

# ORCHISAMA DAS

## Address

Center for Computer Research  
in Music and Acoustics,  
The Knoll, 660 Lomita Court,  
Stanford, CA 94305-8180

## Email

orchisama.das@gmail.com  
orchi@ccrma.stanford.edu

## Website

<http://ccrma.stanford.edu/orchi>

## Education

Ph.D candidate in Computer Based Music Theory and Acoustics (2016-2021).  
Center for Computer Research in Music and Acoustics (CCRMA),  
Department of Music, Stanford University.  
Dissertation Committee- Jonathan Abel, Julius Smith and Chris Chafe.

B.Eng in Instrumentation and Electronics Engineering (2012-2016).  
Jadavpur University, Kolkata, India.  
Graduated with First Class Honors.

## Experience

- Research Intern at **Facebook Reality Labs**, Audio Group (Jun-Sept 2020).
- Visiting Researcher at **IRCAM**, Paris, Sound Analysis and Synthesis Team (Jan - Mar, 2019).
- DSP Intern at **Tesla**, Noise Vibration and Harshness team - Development of NVH toolbox for vibration analysis of drive unit dynos (Jun - Sept, 2018).
- Teaching Assistant for
  - **MUS421A** - *Time-Frequency Audio Signal Processing* taught by Julius Smith (Apr - Jun, 2018-2020).
  - **MUS220A** - *Fundamentals of Computer Generated Sound* taught by Chris Chafe (Sep - Dec, 2019).
  - **MUS220B** - *Compositional Algorithms, Psychoacoustics and Spatial Processing* taught by Ge Wang (Jan - Mar, 2018).
  - **MUS320A** - *Introduction to Audio Signal Processing, Part I: Spectrum Analysis* taught by Julius Smith (Sept - Dec, 2017).
- Research intern at **University of Calgary**, Canada, Department of Electrical and Computer Engineering, supervised by Prof. Michael Smith (May-Aug, 2015).

## Research Topics

- **Multi-microphone Bleed Cancellation (*Dissertation topic*)**
  - Joint estimation of source and multichannel acoustic transfer function in a reverberant environment.
- **Sound Analysis-Synthesis**
  - High Resolution Spectral Estimation

- Modal Synthesis
- Pitch Tracking
- **Artificial Reverberation**
  - Feedback Delay Networks
  - Modal Reverberation

## Publications

### Journal

- *Modal Estimation on a Warped Frequency Axis with Application to Coupled Piano String Modeling* - **O. Das**, J.S Abel in IEEE/ACM Transactions on Audio, Speech and Language Processing, **IEEE TASLP** - **Under review**
- *Improved Real-time Monophonic Pitch Tracking with the Extended Complex Kalman Filter* - **O. Das**, J.O. Smith, C. Chafe in Journal of the Audio Engineering Society - **JAES**, January 2020.
- *Rhythm Analysis of Tabla Signal by Detecting the Cyclic Pattern* - S. Bhaduri, **O. Das**, S. Saha, C. Mazumdar in Innovations in Systems and Software Engineering - **ISSE**, a NASA journal published by Springer, September 2015.

### Conference

- *Delay Network Architectures for Room and Coupled Space Modeling* - **O. Das**, E.K Canfield-Dafilou, J.S Abel in Proc. of 23rd International Conference on Digital Audio Effects - **DAFx 2020**, Vienna, Austria.
- *On the Behavior of Delay Network Reverberator Modes* - **O. Das**, E.K Canfield-Dafilou, J.S Abel in Proc. of IEEE Workshop on Applications of Signal Processing to Audio and Acoustics - **WASPAA 2019**, New Paltz, USA.
- *Improved Carillon Synthesis* - M.Rau, **O. Das**, E.K Canfield-Dafilou in Proc. of 22nd International Conference on Digital Audio Effects - **DAFx 2019**, Birmingham, UK.
- *FAST MUSIC - An efficient implementation of the MUSIC algorithm for frequency estimation of approximately periodic signals* - **O. Das**, J.S Abel, J. O. Smith in Proc. of 21st International Conference on Digital Audio Effects - **DAFx 2018**, Aveiro, Portugal.
- *Analyzing and Classifying Guitarists from Rock Guitar Solo Tablature* - **O. Das**, B. Kaneshiro, T. Collins in Proc. of 15th International Conference on Sound and Music Computing - **SMC 2018**, Limassol, Cyprus.
- *An "Infinite" Sustain Effect Pedal Designed for Live Guitar Performance* - M. Rau, **O. Das** in Proc. of 143rd Audio Engineering Society Convention - **AES 2017**, New York, USA.
- *Real-time Pitch Tracking in Audio Signals with the Extended Complex Kalman Filter*- **O. Das**, J.O. Smith, C. Chafe in Proc. of 20th International Conference on Digital Audio Effects - **DAFx 2017**, Edinburgh, UK.

- *Application of the Tuned Kalman Filter in Speech Enhancement* - **O. Das**, B. Goswami, R. Ghosh in Proc. of 1st IEEE International Conference on Control, Measurement and Instrumentation - **CMI 2016**, Kolkata, India.

#### **Grants and Awards**

- Adobe Research Fellowship 2020 Finalist.
- Travel award for IEEE WASPAA 2019.
- 4th best paper award at DAFx 2017. Extended paper invited for publication in the Journal of Audio Engineering Society.
- Gertrude Guggenheim and Robert M. Levison Fellowship in the Humanities offered by the School of Humanities and Sciences, Stanford University (2016-2021).
- Mitacs Globalink Fellowship for summer research in Canada, 2015.
- Scholarship for Higher Education (SHE) offered by the Ministry of Human Resource and Development, Govt. of India, 2012.

#### **Technical Reviewer**

- Digital Audio Effects Conference (DAFx) 2018, 2020.
- Sound and Music Computing Conference (SMC) 2019, 2020.
- Linux Audio Conference (LAC) 2019.