The Future of Storytelling: AI-Powered Storytelling with NAO

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Abstract:

This research project explores the feasibility of integrating generative AI with the NAO humanoid robot to create a virtual storyteller designed for caregivers, educators, and professionals in assistive and therapeutic fields. Studies indicate that individuals with Autism Spectrum Disorder (ASD) often find robots more approachable and predictable than human partners, making robotic interaction a valuable tool for fostering communication and social skills. By leveraging the NAO robot's built-in audio functionality as the primary mode of interaction, this project examines how robotics and generative AI can enhance interactive storytelling.

The system implementation will utilize Google Dialogflow CX to manage conversational flow and process user input, working in conjunction with a Conversational Retrieval-Augmented Generation (CoRAG) model. CoRAG enhances storytelling continuity by adapting to user choices and thematic preferences over multiple interactions. Instead of generating isolated responses, CoRAG enables the storyteller to retain user preferences and past interactions, ensuring context-aware, progressively enriching narratives. The storyteller will process verbal input—such as user choices, questions, and themes—to generate personalized stories set in engaging fictional worlds, including space adventures and fantasy realms.

Caregivers, educators, and professionals working with ASD may benefit from NAO-integrated storytelling as a tool for engagement and guided learning. By leveraging CoRAG, we aim to develop an accessible and contextually adaptive storytelling platform that fosters meaningful interaction within caregiver-supported environments. Looking ahead, we envision a future where the NAO robot's mechanical expressiveness further enhances the storytelling experience through emotionally expressive movements, deepening engagement and immersion.