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Modeling Maqam Relations with Self-Organizing Maps

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Abstract: Self-organizing maps (SOMs, Kohonen, 1982) have been extensively used as information processing models in music perception. Using a corpus that represents tonal regularities in Western music, Tillmann et.al (2000) developed a schema of Western tonal music. Krumhansl, et.al (2000) showed that melodic expectancy in Finnish music could be modeled by SOMs trained on samples of Finnish music. Recently, Schmuckler (2010) observed that a model of contour structure based on Fourier analysis could predict perceived melodic similarity. In this study, we investigated alternative SOM models of maqam music. Traditionally, maqams are defined by pitch structure and the structure of melodic contour, which are assumed to be independent. We trained SOMs using a representative corpus of Turkish maqam music. The SOMs were trained either with the pitch class distributions or the contour structure. Preliminary results showed that both types of information were useful to model the relations between maqams.