CENTER ON Pervasive Personalized Intelligence

Together We Go Farther

PuppetGuide: Tangible Personalized Museum Tour Guides using LLMs

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Problem and Industrial Relevance

- Museums strive to provide an **accessible** and **engaging** learning experience for visitors of all ages and backgrounds. However, there are challenges implementing this at scale.
- Interaction with Large-Language Models (LLMs) and Generative AI is primarily limited to text. **Tangible interfaces for LLMs** provide new opportunities for exploring their role in people's lives, and examine their perspectives about generative AI.

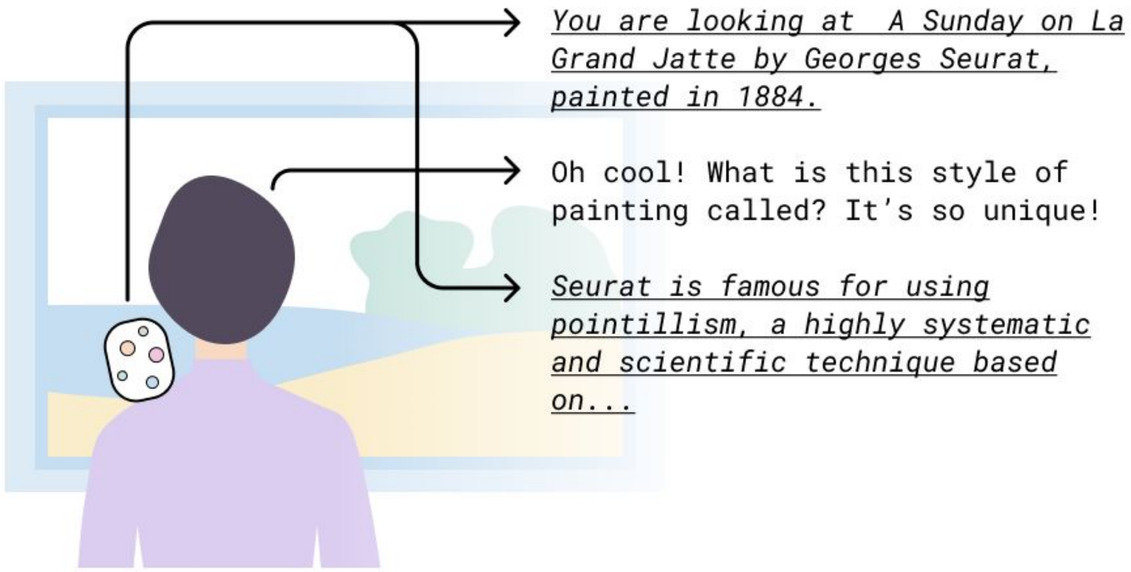
Contributions

In this work,

- We contribute a puppet tour guide system powered by LLMs that can offer personalized experiences to museum visitors, **tailored to their age, educational background, and interests**.
- We explore the design of **tangible user interfaces** for interacting with LLMs and their effect on people's beliefs and acceptance of AI.

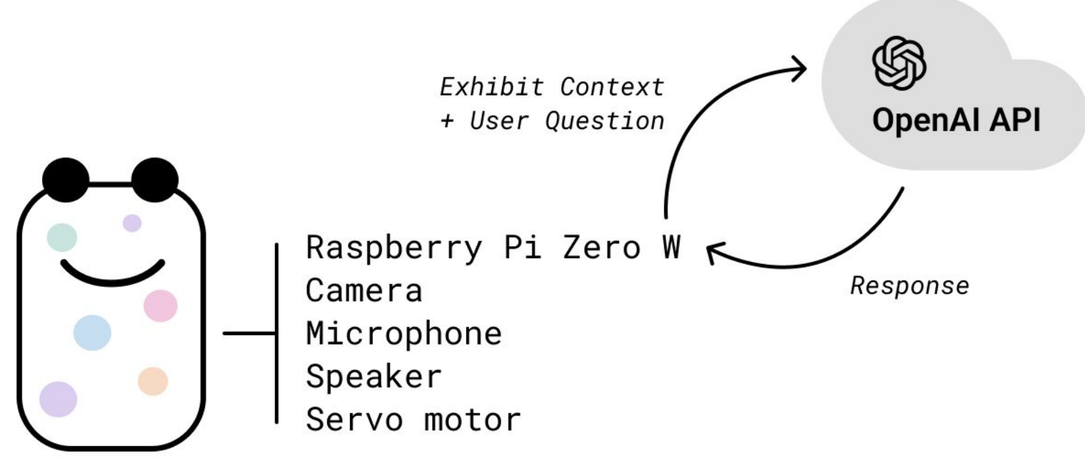
Approach

We developed a **customizable, physical shoulder puppet** that offers an **engaging and accessible** experience to museum visitors.



Implementation

The PuppetGuide uses **computer vision (CV)** to recognize which exhibit is being viewed and communicates its information and viewer's **verbal questions** to ChatGPT (OpenAI). The response is **output as speech**.



Puppet's **movement** provides non-verbal cues for the hands-free interaction with LLMs.

What Follows

- Work with different types of museums to connect our system to their repository of information and identify needs and design requirements.
- Iteratively test and refine the system and its interactions through user studies with diverse ranges of target audiences.
- Conduct design exploration with users centered around tangible interfaces for LLMs to investigate different mappings of chatbot features to physical characteristics.

Executive Summary

Tangible interfaces for LLM chatbots can offer unique interaction opportunities and research questions about **people's usage and perspectives on generative AI**.

In this work, we explore one such application of a tangible LLM in a puppet tour guide for museums. PuppetGuide is a **portable shoulder puppet** that enables visitors to **verbally communicate with an LLM chatbot** to receive **personalized assistance and information** about the museum exhibits.

For more details, please visit **colorado.edu/atlas/acme-lab**