Creativity Support for Novice and Sensory Impaired Users in DAWs
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Abstract

The current trend of research in Artificial Musical Intelligence (AMI) focuses on lyric creation, music composition, and generative sound synthesis. Currently, there is no research being conducted that incorporates an artificial intelligent musical agent into a Digital Audio Workstation (DAW) to help co-create musical deliverables by addressing recording and producing techniques. The agent I plan on creating will bring a unique aspect into enabling computational creativity by lowering the barrier of entry with DAWs for novice users as well as users who have sensory impairments (vision and hearing).

Introduction

Artificial Musical Intelligence is a broad area of research that uses Artificial Intelligence techniques to build autonomous, interactive, musical systems (Besold, Schorlemmer, and Smaill 2015). This area of research situates itself within the realm of Computational Creativity by using autonomous systems to generate and apply new ideas that would be considered creative, specifically for various kinds of music ideation (Collins 2006). Initially, research in this field focused on the generation of musical compositions through various rule-based systems or Markov Chains. Research in AMI continues to focus on similar procedural generation endeavors through mediums such as lyrics and musical scores. Instead, I propose an agent that will co-produce musical compositions within a DAW. This will include assistance in audio and MIDI manipulation, mixing, and mastering. The novelty of this research within the ICCC community is a musical agent that can co-create with both novice users as well as users with sensory impairments (vision and hearing).

The first stage of my research aims to reduce the learning curve for novice user integration into DAWs, with a particular emphasis in Ableton Live. These users will be split into two subset populations based on their prior experience with audio manipulation and recording techniques. This split in the population will help determine whether having previous experience or exposure to audio manipulation in an analog domain has a direct correspondence to a faster learning rate within a DAW. A cognitive walk-through of the DAW will be used as the mode for data acquisition along with a brief semi-structured interview for a deeper understanding of the participant's musical background and their interest in music production. The deliverable at this stage will be a list of common pitfalls that novice users tend to have when implementing their musical ideas in DAWs.

The second stage of my research deals with accessibility accommodations for DAWs. This portion of the research will be used to gain a better understanding of the previous techniques employed to extend the accessibility of DAWs in either the software or hardware domain such as ProAccess (Tom Zahradnick 2008) and Musical Vibrations (Hopkins et al. 2016). Although most of the research in this realm makes use of haptic feedback for visually impaired users, I will focus on accommodations within the software itself, rather than bootstrapping the affordances through an external medium. At this stage, I hope to gain a sense of how to better enable users with sensory impairments to produce music. Pilot studies will be run on these different techniques through various prototypes in order to establish the best possible accommodation for these users.

The third and final stage of my research will be focused solely on the implementation of the creative music agent. This stage will be an iterative process with user testing at each milestone to ensure the final product is truly representative of a universally accommodating tool. The final deliverable will be created for use specifically within Ableton Live, but the concepts are transferable to any common DAW.

References

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