communication with natural language

- Linguistic features
- Paralinguistic features
- Extralinguistic features



Linguistic features

- The verbal content: words, grammar, sentence structure
- Conveys propositional meaning, logical structure
- What is being said

Paralinguistic features

- Vocal features that carry meaning beyond words
  - Prosody (intonation, pitch, loudness, rhythm)
  - Voice quality (breathy, tense, nasal, etc.)
  - Speech rate and pauses (e.g., hesitations indicating uncertainty)
  - Emotion detection from vocal tone
- How something is said vocally

Extralinguistic features

- Bodily or visual behavior outside speech itself
  - Facial expressions, gaze, gestures, posture, proxemics
- How something is said physically

Why this Project?

- The rise of LLMs and GenAI is transforming game development
  - New ways to increase player engagement and interaction
  - NPCs capable of dynamic, unscripted communication
- Discuss the potential and limitations of GenAI-based NPCs
  - Impact on player experience
  - Social and ethical concerns

https://www.youtube.com/watch?v=2exStfzIZAg

https://www.youtube.com/watch?v=l2jIhh9jT7M&t

https://www.youtube.com/watch?v=fk5D4N1ghqE&t

13

Intern

Colleague

Boss

What you will be working on?

- Build a game prototype as a framework for NPC interaction research
- Integrate a system that allows players to talk to NPCs using natural language
- Design the system to be modular and extensible, allowing different dialogue or AI systems to be integrated
- Conduct a study to evaluate player experience and interaction quality
- Write it up as a paper

Game Design Opportunities

- **Game Genre:** First-Person Shooters, Role-Playing Games, Racing, Strategy, Survivor, Simulation, Serious Games, Puzzle, Stealth
- **Platform:** PC, VR, Mobile, etc.

Potential platforms to work with:

- Convai: https://convai.com/
- InWorld: https://inworld.ai/

Expectations & Requirements

Should complete project preparation course:

- Entertainment Computing II

We anticipate 6-10 participants for this project

- Activities on the project on a daily basis (30 credit point)
- In-person attendance (project room in MZH)