

Chitrlekha Gupta, Senior Research Fellow

CONTACT INFORMATION	COM2-01-07, Augmented Human Lab, School of Computing, National University of Singapore	Google Scholar , Website , Github E-mail: chitrlekha@nus.edu.sg
RESEARCH INTERESTS	My research interests lie at the intersection of deep learning, human-computer interaction, and audio, particularly in singing quality and lyrics analysis, controllability of audio generative models, explainability of AI, and audio-based assistive technologies.	
WORK EXPERIENCE	Senior Research Fellow Mar 2023 - Present Augmented Human Lab, School of Computing, NUS Research Fellow Augmented Human Lab, School of Computing, NUS (PI: <i>Suranga Nanayakkara</i>) 2022-2023 Communications and New Media, Faculty of Arts, NUS (PI: <i>Lonce Wyse</i>) 2021-2022 Human Language Technology lab, Electrical and Comp Engg., NUS (PI: <i>Haizhou Li</i>) 2019-2021 Co-Founder of MuSigPro Pte. Ltd. Aug 2019 – Present A music technology start-up that commercializes two AI-based music technologies developed during my PhD and post-doc - a singing quality assessment algorithm, and an audio-to-lyrics time aligner. Research Engineer at Airbus Defense and Space, Bangalore March 2013 - July 2014 Software Developer at Dell R&D, Bangalore Aug 2011 - Feb 2013	
EDUCATION	Ph.D. at Dept. of Computer Science, 2015 - 2019 National University of Singapore (NUS) <i>Thesis: Comprehensive evaluation of singing quality; Advisors: Haizhou Li and Ye Wang</i> Master of Technology at Dept. of Electrical Engg. 2008 - 2011 Indian Institute of Technology Bombay (IIT-Bombay) <i>Thesis: Objective assessment of ornaments in Indian singing; Advisor: Preeti Rao</i> Bachelor of Engineering in Electronics Engg. 2004 - 2008 M.S. University, Baroda, India	
SELECTED PROJECTS	Through my experience as a research fellow and a senior research fellow, I have worked on a diverse range of projects related to audio and deep learning. A selected few of them are below: <ul style="list-style-type: none">• Assistive Augmentation Technologies: I have worked with people with visual impairments to build an assistive tool that creates awareness of distant scenes through sonification, i.e. converting scene information into relevant sounds through generative models. <i>Published in ACM IMWUT</i> 2023 - Present• Controllability of Sound Synthesis using Generative Models: I have worked on exploring supervised and unsupervised methods of inducing control over certain attributes of synthesized audio by manipulating the latent space of Generative Adversarial Networks. <i>6 papers published across ICASSP, ISMIR, ACM IUI, Springer, IEEE/ACM TASLP2021</i> - Present• Music Analysis:<ul style="list-style-type: none">(a) Singing Quality Evaluation: I have worked on signal processing and machine learning-based explainable modeling of singing quality, based on pitch, rhythm, ornaments, and pronunciation. <i>12 papers published across ISMIR, Interspeech, APSIPA, IEEE/ACM TASLP</i> 2017 - 2022(b) Alignment and Recognition of Lyrics in Music: I have worked on kaldy-based modular ASR models for the task of lyrics-to-audio alignment and lyrics recognition. I have also co-authored works on espnet-based end-to-end ASR models lyrics recognition. <i>9 papers published across ICASSP, Interspeech, SMC, IEEE/ACM TASLP</i> 2019 - 2022	

SELECTED
PUBLICATIONS

- **Chitrlekha Gupta**, Shreyas Sridhar, Denys Mattheis, Christophe Jouffrais, and Suranga Nanayakkara, *SonicVista: Towards Creating Awareness of Distant Scenes through Sonification*, *IMWUT*, 2024.
- Purnima Kamath, **Chitrlekha Gupta**, Lonce Wyse, and Suranga Nanayakkara, *Example-Based Framework for Perceptually Guided Audio Texture Generation*, *IEEE/ACM TASLP*, 2024.
- Elliot Wen, **Chitrlekha Gupta**, Prasanth Sasikumar, Mark Billinghurst, James Wilmott, Emily Skow, Arindam Dey, and Suranga Nanayakkara, *VR.net: A Real-world Dataset for Virtual Reality Motion Sickness Research*, *IEEE VR*, 2024 - **Best Paper Award**.
- **Chitrlekha Gupta**, Purnima Kamath, Yize Wei, Zhuoyao Li, Suranga Nanayakkara, and Lonce Wyse, *Towards Controllable Audio Texture Morphing*, *ICASSP*, 2023.
- Xiaoxue Gao, **Chitrlekha Gupta**, and Haizhou Li, *PoLyScriber: Integrated Training of Extractor and Lyrics Transcriber for Polyphonic Music*, *IEEE/ACM TASLP*, 2023.
- **Chitrlekha Gupta**, Haizhou Li, and Masataka Goto, *Deep Learning Approaches in Topics of Singing Information Processing (Overview Paper)*, *IEEE/ACM TASLP*, 2022.
- **Chitrlekha Gupta**, Yize Wei, Purnima Kamath, Zhuoyao Li, and Lonce Wyse, *Parameter Sensitivity of Deep-Feature based Evaluation Metrics for Audio Textures*, *ISMIR*, 2022.
- **Chitrlekha Gupta**, Emre Yilmaz, and Haizhou Li, *Automatic Lyrics Alignment and Transcription in Polyphonic Music: Does Background Music Help?*, *ICASSP*, 2020.
- **Chitrlekha Gupta**, Haizhou Li, and Ye Wang, *Automatic Leaderboard: Evaluation of Singing Quality without a Standard Reference*, *IEEE/ACM TASLP*, 2019.

SELECTED
ACHIEVEMENTS
AND AWARDS

- **DCASE Challenge 2023**: Our generative model system for the Foley Sound Synthesis Task at this international challenge ranked 3rd amongst 26 submitted systems.
- **MIREX 2020 and 2019**: Our “Automatic Lyrics-to-Audio Alignment and Lyrics Transcription” system ranked 1st in the International Music Information Retrieval Evaluation eXchange platform for two consecutive years 2019 and 2020. ([Press Release](#))
- **NUS Graduate Research Innovation Program (GRIP) Award**, July 2019, a start-up grant for MuSigPro Pte. Ltd.

GRANTS

- **Collaborator** in MOE Tier 1/NUHS Seed Grant 2023, Topic: *To assess the feasibility and objectivity of using an AI-based Speech Intelligibility Assessment Tool for people with Dysarthria to enhance the efficiency of dysarthria assessment and intervention in the local English-speaking population.*, SGD 138,000.

PATENT
(PENDING)

Chitrlekha Gupta, Haizhou Li, and Ye Wang, “System and Method for Assessing Quality of A Singing Voice”; **U.S. Patent Application No. 17/631,646** filed on 8 February 2022.

INVITED TALKS

- Invited talk at Meta ARIA Summit, Redmond WA, USA. 2024
- Guest lectures at an Entrepreneurial courses, NUS. 2021-2024
- Invited talk at Music Research Symposium, Singapore. 2023
- Women in MIR panelist at ISMIR 2022. 2022
- Invited talk at IIT Bombay. 2021

OVERSEAS/
INDUSTRY
COLLABORATORS

- Meta Platforms Inc. (META) 2022 - Present
- AIST, Japan (Dr. Masataka Goto) 2021 - 2022

MENTORSHIP

- Mentored 2 PhD Students, and Co-supervised 2 Masters students.
- Served as a PhD Thesis Examiner of a student from Sorbonne University, Paris in 2023.