Tutorial 2

Computational Methods For Supporting Corpus-Based Research On Indian Art Music

Thomas Nuttall, Genís Plaja-Roglans, Lara Pearson, Brindha Manickavasakan

Abstract

Culture-aware approaches to computational musicology and music information research (MIR) have been shown to be effective for a musically relevant analysis of a music culture. Projects such as CompMusic (2011-2017), MusicalBridges (2018-2022) or the initiatives funded by SPARC (2019-2022) have demonstrated the importance of considering sociocultural specifics of a music tradition to effectively define research problems, collect data and propose methods for analysis. These projects have made particularly notable contributions to the analysis of Indian Art Music (IAM), leading to a collective body of bespoke computational methods for analyzing these traditions.

Through this tutorial we aim to compile and present such works, making openly available a number of software tools and materials developed by MIR researchers working on the two main IAM traditions, Carnatic and Hindustani. The content will be organized into five sections: (1) datasets and corpora, (2) melodic analysis, (3) rhythmic analysis, (4) timbral analysis and (5) structural analysis. Each topic will include an introduction covering the basic musical concepts required to understand its constituent tasks, followed by a practical presentation of the materials and software tools compiled.

This tutorial is the result of an ongoing collaborative effort involving many contributors. The software will be available in Python through a single Github repository, containing clear and reproducible implementations of the presented methodologies. A Jupyter WebBook will be the main tutorial reference, in which we will introduce all the materials, contextualize the software tools, and include Jupyter Notebook examples for most of the research tasks covered.

Biographies of Presenters

Thomas Nuttall is a Research Engineer in the Music Technology Group (MTG) of Universitat Pompeu Fabra in Barcelona, Spain. His research focus is on melodic pattern analysis in musical traditions under-represented in the music computation and computational musicology fields, such as Arab-Andalusian or Indian Art Music, and on building tools that bridge the gap between the music information retrieval and musicology research communities.

Genís Plaja-Roglans is a Ph.D student in the Music Technology Group (MTG) of Universitat Pompeu Fabra in Barcelona, Spain. His research focus is on creation of bespoke machine learning models for the understanding of musical traditions under-represented in Music Information Research, currently focusing on Carnatic and Hindustani music. Recent work includes vocal melody estimation, singing voice source separation and repeated pattern discovery.

Lara Pearson is a musicologist at the Max Planck Institute for Empirical Aesthetics (MPIEA), Frankfurt am Main, Germany. Her work explores bodily and movement dimensions of music experience and meaning, often combining sonic and kinetic analyses. Her stylistic focus lies in South Indian music practices, in particular Carnatic music. She has also published on cross-cultural aesthetics, cultural heritage, music notation and the concept of improvisation.

Brindha Manickavasakan is a Carnatic Music vocalist, and is among the foremost, popular young performing Carnatic musicians in India. She has been performing for the past 21 years, and is currently learning from Vidushi Suguna Varadachari. She is an ‘A’ graded vocal artist of All India Radio. Brindha holds a Master’s degree in Biostatistics from Georgetown University, USA, a Master’s degree in Music and is a PhD candidate in Music from Madras University with a thesis on the contribution of Tañjāvūr K Poṉṉayyā Piḷḷai. She is a constant feature in all the major sabhas in Chennai, and performs regularly across India and abroad.