Stability and Variation in Cadence Formulas in Oral and Semi-Oral Chant Traditions — a Computational Approach

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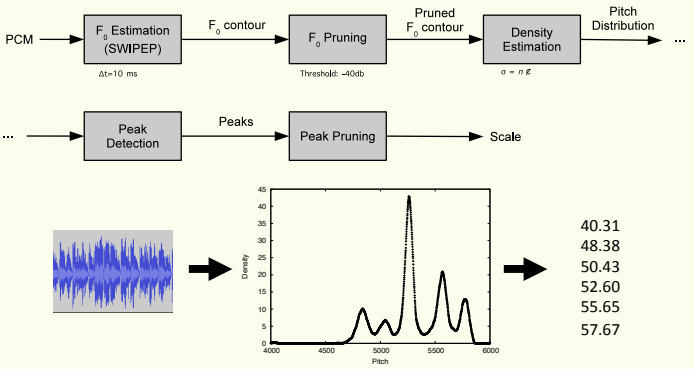
Aim

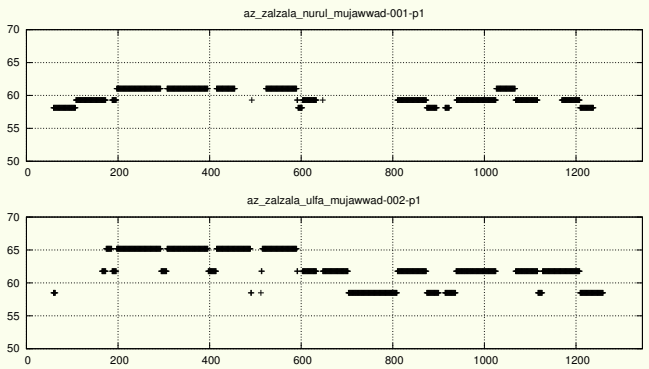
Investigate stability and variation of melodic scale and melodic contour in Torah trope, Qur'an Recitation and Dutch folk songs, taking a computational approach.

Audio Analysis



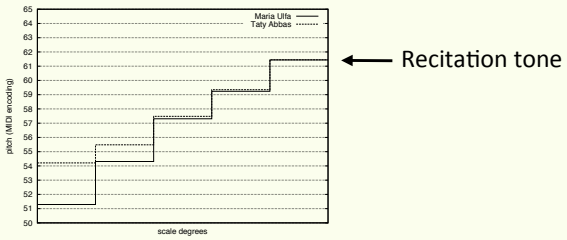
Qur'an Recitation

Alignment of two reduced renditions of the same phrase from *surah al-zalzalah* as read by Hajjah Maria Ulfa (Indonesia) and Nurul Ummah (Netherlands), presenting similairity of recitation tone and basic melodic contour



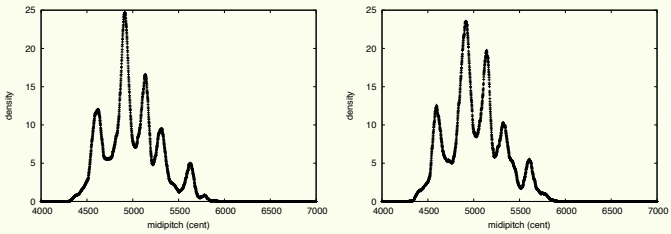
Qur'an Recitation

Simalarity of scale pitches in the final phrase of *surah al qadr* as read by reciters Hajjah Maria Ulfa (Indonesia) and Taty Abbas (Netherlands). The recitation tone is identical.



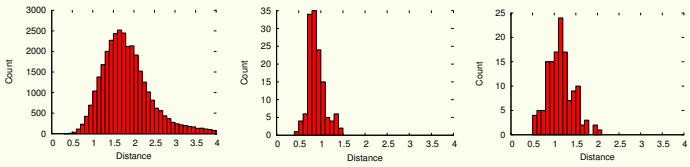
Torah Trope

Pitch-Histograms of Genesis 1–4 (left) and Genesis 5 (right) as read in The Netherlands (by Amir Naamani in 2011), showing a high degree of pitch-stability in different sections of the reading.



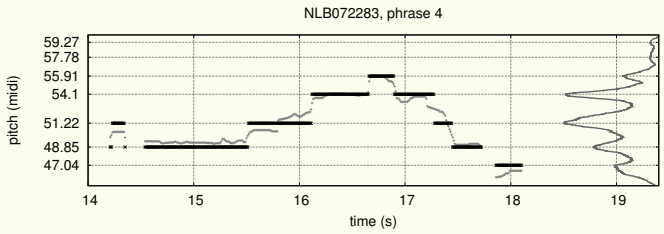
Torah Trope

Distributions of distances between unrelated segments (left), between *sof pasuq* renditions in Hungarian (middle) and Moroccan (right) readings, showing higher stability in the Hungarian reading.



Dutch Folk Songs

Reduced contour of a cadential phrase from the Dutch tune family *Soldaat kwam uit de oorlog*. The pitch density diagram reveals a pentatonic scale.



Conclusion

By developing computational models for analyzing these three chant types we are creating a methodology to test stability and variation in terms of melodic scale and melodic contour. By extending possibilities for musical transcription via the employment of a new computational platform we reexamine variation and stability within melodic formulas within these chant traditions.

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