

Exploring the viability of Conversational AI for Non- Playable Characters: A comprehensive survey

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I am going to talk about this paper, “Exploring the viability of
Conversational AI for Non-Playable Characters: A comprehensive survey”

Introduction

The viability of using Conversational AI for NPCs

The aim of this paper is to explore the viability of using Conversational AI for Non-Playable Characters (NPCs) in games to enhance and refine the conversing experience surrounding NPCs. This paper provides an overview of AI in the gaming sphere, the evolution of NPCs, and the components of Conversational AI. Also, the paper discusses the potential benefits and challenges of implementing Conversational AI for NPCs and suggests their future works.

Background

AI

AI as Actor

AI as Designer

AI as Producer

Artificial intelligence (AI) is a wide range of computer science that creates smart machines capable of executing tasks. These tasks usually require human intelligence. AI is used in some domain like market simulators, economic planners and logic systems. In the gaming domain, AI is used for NPCs to simulate human-like behavior, and decision-making. Game AI has three roles: AI as Actor, AI as Designer, and AI as Producer. AI as Actor is NPCs. AI as Designer is procedural content generation. AI as Producer is scaling game production pipeline, enhancing strong game interpolations, and so on. The gaming industry has been using AI for several decades to create more immersive and engaging games. Pacman, Alien: Isolation, GOMOKU, Settlers of Catan, etc..

Background

NPCs

Following script → Reduce immersion

Persuasive → Increase immersion

NPCs have been an integral part of games. They make games more interesting and increase player immersion. They are used to interact with the player to further the plot or initiate side stories. NPCs relied on the script so the NPCs were not dynamic in nature and couldn't react to unpredictable player behavior. As a result, it reduced player engagement and immersion in the gameplay. However, it has persuasive, then player immersion is increased. The more persuasive and familiar an environment makes itself to be, the easier it is to be completely infatuated and immersed with it.

Conversational AI

NLU	DMS	NLG
	Switch Statement	
	Finite State Machines	T5 Google
Deep Learning Model	Machine Learning	DLG Net
	Deep Learning	Persona
	Reinforcement Learning	

Conversational AI is a subfield of AI that focuses on creating machines. It can understand and respond to human language. Conversational AI is composed of Natural Language Understanding, Dialogue Management System, and Natural Language Generation. The NLU is a branch of AI and a subset of Natural Language Processing that uses computer processing to understand the user's input. Generally, deep learning models are applied for NLU. The DMS is responsible for mapping inputs to appropriate outputs in a way that directs the agent in determining its own actions. It uses methods like switch statement, finite state machines, machine learning, deep learning, and reinforcement learning. However, switch statement makes conversation robotic. Finite state machines make conversation redundant. Traditional machine learning is not useful for DMS. Deep learning makes conversation flat. Therefore, reinforcement learning is the best of the 5 methods. NLG takes the identified context and dialogue history and formulates a natural language sentence. Some of the popular NLG engines are T5 Google, DLG Net, and Persona.

Result

Conversational AI can connect with NPC

As a result, Natural Language Processing and Natural Language Understanding could help the NPCs get intelligent, context-oriented responses. This would allow players to explore side-plots and the storyline in the way they fit. Then, it greatly increases player immersion. Therefore, they consider that conversational AI would be a viable technology to enhance NPC interactions and propel player immersion to new heights.

Conclusion and Future work

Conclusion:

Using Conversational AI can make NPCs interaction better

Future work:

Integrate Conversational AI for NPCs

This highlights how NPCs have become an integral component for games today, yet somehow lack immersive conversing capabilities. They concluded that with proper integration of different conversational AI models for NPCs, the conventional and robotic dialogues could be transformed into smart, context-reliant conversations. Also, this would greatly improve player immersion. In future work, they plan to practically integrate conversational AI in a game to see to what scale they can enhance simple choice-based NPC interactions. Taking this research survey as a foundation, they look to address several aspects discussed in the paper and offer a fully functional, conversational AI based framework to re-define conversing with NPCs.

Thank you for listening!