

WASP Project Course 2023

Understanding LLM chat agents for Game NPC

Background

ChatGPT-like models have taken the AI world by storm, and it would not be an overstatement to say that their impact on the digital world has been revolutionary. Making more believable NPCs in games is difficult and of great interest since it would improve the gaming experience without using too much resources. One potential approach to the automatization of NPC behavior is using large language models (LLMs). This project will explore how generative models based on LLMs can drive software agents to simulate human dialogs in games. However, it is still unknown if these models can generate interesting dialogs for gameplay. A core research question is to evaluate the human perception of the quality of dialog and behavior development over time. Another challenge is that leading LLMs are expensive and slow to use in an interactive setting. Can combinations of fine-tuned and smaller models that can run locally also provide good performance? To answer these questions, the project should implement different models and evaluate the results.

Participants

Industrial partner: Electronic Arts

Industrial supervisor: Konrad Tollmar, ktollmar@ea.com

Academic supervisor: Anna Jonsson, aj@cs.umu.se, Umeå University

Coordinating WARA representative: Konrad Tollmar, WARA Media and Language

Suggested WASP PhD students: NA

Challenges to investigate

- What about making more believable NPCs using LLM chat agents?
- Can LLM chat agents generate interesting dialogs for gameplay?
- How to make user test on LLM Chat models? What questions do we need to ask during user tests to get the information we want?
- How to achieve a small interactive model that can be run locally?

Resources

All code and models needed for this project is open source

To run a OpenAI model, an account and API key are needed

To run a local model, a GPU with +32GB or Mac with +M1, is recommended

Deliverables

- Proof of concept (a working, small generative model for NPCs)
- Evaluation scheme (for evaluating an NPC's behavior, how believable is it?)
- Report that addresses background, research questions, method, results, and discussion
- A presentation that summarizes above

References

Project presentation

[Understanding LLM chat agents for Game NPC](#)

Papers

Generative Agents: Interactive Simulacra of Human Behavior

<https://arxiv.org/abs/2304.03442>

LaMDA: Language Models for Dialog Applications

<https://arxiv.org/abs/2201.08239>

Towards Understanding and Mitigating Social Biases in Language Models

<https://arxiv.org/abs/2106.13219>

Toxicity in ChatGPT: Analyzing Persona-assigned Language Models

<https://arxiv.org/abs/2304.05335>

Models and code

<https://python.langchain.com/en/latest/modules/agents.html>

https://github.com/tatsu-lab/stanford_alpaca

<https://huggingface.co/spaces/hwchase17/chat-langchain>

Keywords

NPC, gaming, human-computer interaction, generative models, small language models