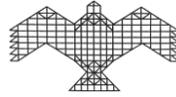Junior Research Fellow Position in the area of
"Signal Processing and Machine Learning of Music"

National Institute of Advanced Studies, Bangalore

The National Institute of Advanced Studies (NIAS) was conceived and founded in 1988 by the late J. R. D. Tata, who sought to create an institution to conduct advanced multidisciplinary research. Housed in a picturesque green campus in Bangalore, the Institute serves as a forum to bring together individuals from diverse intellectual backgrounds, in the natural and life sciences, humanities, social sciences, and conflict and security studies. The philosophy underlying NIAS is given shape by its multidisciplinary research teams. The Institute is unique in its integrated approach to the study of intersections between science and technology, philosophy, social issues and leadership. The objective is to nurture a broad base of scholars, managers and leaders who would respond to the complex challenges that face contemporary India and global society, with insight, sensitivity, confidence and dedication. For more details: www.nias.res.in

About the Project: This DST-funded project aims to mathematically and computationally analyse certain musical tunes that were culturally exchanged in the history of Indian and European classical and popular music, particularly during the 18th and 19th centuries, characterise their complexity and identify patterns in the notation that may reveal specific signatures of particular composers. This will largely involve mathematical characterisations of the notion of simple vs. complex patterns/tunes using complexity/infotheoretic and time series-based measures. Computational learning algorithms, such as artificial neural networks, hidden Markov models, audio/speech/signal processing and time series analysis techniques, would also be used to identify signatures of tunes/songs/notations to aid authorship identification.

Title of Position: Junior Research Fellow (JRF)

Job description: The JRF position pertains to data acquisition and analysis of music. The role will involve recording of musical pieces (Indian classical and Western tunes), performing filtering, signal processing, time series analysis, and learning methods (including machine learning techniques) to identify/learn patterns and characterize/classify tunes based on the computational features extracted. Knowledge of signal processing, audio/speech/music processing, machine learning methods, programming skills in any one of MATLAB/Python/C/C++ is a must. JRF aspirants must be willing to work as part of a multidisciplinary team and be eager to rapidly learn concepts and skills across multiple domains.

Qualifications for JRF:
A postgraduate degree in the basic sciences with NET-qualification or graduate/post-graduate degree in a professional course (BTech/MTech). Candidates with a bachelor's degree should be NET/GATE-qualified. Candidate with some experience in **speech/music signal processing** will be given a preference. **Strong programming skills are desirable**.

Emoluments

Rs. 25,000/month for the 1st and 2nd years and Rs. 28,000/month for the third year, plus a monthly HRA as applicable to Bengaluru, which is currently24% of the basic fellowship.

Mode of Application:

Interested applicants should submit their curriculum vitae electronically along with the following documents:

1. Covering letter (with latest CV)
2. Statement of Purpose
3. Copy of degree certificates (and NET-qualification certificate, if applicable)

The deadline for receiving applications is **August 15, 2019**. Short-listed candidates will be invited to NIAS for an interview.

Applications should be addressed by email with subject line "Application for JRF" to:

Dr. Nithin Nagaraj (Co-Principal Investigator)
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Indian Institute of Science Campus
Bangalore 560, 012, India
E-mail: nithin.nagaraj@gmail.com
URL: https://sites.google.com/site/nithinnagaraj2/