

## ORCHISAMA DAS

### Address

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### Education

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

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

### Industry Experience

#### Current position

- Senior Audio Research Scientist at **SONOS, Inc.**, London, UK.

#### Research Intern

- Audio Research Intern at **Facebook Reality Labs**, Redmond, USA. (Jun-Sept 2020).
  - \* Interpolation of room impulse responses for reverberation synthesis in Augmented Reality.
- DSP Intern at **Tesla, Inc.**, Noise Vibration and Harshness team, Palo Alto, USA (Jun - Sept, 2018).
  - \* Development of NVH toolbox for vibration analysis of drive unit dynos.

### Academic Experience

#### Postdoctoral Research Fellow

- Institute of Sound Recording (IoSR), University of Surrey.  
Project - EPSRC funded SCalable Room Acoustics Modeling,  
(Aug, 2021 – Jun, 2022).

#### Visiting Researcher

- Aalto Acoustics Lab, Aalto University, Espoo, Finland (May 2022).
- Audiokommunikation Dept., Technische Universität Berlin, Berlin, Germany (Jan-Mar, 2020).
- Sound Analysis and Synthesis Team, IRCAM, Paris, France. (Jan - Mar, 2019)

#### Research Intern

- Department of Electrical and Computer Engineering, University of Calgary (May - Aug, 2015).

### Teaching Assistant (Stanford University)

- MUS421A - *Time-Frequency Audio Signal Processing* (Apr - Jun, 2018-2020).
- MUS220A - *Fundamentals of Computer Generated Sound* (Sep - Dec, 2019).
- MUS220B - *Compositional Algorithms, Psychoacoustics and Spatial Processing* (Jan - Mar, 2018).
- MUS320A - *Introduction to Audio Signal Processing, Part I: Spectrum Analysis* (Sept - Dec, 2017).

### Technical Skills

Programming in **Python, MATLAB, C++ (JUICE)**

Numerical analysis in COMSOL, FreeFEM++

Sound recording and mixing

**Github:** <https://github.com/orchidas>

### Peer-reviewed Publications

#### Journal

1. **O. Das**, J.S Abel, "Grouped Feedback Delay Networks for Modeling of Coupled Spaces" in *J. Audio Eng. Soc.*, vol 69 no.7/8, pp.486-496, July 2021.
2. **O. Das**, J.O. Smith, C. Chafe, "Improved Real-time Monophonic Pitch Tracking with the Extended Complex Kalman Filter" in *J. Audio Eng. Soc.*, vol 68 no.1/2, pp.78-86. February 2020.
3. S. Bhaduri, **O. Das**, S. Saha, C. Mazumdar, "Rhythm Analysis of Tabla Signal by Detecting the Cyclic Pattern" in *Innovations in Syst. Software Eng., a NASA journal*, vol 11 no.3, pp.187-195. September 2015.

#### Conference

1. M. Scerbo, **O. Das**, E. De Sena, "Higher-order Scattering Delay Networks for Artificial Reverberation" in *Proc. of 25th Int. Conf. Digit. Audio Effects, 2022*, Vienna, Austria.
2. J. Mannall, **O. Das**, P. Calamia, E. De Sena, "Perceptual evaluation of low-complexity diffraction models from a single edge" in *Proc. of AES Int. Conf. on Audio for Virtual and Aug. Reality, 2022*, Redmond, USA.
3. **O. Das**, J.O Smith, J.S Abel, "Microphone Cross-talk Cancellation in Ensemble Recordings with Maximum Likelihood Estimation" in *Proc. of 150th Audio Eng. Soc. Conv.*, 2021.
4. **O. Das**, P. Calamia, S.V.A Gari, "Room Impulse Response Interpolation from a Sparse Set of Measurements Using a Modal Architecture" in *Proc. of IEEE 46th Int. Conf. on Acoust., Speech, Signal Process.*, 2021, Toronto, Canada.

5. **O. Das**, E.K Canfield-Dafilou, J.S Abel, "Delay Network Architectures for Room and Coupled Space Modeling" in *Proc. of 23rd Int. Conf. Digit. Audio Effects*, 2020, Vienna, Austria.
6. **O. Das**, E.K Canfield-Dafilou, J.S Abel, "On the Behavior of Delay Network Re-verberator Modes" in *Proc. of IEEE Workshop Appl. of Signal Process. Audio, Acoust.*, 2019, New Paltz, USA.
7. M.Rau, **O. Das**, E.K Canfield-Dafilou, "Improved Carillon Synthesis" in *Proc. of 22nd Int. Conf. on Digit. Audio Effects*, 2019, Birmingham, UK.
8. **O. Das**, J.S Abel, J. O. Smith, "FAST MUSIC - An efficient implementation of the MUSIC algorithm for frequency estimation of approximately periodic signals" in *Proc. of 21st Int. Conf. on Digit. Audio Effects*, 2018, Aveiro, Portugal.
9. **O. Das**, B. Kaneshiro, T. Collins, "Analyzing and Classifying Guitarists from Rock Guitar Solo Tablature" in *Proc. of 15th Int. Conf. Snd, Music Comp.*, 2018, Limassol, Cyprus.
10. **O. Das**, J.O. Smith, C. Chafe , "Real-time Pitch Tracking in Audio Signals with the Extended Complex Kalman Filter" in *Proc. of 20th Int. Conf. Digit. Audio Effects*, 2017, Edinburgh, UK.
11. **O. Das**, B. Goswami, R. Ghosh, "Application of the Tuned Kalman Filter in Speech Enhancement" in *Proc. of 1st IEEE Int. Conf. on Control, Meas. Instr.*, 2016, Kolkata, India.

#### Patents

- **O. Das**, S.V.A Gari, P. Calamia, P. Robinson, "*Estimation of Acoustic Parameters for Audio System Based on Stored Information About Acoustic Model*" - **USPTO Application 17/133,938** (Patent Pending).

#### Invited talks

- *Aalto Acoustics Lab, Aalto University*, "On the use of Paraunitary matrices in Artificial Reverberation", May, 2022.
- *Institute Jean le Ronde d'Alembert, Sorbonne University*, "Coupled room acoustics modeling with Grouped Feedback Delay Networks", December 2021.
- *Bay Innovative Signal Hackers BASH (BISH BASH)*, "Microphone bleed cancellation in studio recordings", June 2020.
- *Facebook Reality Labs*, "Interpolation of Room Impulse Responses for Augmented Reality applications with modal synthesis", November 2020.

#### Grants and Awards

- Best Paper Award – Mannall et al., **AES AVAR 2022**.
- **Adobe Research Fellowship** Finalist, 2020.

- Travel Award, **IEEE WASPAA** 2019.
- 4th Best Paper Award – Das et al. **DAFx** 2017.
- **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**

- Audio Engineering Society (AES Journal and Convention)
- Digital Audio Effects Conference (DAFx)
- Sound and Music Computing Conference (SMC)
- Linux Audio Conference (LAC)

**Memberships**

- Audio Engineering Society
- IEEE Signal Processing Society
- UK Acoustics Network