Calvin Vandor
Jacob Robinette
Professor Hao Loi
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Research

Core Research

[(PDF) A systematic review of artificial intelligence technologies used for story writing]
Fang, Xiaoxuan & Ng, Davy Tsz Kit & Leung, Jac & Chu, Samuel. (2023). A systematic review of artificial intelligence technologies used for story writing. Education and Information Technologies. 10.1007/s10639-023-11741-5.

- Validates the Use of AI for Interactive Storytelling
    - Confirms that AI-driven storytelling enhances engagement and boosts creativity.
    - Supports the CoRAG (Conversational Retrieval-Augmented Generation) approach in adaptive storytelling.
- Highlights Key Challenges in AI Story Generation
    - Our project should address coherence, emotional depth, and user engagement when using AI in NAO.
    - Suggests fine-tuning generative AI models to ensure better story relevance.
- Reinforces the Role of Human-AI Collaboration
    - AI assists users in creating narratives rather than fully automating storytelling.
    - NAO's role as a storytelling companion aligns with AI's co-creative approach in education.

[Integrating GPT-Based AI into Virtual Patients to Facilitate Communication Training Among Medical First Responders: Usability Study of Mixed Reality Simulation]
Gutiérrez Maquilón R, Uhl J, Schrom-Feiertag H, Tscheligi M. Integrating GPT-Based AI into Virtual Patients to Facilitate Communication Training Among Medical First Responders: Usability Study of Mixed Reality Simulation. JMIR Form Res. 2024 Dec 11;8:e58623. doi: 10.2196/58623. PMID: 39661979; PMCID: PMC11669881.

- Demonstrates GPT-Based AI Can Power Interactive Storytelling

    - This study shows that GPT-based AI can handle real-time verbal interaction.
    - Our project could apply similar AI-driven storytelling techniques to NAO.
- Highlights the Need for Reducing AI Response Latency
    - The 3-second delay was a major usability issue in this study.
    - Our project may need optimized AI processing (e.g., local hosting, caching responses) to ensure real-time storytelling.
- Validates Using AI for Training & Engagement
    - The study confirms AI-driven agents are engaging and useful for education.
    - Our project's Conversational Retrieval-Augmented Generation (CoRAG) approach aligns with this study's prompt engineering techniques.
- Emphasizes the Role of Expressive Speech in AI Narratives
    - Our project may need to explore better TTS models for emotionally engaging storytelling.
    - Similar to this study's stuttering and breathing effects, NAO's physical gestures could enhance storytelling immersion.

[2404.15576] Designing AI-Enabled Games to Support Social-Emotional Learning for Children with Autism Spectrum Disorders

Lyu, Y., An, P., Zhang, H., Katsuragawa, K., & Zhao, J. (2024). Designing AI-Enabled Games to Support Social-Emotional Learning for Children with Autism Spectrum Disorders. arXiv:2404.15576.

- Supports AI-Driven Storytelling for Social Learning
    - The study validates the use of AI-generated narratives to enhance engagement and emotional understanding.
    - Our project can apply similar adaptive storytelling principles for the NAO robot.
- Provides a Framework for Emotional Personalization
    - Demonstrates how fine-tuned AI models (like CoRAG) can improve interactive storytelling.
    - Suggests that our system should adjust storytelling complexity based on user interactions.
- Highlights the Importance of Multimodal Feedback
    - Emphasizes visual and interactive elements as key engagement factors for children with ASD.
    - Our project could benefit from incorporating NAO's expressive movements to enhance immersion.
- Potential for AI + Robotics Integration

    - The study's storytelling model could be adapted for robotic storytelling, helping NAO deliver personalized, real-time narratives.

[2402.00260] Human-mediated Large Language Models for Robotic Intervention in Children with Autism Spectrum Disorders
Mishra, R., Welch, K. C., & Popa, D. O. (2024). Human-mediated Large Language Models for Robotic Intervention in Children with Autism Spectrum Disorders. arXiv:2402.00260.

