PhD Open Days

FIRST YEAR WORK PLAN SHARING: EXPLORING PLAYFUL HUMAN-AI INTERACTION FOR FOSTERING PUBLIC UNDERSTANDING OF NATRAUL SCIENCES

Ph.D. PROGRAM IN COMPUTER SCIENCE AND ENGINEERING & CARNEGIE MELLON PORTUGAL AFFILIATED Ph.D. PROGRAM

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Keywords: Human-AI Interaction; Playful Design; User Experience; Participatory Design

Introduction and Background

As AI technologies advance, especially with the emergence of large language models (LLMs), opportunities to enrich Human-AI interaction are expanding. Recent studies reveal that playful, exploratory engagement with AI has great potential to enhance user experiences in various tasks [1,2]. For example, empirical research has shown that integrating play into Human-AI interactions can lead to deeper engagement and more nuanced, personalized AI responses, fostering a creative and prolonged dialogue [3]. However, AI's unpredictability and lack of controllability present unique challenges to designing for playfulness while balancing trust and usability [4]. This research will address these gaps by exploring the design implications of playful Human-AI interactions in natural science learning contexts, aiming to enhance public engagement through interactive and explorative AI-based experiences.

Research Problem and Objectives

This study seeks to examine the role of playful AI interactions in natural science learning, focusing on how these interactions can promote engagement, curiosity, and a deeper appreciation of nature and wildlife. Specifically, it aims to:

Figure.1. The concept of interaction between visitors and the species on display at the museum

Identify the elements that contribute to playfulness in Human-AI interaction within natural science learning contexts. Assess the impact of playful design on user engagement, trust, and educational outcomes. Explore how providing contextual information affects user perceptions of AI reliability and authenticity.

Research Questions

1. What elements do participants recognize as "playful" in Human-AI interactions?
2. How effective are these playful elements in fostering engagement and curiosity?
3. To what extent does integrating original information retrieval improve participants' trust in AI?

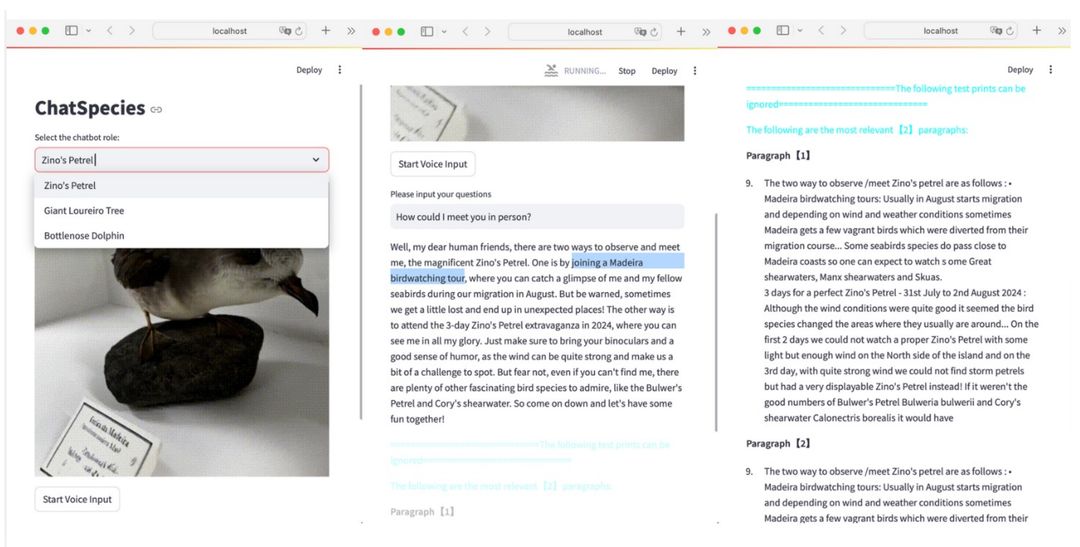

Figure.2. A Draft of the Demo (More iterations will be conducted later)

Proposed Methods

To address these questions, this work will adopt a qualitative approach. Data will be gathered from visitor interactions with an AI-powered Chatbot for natural science learning which designed to include playful, exploratory elements. Observational analysis, surveys, and interviews will capture participant reactions, perceptions of playfulness, and trust in AI. The qualitative feedback will provide insights into user experiences design within Human-AI interaction domain.

Significance and Expected Outcomes

This research will contribute valuable insights into the design of playful Human-AI interactions, advancing current knowledge on effective engagement strategies in natural science learning settings. Expected outcomes include actionable design guidelines for incorporating play into AI-guided learning and fostering public interest in natural science and conservation.

Resferences

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Acknowledgement

This work is co-financed by Fundação para a Ciência e a Tecnologia (Portuguese Foundation for Science and Technology) through the Carnegie Mellon Portugal Program under the fellowship (insert FCT grant reference SFRH/BD/xxxxxx/20xx) (Contract in the process of being signed)