

# Chitrlekha Gupta, Post-Doctoral Research Fellow and Founder of MuSigPro Pte. Ltd.

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CONTACT INFORMATION	E4-06-20, Human Language Technology Lab, Electrical and Computer Eng. Dept., National University of Singapore	Web: <a href="https://chitrlekha18.github.io/chitrlekha/">https://chitrlekha18.github.io/chitrlekha/</a> E-mail: <a href="mailto:chitrlekha@nus.edu.sg">chitrlekha@nus.edu.sg</a> GitHub: <a href="https://github.com/chitrlekha18">https://github.com/chitrlekha18</a> Start-up: <a href="https://musigpro.com">https://musigpro.com</a>
RESEARCH INTERESTS	Speech and singing voice analysis and synthesis, music information retrieval, applications of ASR in music, applications of music in education and health therapy.	
EDUCATION	<p><b>Ph.D.</b> 2015 - 2019 <b>National University of Singapore</b> <a href="#">NUS Graduate School for Integrative Sciences and Engineering</a> (Dept. of Comp. Sci.); CAP: 4.38/5.0 <i>Thesis</i>: Comprehensive evaluation of singing quality <i>Advisor</i>: <a href="#">Haizhou Li</a> and <a href="#">Ye Wang</a></p> <p><b>Master of Technology</b> 2008 - 2011 <b>Indian Institute of Technology Bombay</b> <i>Specialization</i>: Communication &amp; Signal Processing (Dept. of Electrical Eng.); <i>GPA</i>: 9.63/10.0 <i>Thesis</i>: Objective assessment of ornaments in Indian singing <i>Advisor</i>: <a href="#">Preeti Rao</a></p> <p><b>Bachelor of Engineering</b> 2004 - 2008 <b>M.S. University, Baroda</b> <i>Specialization</i>: Electronics; <i>GPA</i>: 3.8/4.0 <i>Thesis</i>: An obstacle detector for the visually challenged <i>Advisor</i>: M. S. Gosavi</p>	
SELECTED HONORS AND AWARDS	<ul style="list-style-type: none"><li>• <b>NUS Graduate Research Innovation Program (GRIP) Award</b>, July 2019, a start-up grant for MuSigPro Pte. Ltd.</li><li>• <b>MIREX 2019</b> Our “Automatic Lyrics-to-Audio Alignment” system has outperformed all other systems in the International Music Information Retrieval Evaluation eXchange platform 2019. (<a href="#">Mirex Results</a>)</li><li>• <b>NUS Dean’s Graduate Research Achievement Award</b>, School of Computing, NUS, 2018.</li><li>• <b>School of Computing Innovation Prize, NUS</b> (Team), for <i>SLIONS: Singing and Listening to Improve Our Natural Speaking</i>, an application for language learning through singing, 2018.</li><li>• <b>Best Student Paper Award</b>, for the paper <i>Perceptual Evaluation of Singing Quality</i> at APSIPA 2017.</li><li>• <b>NGS PhD Scholarship</b>, National University of Singapore, 2015–2019</li><li>• <b>Best Employee of the Quarter</b>, Airbus Defense and Space, Bangalore, 2014</li><li>• <b>Recognized Disclosure</b>, Dell R&amp;D, Bangalore, 2013: “Applying state-of-the-art speech recognition tools for improved user experience in enterprise servers” (Awarded to the best novel proposals)</li></ul>	
WORK EXPERIENCE	<ol style="list-style-type: none"><li>1. <b>Founder and CEO of <a href="#">MuSigPro Pte. Ltd.</a></b> Aug 2019 – Present An online gamified singing contest platform powered by the state-of-the-art AI judge to evaluate singing quality that motivates users to learn and improve singing skills.</li><li>2. <b>Research Fellow at Human Language Technology Lab, ECE, NUS</b> Feb 2019 – Present Singing voice evaluation, applications of ASR in music, singing voice synthesis.</li></ol>	

3. **Internship at Sound and Music Computing Lab, NUS** Aug 2014 – Dec 2014  
Singing and ear training application design for children with cochlear implants.
4. **Research Engineer at Airbus Defense and Space, Bangalore** March 2013 - July 2014  
Clutter rejection techniques for radar applications.
5. **Software Developer at Dell R&D, Bangalore** Aug 2011 - Feb 2013  
Developing a scriptable interface for local and remote control of Dell servers.