- Supports the Integration of LLMs with NAO for Interactive Storytelling
    - Shows that LLMs can generate meaningful, real-time dialogue that enhances engagement.
    - Our project's use of Conversational Retrieval-Augmented Generation (CoRAG) aligns well with this study's GPT-2 + BART approach.
- Demonstrates the Feasibility of Human-Mediated AI Systems
    - Like our project, this study allows a human (therapist/educator) to intervene and guide AI-generated content, ensuring appropriateness.
    - Suggests that Dialogflow CX (which our project uses) could play a similar role in managing user interaction.
- Highlights Challenges in Speech Recognition & AI Adaptability
    - The study found that speech recognition in robots (NAO) is not perfect, which is something we may need to address in our project.
    - Our project could improve upon this by fine-tuning speech recognition models or adding user feedback loops.
- Potential Application to Storytelling-Based Therapy
    - While this research focuses on perspective-taking interventions, the same methods could be applied to story-driven therapy.
    - Our project could extend CoRAG to personalize stories based on user interaction and needs, making it useful in therapy and education.

People with Autism Spectrum Disorder Could Interact More Easily with a Robot than with a Human: Reasons and Limits
Dubois-Sage, M., Jacquet, B., Jamet, F., & Baratgin, J. (2024). People with Autism Spectrum Disorder Could Interact More Easily with a Robot than with a Human: Reasons and Limits. Behavioral Sciences, 14(2), 131. https://doi.org/10.3390/bs14020131

- Confirms the Value of AI and Robotics in Interactive Storytelling
    - Supports the use of robotic storytelling as a social engagement tool.
    - Reinforces that NAO's predictable behavior and AI-generated stories may be easier for autistic individuals to follow.
- Validates Use of CoRAG and Generative AI

    - AI-driven adaptive storytelling aligns with the predictability and structured interaction preferences of autistic individuals.
    - CoRAG could help sustain engagement and improve user retention.
- Highlights the Need for Ethical Considerations
    - Our project may need to address concerns about robot dependency.
    - Suggests that training users to transition from robot-based to human interactions is a key design consideration.

Supplemental Research

Here's the Story: Narrative Ability and Executive Function in Autism Spectrum Disorder
Greco, G., Choi, B., Michel, K., & Faja, S. (2022). Here's the Story: Narrative Ability and Executive Function in Autism Spectrum Disorder. Research in Autism Spectrum Disorders, 101, 102092. https://doi.org/10.1016/j.rasd.2022.102092

Can AI tell good stories? Narrative transportation and persuasion with ChatGPT
Chu, H., & Liu, S. (2024). Can AI Tell Good Stories? Narrative Transportation and Persuasion with ChatGPT. Journal of Communication. https://doi.org/10.1093/joc/jqae029

Empowering Education with Intelligent Systems: Exploring LLMs and the NAO Robot for Information Retrieval
Fragakis, N., Trichopoulos, G., & Caridakis, G. (2025). Empowering Education with Intelligent Systems: Exploring LLMs and the NAO Robot for Information Retrieval. Preprints, 202501.2278(v1). https://doi.org/10.20944/preprints202501.2278.v1

Artificial Intelligence in Creative Writing Studies: Threat or Opportunity
Suchy, S. T. (2024). Artificial Intelligence in Creative Writing Studies: Threat or Opportunity. In Creativity in Contemporaneity (pp. 1-15). IntechOpen. https://doi.org/10.5772/intechopen.1008429

A Story of Robots and Autism
A Story of Robots and Autism [Video]. (2024). YouTube. https://www.youtube.com/watch?v=nwJsxLOilcc

Robots teach communication to kids with autism
Robots Teach Communication to Kids with Autism [Video]. (2024). YouTube. https://www.youtube.com/watch?v=lm3vE7YFsGM

https://www.youtube.cgptars - YouTubeom/@gptars
gptars. (n.d.). YouTube Channel. Retrieved February 21, 2025, from https://www.youtube.com/@gptars

https://cloud.google.com/dialogflow/cx/docs
Google Cloud. (n.d.). *Dialogflow CX Documentation*. Google Cloud. Retrieved April 4, 2025, from