

UC Merced

Proceedings of the Annual Meeting of the Cognitive Science Society

Title

Musicat: A model of music perception and expectation

Permalink

<https://escholarship.org/uc/item/0379h9rm>

Journal

Proceedings of the Annual Meeting of the Cognitive Science Society, 31(31)

ISSN

1069-7977

Authors

Hofstadter, Douglas
Nichols, Eric

Publication Date

2009

Peer reviewed

Musicat: A model of music perception and expectation

Eric Nichols

Indiana University

Douglas Hofstadter

Indiana University

Abstract: We present an overview of our computer model of music perception and expectation. This model, called "Musicat" (after Mitchell and Hofstadter's "Copycat") extends to a musical domain the Active Symbols Architecture used in projects such as Copycat. Musicat models the dynamic experience of listening as music unfolds through time. Specifically, given a symbolically-represented input melody, Musicat simulates the process of listening to the music one note at a time, generating and revising internal higher-level representations of the input as it is presented. Musicat's model of perceptual simulation groups notes together, perceives relations between groups, and extracts repeating musical motifs. The model's internal representations also give rise to expectations about upcoming notes, and such expectations can be used to compare the model with human subjects. We discuss ongoing improvements to the model, informed by both successful and less-successful examples of Musicat's output when given Western folk-style melodies as input.