#### PUBLICATIONS

1. **Chitrlekha Gupta**, Emre Yilmaz, and Haizhou Li, *Automatic Lyrics Alignment and Transcription in Polyphonic Music: Does Background Music Help?*  
*Submitted to ICASSP*, 2020.
2. **Chitrlekha Gupta**, Emre Yilmaz, and Ye Wang, *Automatic Leaderboard: Evaluation of Singing Quality without a Standard Reference*  
*IEEE/ACM Transactions on Audio, Speech, and Language Processing*, 2019.
3. **Chitrlekha Gupta**, Emre Yilmaz, and Haizhou Li, *Acoustic Modeling for Automatic Lyrics-to-Audio Alignment*  
*In Proceedings of Interspeech*, Graz, 2019.
4. **Chitrlekha Gupta\***, Bidisha Sharma\*, Haizhou Li, and Ye Wang, *Automatic lyrics-to-audio alignment on polyphonic music using singing-adapted acoustic models*  
*In Proceedings of ICASSP*, Brighton, 2019 (\*equal contributors).
5. **Chitrlekha Gupta**, Haizhou Li, and Ye Wang, *Automatic Evaluation of Singing Quality without a Reference*  
*In Proceedings of Asia-Pacific Signal and Information Processing Association (APSIPA)*, Hawaii, 2018.
6. **Chitrlekha Gupta**, Haizhou Li, and Ye Wang, *A Technical Framework for Automatic Perceptual Evaluation of Singing Quality*  
*APSIPA Transactions on Signal and Information Processing*, Vol. 7, Cambridge University Press, 2018.
7. **Chitrlekha Gupta**, Haizhou Li, and Ye Wang, *Automatic Pronunciation Evaluation of Singing*  
*In Proceedings of Interspeech*, Hyderabad, 2018.
8. **Chitrlekha Gupta**, Rong Tong, Haizhou Li, and Ye Wang, *Semi-supervised Lyrics and Solo-Singing Alignment*  
*In Proceedings of International Society of Music Information Retrieval (ISMIR)*, Paris, 2018.
9. Michael Mustaine, Karim Ibrahim, **Chitrlekha Gupta**, and Ye Wang, *Empirically weighing the importance of decision factors when selecting music to sing*  
*In Proceedings of International Society of Music Information Retrieval (ISMIR)*, Paris, 2018.
10. **Chitrlekha Gupta**, Haizhou Li, and Ye Wang, *Perceptual Evaluation of Singing Quality*  
*In Proceedings of Asia-Pacific Signal and Information Processing Association (APSIPA)*, Kuala Lumpur, 2017 (**Best Student Paper Award**).
11. Douglas Turnbull, **Chitrlekha Gupta**, Dania Murad, Michael Barone, and Ye Wang, *Using Music Technology to Motivate Foreign Language Learning*  
*In Proceedings of International Conference on Orange Technologies (ICOT)*, Singapore, 2017.
12. **Chitrlekha Gupta**, David Grunberg, Preeti Rao, and Ye Wang, *Towards automatic mispronunciation detection in singing*  
*In Proceedings of International Society of Music Information Retrieval (ISMIR)*, Suzhou, 2017.
13. Karim Magdi, David Grunberg, Kat Agres, **Chitrlekha Gupta**, and Ye Wang, *Intelligibility of Sung Lyrics: A Pilot Study*  
*In Proceedings of International Society of Music Information Retrieval (ISMIR)*, Suzhou, 2017.

14. Zhiyan Duan, **Chitralekha Gupta**, Graham Percival, David Grunberg, and Ye Wang, *SECCIMA: Singing and Ear Training for Children with Cochlear Implants via a Mobile Application* In *Proceedings of Sound and Music Computing (SMC)*, Helsinki, 2017.
15. **Chitralekha Gupta**, Kaushal Jadia, Avik Santra, and Rajan Srinivasan *Spectral Estimation of Clutter for Matched Illumination*, In *Proceedings of International Radar Symposium India (IRSI)*, Bangalore, Dec. 2013.
16. **Chitralekha Gupta** and Preeti Rao, *Objective Assessment of Ornamentation in Indian Classical Singing*, S. Ystad et al. (Eds.): *CMMR/FRSM 2011, Springer Lecture Notes on Computer Science (LNCS) 7172*, pp. 1-25, 2012. (Masters thesis work)
17. Vishweshwara Rao, **Chitralekha Gupta**, and Preeti Rao, *Context-aware features for singing voice detection in polyphonic music*, In *9th International Workshop on Adaptive Multimedia Retrieval*, Barcelona, July 2011.
18. Ashish Patil, **Chitralekha Gupta** and Preeti Rao, *Evaluating Vowel Pronunciation Quality: Formant Space Matching versus ASR Confidence Scoring*, In *Proceedings of 16th National Conference on Communications, IIT Madras*, Chennai, Jan. 2010.

PATENT (PENDING) *Inventors:* Chitralekha Gupta, Haizhou Li, and Ye Wang,  
*Invention:* “Automatic Leaderboard: Evaluation of Singing Quality without a Standard Reference”;  
as described in **Singapore Patent Application No. 10201907238Y** filed on 5 August 2019.

DEMOS

- **MuSigPro:** Chitralekha Gupta, and Haizhou Li, “Automatic Leaderboard Generation of Singers using Reference-Independent Singing Quality Evaluation Methods”, *presented at ASRU 2019*.  
[Web Platform](#), [Demo Video](#)
- **Speak-to-Sing:** Chitralekha Gupta, Karthika Vijayan, Bidisha Sharma, Xiaoxue Gao, and Haizhou Li, “A Personalized Speech-to-Singing Conversion System”, *presented at Interspeech 2019*.  
[Web Platform](#), [Poster](#)

SOFTWARE  
ENG. SKILLS

*Programming/Scripting Languages:* Python, Matlab, C, C++, Java, Javascript, HTML, PHP  
*Programming Tools:* Kaldi speech recognition toolkit, Tensorflow, Pytorch, Pytorch-kaldi  
*Version Control Tools:* Git, SVN

REFERENCES

<p><b>Dr. Haizhou Li</b> (PhD advisor)  Professor  Dept. of Electrical and Comp. Eng.  National University of Singapore  Email: haizhou.li@nus.edu.sg</p>	<p><b>Dr. Ye Wang</b> (PhD advisor)  Associate Professor  Dept. of Comp. Sci.  National University of Singapore  Email: wangye@comp.nus.edu.sg</p>	<p><b>Dr. Preeti Rao</b> (MTech advisor)  Professor  Dept. of Electrical Eng.  IIT Bombay, India  Email: prao@ee.iitb.ac.in</p>
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**Mr. Prakash Kadham** (Manager  
at Dell R&D)  
Vice President Engineering  
MANCH Technologies Pvt. Ltd.  
Bangalore, India  
Email: kadham.prakash@gmail.com