

Computational approaches to aid ethnographic research on Maqam melodies

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Abstract

There has been a recent trend towards examining the Indian Ocean as an “aesthetic space” in which artistic patterns and practices circulate and evoke the broader Indian Ocean through the specific sensual experience they create. One such endeavor is a project by Eisenberg et al., entitled “The Swahili Musical Imagination: Intercultural Style and Aesthetics in the Compositions of Ally Salim Basalama” that aims to chart a path toward an ethnomusicology that productively combines ethnographic and computational methods, and forging new ways to systematically approach the interdependence of music and poetry. Whereas qualitative (ethno)musicological studies of patterns in musical style necessarily home in on representative examples, the “sonic digital humanities” methods that the Music and Sound Cultures (MaSC) research group at the New York University Abu Dhabi have been developing work at the level of the corpus, and are therefore particularly useful for drawing out similarities between multiple traditions or genres. We employ computational audio analysis, machine learning, and visualization techniques to explore similarities in music corpora from different regions. Methods proposed by Ganguli and Senturk that develops a heuristic melodic stylization algorithm combining domain knowledge- and data-driven optimizations, are adapted to study the corpora of the “music from the region”. One of the aims of the computational analysis is to model the melodic similarity space between Ally Salim’s songs, Egyptian song, and Hindi film song, with a view to understanding sources of melodic inspiration for Ally Salim. This paper discusses methodological details at various audio processing stages – fundamental frequency (F0) extraction, tonic estimation, histogram characterization, and stable note transcription. The outcome of the analyses also finds its place in pedagogical and mainstream music information retrieval applications. We believe, this approach where scientific/computational research complements ethnographic studies, can lead to a better understanding of cultural migration in the Indian ocean space.

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