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

Contact Information

E4-06-20, Human Language Technology Lab,
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Start-up: https://musigpro.com

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

Ph.D. 2015 - 2019
National University of Singapore
NUS Graduate School for Integrative Sciences and Engineering (Dept. of Comp. Sci.); CAP: 4.38/5.0
Thesis: Comprehensive evaluation of singing quality
Advisor: Haizhou Li and Ye Wang

Master of Technology 2008 - 2011
Indian Institute of Technology Bombay
Specialization: Communication & Signal Processing (Dept. of Electrical Eng.); *GPA:* 9.63/10.0
Thesis: Objective assessment of ornaments in Indian singing
Advisor: Preeti Rao

Bachelor of Engineering 2004 - 2008
M.S. University, Baroda
Specialization: Electronics; *GPA:* 3.8/4.0
Thesis: An obstacle detector for the visually challenged
Advisor: M. S. Gosavi

Selected Honors and Awards

- **NUS Graduate Research Innovation Program (GRIP) Award**, July 2019, a start-up grant for MuSigPro Pte. Ltd.
- **MIREX 2019** Our *"Automatic Lyrics-to-Audio Alignment"* system has outperformed all other systems in the International Music Information Retrieval Evaluation eXchange platform 2019. (Mirex Results)
- **NUS Dean's Graduate Research Achievement Award**, School of Computing, NUS, 2018.
- **School of Computing Innovation Prize, NUS** (Team), for *SLIONS: Singing and Listening to Improve Our Natural Speaking*, an application for language learning through singing, 2018.
- **Best Student Paper Award**, for the paper *Perceptual Evaluation of Singing Quality* at APSIPA 2017.
- **NGS PhD Scholarship**, National University of Singapore, 2015–2019
- **Best Employee of the Quarter**, Airbus Defense and Space, Bangalore, 2014
- **Recognized Disclosure**, Dell R&D, Bangalore, 2013: "Applying state-of-the-art speech recognition tools for improved user experience in enterprise servers" (Awarded to the best novel proposals)

Work Experience

1. **Founder and CEO of MuSigPro Pte. Ltd.** 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.
2. **Research Fellow at Human Language Technology Lab, ECE, NUS** Feb 2019 – Present
   Singing voice evaluation, applications of ASR in music, singing voice synthesis.

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. **Chitralekha Gupta**, Emre Yılmaz, and Haizhou Li, *Automatic Lyrics Alignment and Transcription in Polyphonic Music: Does Background Music Help?*
   Submitted to ICASSP, 2020.
2. **Chitralekha Gupta**, Haizhou Li, and Ye Wang, *Automatic Leaderboard: Evaluation of Singing Quality without a Standard Reference*
   IEEE/ACM Transactions on Audio, Speech, and Language Processing, 2019.
3. **Chitralekha Gupta**, Emre Yılmaz, and Haizhou Li, *Acoustic Modeling for Automatic Lyrics-to-Audio Alignment*
   In Proceedings of Interspeech, Graz, 2019.
4. **Chitralekha 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. **Chitralekha 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. **Chitralekha 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. **Chitralekha Gupta**, Haizhou Li, and Ye Wang, *Automatic Pronunciation Evaluation of Singing*
   In Proceedings of Interspeech, Hyderabad, 2018.
8. **Chitralekha 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, **Chitralekha 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. **Chitralekha 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, **Chitralekha 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. **Chitralekha 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, **Chitralekha 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

- **AutoLyrixAlign:** Chitralekha Gupta, Emre Yılmaz, and Haizhou Li, "NUS AutoLyrixAlign", *submitted to ICASSP 2020 Show and Tell.*
Web Platform, **Demo Video**
- **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**, **Poster**
- **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, **Demo Video**, **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

Dr. Haizhou Li (PhD advisor)
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National University of Singapore
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Dr. Ye Wang (PhD advisor)
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Dr. Preeti Rao (MTech advisor)
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Dept. of Electrical Eng.
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Mr. Prakash Kadham (Manager at Dell R&D)
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