Co-Creativity between Music Producers and ‘Smart’ versus ‘Naïve’ Generative Systems in a Melody Composition Task

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Abstract

Background
Human-AI collaboration is suggested to foster creativity in domains like art and design. Different music generators have been developed to autonomously produce music. Most research in this area has focused on the technical performance and the subjective quality of the end products. It is unclear however, how this technology functions in a collaborative context between music producer and AI system. This study aims to analyze the creative process of music producers, while they are composing melodies assisted by either a co-creative ‘smart’ AI-system or a ‘naïve’ MIDI generator.

Methods
In this randomized crossover pilot study, music producers were assigned to two conditions in double-blinded random order: co-creating with the smart system on one day, and with the naïve system on the other. Both systems expand an input (MIDI) sequence provided by the participant. The smart system uses the input sequence to generate an expansion (‘output’); whereas the naïve system provides an unrelated MIDI sample from existing melodies. Producers created two 8-bar melodies in 40 minutes using their personal digital audio workstations, while actively collaborating with the assigned system. Both systems had identical interfaces and subjects were unaware of differences or assigned orders. After each session, participants rated aspects like novelty, value, and surprise on 7-point Likert scales, which were then used to guide a semi-structured interview.

Analysis
The system’s output and the producer’s (intermediate) melodies are compared for novelty and adoption using melodic distance measures. Novelty is defined as the percentage of new elements added by the system to the intermediate composition. Adoption reflects to what extent the system’s output is incorporated into the composition.

Summary statistics are obtained for the questionnaires. The interview is subject to thematic categorization. The outcomes of the two systems are compared statistically. In addition, the individual novelty and adoption indices are related to the participant’s ratings. The results of these analyses will be further contextualized, based on the interviews.

Results
Thirteen music producers participated in the study. All participants completed both sessions. The results will be demonstrated during the Graduation Presentation.