

# Informal Learning with Co-Creative Agents in Museum Environments

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## Abstract

Co-creative agents, or artificially intelligent computer agents that can collaborate creatively in real-time with human partners, have proven successful in being both creatively engaging and fun to interact with. Prior research in museum experience design also indicates that due to their incorporation of embodied interaction, creative narrative construction, and personal identity, co-creative agents have potential to drive informal learning about technology in museum settings. However, many co-creative agents fall short in effectively communicating technology-related educational outcomes. My work aims to explore how museum experiences can be designed around co-creative agents such that they both foster creative engagement and facilitate informal learning, using two interactive installation projects (*LuminAI* and *TuneTable*) as technical probes.

## Introduction

Co-creative agents are computer colleagues that collaborate in real-time with humans in order to foster and inspire human creativity (Davis et al. 2014). There are numerous existing co-creative agents that collaborate with humans in creating visual art, contemporary dance, and theatrical improvisation (Davis et al. 2016; Magerko, DeLeon, and Dohogne 2011; Jacob et al. 2013). These agents have a lot of potential for use in museums since working with a co-creative agent involves embodied interaction, the generation of creative narratives, and the incorporation of personal identity, all of which are activities that have been identified as being central to human-centered museum experience design (Bedford 2014). Curatorial interdisciplinarity has also been highlighted as an issue of increasing importance in museum exhibit design, and co-creative agents are well positioned to cross disciplinary boundaries by simultaneously fostering creativity and encouraging informal learning about technology (Muller and Edmonds 2006).

However, while many of these agents have proven to be creatively engaging, artistically inspiring, and fun to interact with, the technological educational outcomes are not always communicated effectively. Participants frequently fail to grasp how the agents work, and often they do not even understand that they are interacting with an AI agent (Jacob et al. 2013). Thus, the question I am interested in is: how can

we design museum experiences around co-creative agents that are truly interdisciplinary in that they both: 1) foster creative engagement and 2) help participants gain an understanding of the technology operating behind-the-scenes? I am also interested in developing evaluation methodology to accurately assess whether these experiences effectively facilitate engagement and informal learning.

## Current Work

My work aims to utilize strategies employed in visitor-centered museum research to inform the design of informal learning experiences centered around co-creative agents. I am currently working on two different interactive museum installation projects as technical probes for investigating this problem space: *TuneTable* and *LuminAI*.

## TuneTable

*TuneTable* is an interactive tabletop experience in which participants can learn coding concepts by collaborating and creating sample-based music compositions. Through my work on *TuneTable*, I am investigating how to combine existing evaluation methods for assessing engagement with museum exhibits (Tisdal 2004) with new methods for evaluating open-ended collaborative experiences (Davis et al. 2016) to create a testbed of mechanisms and tools to use in evaluating co-creative agents in museum spaces. In addition, I am beginning to investigate how to augment the existing *TuneTable* exhibit with interactive educational stations, drawing on prior work that supplements art exhibits with "contemplation rooms" to aid in understanding (Kortbek and Grønbaek 2008).

## LuminAI

*LuminAI* is an interactive art installation in which human participants and AI agents can engage in collaborative movement improvisation. My work on *LuminAI* explores how changes to visual aesthetics and installation design can make the technology operating behind-the-scenes more understandable while still preserving the creative and fun atmosphere that is central to participant engagement.

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