Melodic Pattern Extraction in Large Collections of Music Recordings Using Time Series Mining Techniques

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Goals
- Discover short-time melodic patterns in audio collections of Indian art music (IAM)
- Assess scalability of melodic similarity measures based on DTW
- Evaluate four variants of DTW cost function for rank refinement
- Assess the tightness of lower bounding techniques for DTW-based distance measure for the given data

Melodic Patterns in Indian Art Music
- Prominent cues for rāga identification
- Basis for melodic analysis of IAM
- Set ground for melodic improvisation
- Highly varied across repetitions

Methodology

Evaluation

Dataset:
- CompMusic Carnatic music collection
- 1764 polyphonic audio recordings
- 365 hours of music material covering different forms, rāgas and artists
- Over 300 million pattern candidates

Evaluation:
- 79,000 seed patterns & 15 million search patterns
- Randomly sample 200 seed patterns and top 10 search patterns
- Total of 8000 patterns pairs evaluated by a professional musician
- Mean average precision (MAP) to quantify musician’s assessment
- ROC curves for the analysis of distance distribution

Results and Discussion

Browse melodic patterns