Nithya Nadig Shikarpur

📞 +1 2405797310 | ✉ snnithya@gmail.com | 🔗 snnithya | ⌨ snnithya | 🏠 snnithya.github.io

RESEARCH INTERESTS

I am interested in developing interactive generative AI tools for music learning and creation to help people engage more deeply with the art. Additionally, as a performer of Hindustani music, I am heavily invested in working with low resource music genres.

EDUCATION

M.Sc. Computer Science - Artificial Intelligence	Aug 2022 - Present
Research Supervisor*: Dr. Cheng-Zhi Anna Huang*	
Université de Montréal & Montréal Institute of Learning Algorithms (Mila)	GPA: 4.19/4.3
B.E. Computer Science	Aug 2016 - Dec 2019
Birla Institute of Technology and Science (BITS) Pilani	GPA: 8.46/10

SELECTED PROJECTS

Interactive Music Generation For Hindustani Music — Aug 2022 - Present

Supervisor: Dr. Anna Huang | *Generative Modelling, HCI, Hindustani Music*

- Working on interactive generative modelling for Hindustani vocal music to aid artistic exploration.
- Implementing the task of sequence continuation with transformers for pitch and waveform data.
- Rapid iterative prototyping of interactive models with Max/MSP and Google Colab to test interaction.

Visual Aids for Memorization of Rhythms in Jazz Improvisation — Aug 2022 - Jan 2023

Supervisor: Dr. Jeremy Cooperstock | *HCI, User Studies, Interface Design, Jazz*

- Studied the role of two visual representations to help users memorize rhythms from jazz improvisation.
- Conducted multiple iterations of design and user testing to develop the final interface.
- Conducted user studies and interviews involving 8 users followed by statistical analysis of observations.

Multimodal Raga Detection — Aug 2021 - June 2022

Supervisor: Dr. Preeti Rao | *Multimodal Classification, Hindustani Music, Music Information Retrieval*

- Project combined hand gestures with audio data to classify raga (melodic mode).
- Experimented with different fusion techniques for audio and visual features.
- Ran qualitative and quantitative analyses of audio, visual and audio-visual model predictions.
- Paper published in ISMIR 2022 and awarded *Best Special Call Paper Award.*

Computational Analysis of Melodic Mode Switching in Raga Performance — Dec 2020 - July 2021

Supervisor: Dr. Preeti Rao | *Hindustani, Computational Musicology, Music Information Retrieval*

- First computational study of melodic mode switching in Jasrangi Jugalbandi.
- Developed a semi-automated pipeline to extract pitch-related features directly from audio.
- Studied the distribution of notes using multiple representations of pitch features and analysed results.
- Paper published in ISMIR 2021.

EXPERIENCE

Researcher | *Mila* — Aug 2022 - Present

Working on interactive music generation inspired by the Hindustani music idiom.

Research Assistant | *Digital Audio Processing Lab, IIT Bombay* — Dec 2019 - June 2022

Worked on projects revolving around computational musicology for Hindustani music.

Consultant | *Oneirix Labs* — Aug 2020 - Dec 2020

Worked on image matching techniques using computer vision and transfer learning.

Research Intern | *McAfee* — July 2019 - May 2020

Worked on malware detection using deep learning.

Research Intern | *CiSTUP, IISc* — May 2019 - July 2019

Worked on an interactive visualization of data collected from public transport in Bangalore.

Research Assistant | *BITS Pilani, Goa*   Jan 2018 - May 2019
Worked on malware detection for APK files using machine learning.
Software Development Intern | *Headout*   May 2018 - July 2018
Developed an automated reporting system using Python, Javascript and APIs.

PUBLICATIONS, PATENTS AND TALKS

1. M. Clayton, P. Rao, **N. Shikarpur**, S. Roychowdhury, and J. Li. "Raga classification from vocal performances using multimodal analysis". In Proc. of the 23rd Int. Soc. for Music Information Retrieval Conference, 2022.
2. **N. Shikarpur**, "Raga classifiction from vocal performances using multimodal analysis", Music + AI Reading Group, Oct 2022. Link.
3. **N. Shikarpur** , A. Keskar, and P. Rao. "Computational analysis of melodic mode switching in raga performance". In Proc. of the 22nd Int. Soc. for Music Information Retrieval Conference, 2021.
4. A. Tripathi, M. A. Bhole, **N. Shikarpur**, T.R. Konda, and M. Bhatnagar. "Scanning of partial downloads", Aug 2022. US Patent.

TEACHING AND LEADERSHIP EXPERIENCE

Co-organizer: Music + AI Reading Group | *Mila + Online*   Aug 2022 - Aug 2023
Organized online reading group related the music + AI research. Invited speakers with diverse backgrounds and hosted sessions.
Teaching Assisstant: Computer Programming | *BITS Pilani, Goa*   Aug 2018 - Dec 2018
Helped devise questions for students and clarified doubts during lab sessions.

SELECTED HONORS & ACCOLADES

International Student Scholarship, 3000 CAD	*DIRO & Quebec Ministry of Higher Education*	2023
Best special call paper award	*ISMIR 2022*	2022
International Student Scholarship, 3000 CAD	*DIRO & Quebec Ministry of Higher Education*	2022
UdeM Exemption Scholarship	*Université de Montréal*	2022
Tuition Fee Waiver	*Université de Montréal*	2022

VOLUNTEER EXPERIENCES

ISMIR, Bengaluru | *Volunteer*   2022
- Helped with organizing of the conference including sponsorship and logistics.

The Blueroom, Bangalore | *Artists Relations*   2019-2020
- Communicated with and invited artists to perform at the venue.
- In charge of handling email.

SKILLS

- **Programming Languages** - *Advanced*: Python; *Intermediate*: C++, C, JavaScript, HTML5/CSS
- **Machine Learning** - *Advanced*: Pytorch, Keras, Tensorflow, Scikit-learn, Matplotlib, Numpy
- **Music** - *Advanced*: Vocalist (Hindustani music and other styles like thumri, jazz, pop and fusion music)

RELEVANT COURSEWORK

Representation Learning | Human Computer Interaction | Reinforcement Learning | Data Structures and Algorithms | Machine Learning

MUSIC

- I am an active performer of Hindustani vocal music and upload my performances and projects on YouTube and Instagram.
- Submitted to the AI Song Contest 2022. [Link].