

A Computational Model of Jazz Improvisation Inspired by Language

Cody Komers

Department of Psychology, University of California, Los Angeles

Alan Yuille

Department of Statistics, University of California, Los Angeles

Abstract: This paper presents a novel computational model of jazz improvisation based on n-gram language models. Recent functional neuroimaging studies suggest that the brain processes structural elements of improvised music and conversational language in a similar manner. We hypothesized that if musical improvisation and language share a common cognitive and neurological foundation, then statistical techniques for modeling one domain should be capable of successfully modeling the other domain. Accordingly, we demonstrate that n-grams (an archetypal language model) can successfully model jazz improvisation when trained on a large corpus of expert-level jazz saxophone solos. Furthermore, we propose perplexity as a novel method of evaluation of jazz improvisation models.