You Know It When You Hear It: A Review of Computational Models of Jazz Improvisation

Cody Kommers

University of California, Los Angeles, Los Angeles, California, United States

Mark Tramo

University of California, Los Angeles

Abstract: Previous computational models of jazz improvisation typically employ algorithms designed to "think" like an improvising jazz musician, each offering distinct advantages and disadvantages. Creating a model that successfully produces jazz improvisation would (1) offer insights into a unique cognitive expertise, (2) elucidate more general creative processes and, (3) create algorithms that require "creativity" within well-defined constraints. First, the present study proposes a multidimensional scale to measure successful production of jazz improvisation and evaluates the strengths and weakness of twelve existing models. Second, the present study proposes new solutions to weakness identified with each model and notes which models have complementary strengths and weaknesses. Third, the present study proposes existing learning algorithms that could be implemented for the production of improvisation. Finally, the present study suggests that future approaches to creating an improvising algorithm should take into account the methods employed in existing pedagogical treatises of jazz improvisation.