

ANTON JERAN RATNARAJAH

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PERSONAL STATEMENT

I am a 5th year PhD student at the University of Maryland, College Park advised by Professor Dinesh Manocha. My research area is broadly in building multi-modal machine learning models to create high-quality sound experiences in interactive applications.

EDUCATION

University of Maryland - College Park

PhD in Electrical and Computer Engineering

Cumulative GPA: 3.88/4.0

College Park, MD, USA

Aug. 2019 – Present (2024 expected)

University of Moratuwa

Bachelor of Science in Engineering

Cumulative GPA: 3.91/4.2

Moratuwa, Sri Lanka

Feb. 2014 – Jan. 2018

SELECTED PUBLICATIONS (MULTIMODAL)

AV-RIR: Audio-Visual Room Impulse Response Estimation

Anton Ratnarajah, Sreyan Ghosh, Sonal Kumar, Purva Chiniya, Dinesh Manocha

CVPR 2024

Listen2Scene: Interactive material-aware binaural sound propagation for reconstructed 3D scenes

Anton Ratnarajah, Dinesh Manocha

IEEE VR 2024

AdVerb: Visually Guided Audio Dereverberation

Sanjoy Chowdhury, Sreyan Ghosh, Subhrajyoti Dasgupta, Anton Ratnarajah, Utkarsh Tyagi, Dinesh Manocha.

ICCV 2023

MESH2IR: Neural Acoustic Impulse Response Generator for Complex 3D Scenes

Anton Ratnarajah, Zhenyu Tang, Rohith Aralikatti, Dinesh Manocha

ACM Multimedia 2022 (Oral)

GWA: A Large Geometric-Wave Acoustic Dataset for Audio Deep Learning

Zhenyu Tang, Rohith Aralikatti, Anton Ratnarajah, Dinesh Manocha

SIGGRAPH 2022

SELECTED PUBLICATIONS (AUDIO AND SPEECH PROCESSING)

Towards Improved Room Impulse Response Estimation for Speech Recognition

Anton Ratnarajah, Ishwarya Ananthabhotla, Vamsi Krishna Ithapu, Pablo Hoffmann, Dinesh Manocha, Paul Calamia

ICASSP 2023

FAST-RIR: Fast neural diffuse room impulse response generator

Anton Ratnarajah, Shi-Xiong Zhang, Meng Yu, Zhenyu Tang, Dinesh Manocha, Dong Yu

ICASSP 2022

IR-GAN: Room Impulse Response Generator for Far-field Speech Recognition

Anton Ratnarajah, Zhenyu Tang, Dinesh Manocha

INTERSPEECH 2021

TS-RIR: Translated synthetic room impulse responses for speech augmentation

Anton Ratnarajah, Zhenyu Tang, Dinesh Manocha

IEEE ASRU 2021

Improving Reverberant Speech Separation with multi-stage training and curriculum learning

Rohith Aralikatti, Anton Ratnarajah, Zhenyu Tang, Dinesh Manocha

IEEE ASRU 2021

M3-AUDIODEC: Multi-channel multi-speaker multi-spatial audio codec

Anton Ratnarajah, Shi-Xiong Zhang, Dong Yu

Arxiv

WORK EXPERIENCE**Research Intern***Tencent America*

May. 2023 – Aug. 2023

Bellevue, Washington, United States

Implemented an innovative neural spatial audio codec for efficient compression of multi-channel (binaural) speech in both single and multi-speaker scenarios while retaining the spatial location information of each speaker.

Research Scientist Intern*META*

May. 2022 – Nov. 2022

Redmond, Washington, United States

Implemented a novel algorithm to estimate room impulse response from a reverberant speech.

Research Intern*Tencent America*

May. 2021 – Aug. 2021

Bellevue, Washington, United States

Implemented a neural-network-based fast diffuse room impulse response generator (FAST-RIR) for generating room impulse responses (RIRs) for a given acoustic environment.

Engineer*Wave Computing*

Feb. 2018 – Jul. 2019

Colombo, Sri Lanka

Developed machine learning applications for Wave Computing's Dataflow Processing Unit (DPU) Architecture using Wave Flow Graph (WFG), a data flow description language developed by Wave Computing. Compiled and simulated the designs in Wave Computing's complete EDA toolchain. Debugged and proposed suggestions to improve the toolchain and the architecture.

Research Intern*HESL Lab, Nanyang Technological University*

Aug. 2016 – Dec. 2016

Singapore

Successfully completed a project titled "Low complexity techniques for Vehicle Localization and Tracking" under the guidance of Dr. Lam Siew Kei.

TEACHING EXPERIENCE**ENEE 245: Digital Circuits and Systems Laboratory***Teaching Assistant for Associate Professor Manoj Franklin*

University of Maryland

*Spring 2022***CMSC 742: Algorithms in Machine Learning: Guarantees and Analyses***Teaching Assistant for Professor Furong Huang*

University of Maryland

*Fall 2021***ENEE 630: Advanced Digital Signal Processing***Teaching Assistant for Professor K. J. Ray Liu*

University of Maryland

*Fall 2020***ENEE 425: Digital Signal Processing***Teaching Assistant for Associate Professor Behtash Babadi*

University of Maryland

*Spring 2020***ENEE 425: Digital Signal Processing***Teaching Assistant for Professor Carol Espy-Wilson*

University of Maryland

Fall 2019

ACADEMIC SERVICES

- I served as a reviewer for the ACM Multimedia 2023, ACM UIST 2023, IEEE VR 2023, MERCON 2019.

HONORS AND AWARDS

- Won B.Sc. grant for outstanding SMCS B.Sc. thesis work from the IEEE SMCS Thesis Grant Initiative in 2018.
- Became Runner-Up in the Startathon Competition organized by Nanyang Technological University, Singapore in 2016.
- Our project titled Forensic Video Analytics Software was awarded Gold Medal in the “Tertiary Student Project (Technology)” Category on the 20th National Best Quality ICT Awards, in Sri Lanka.

COURSEWORK

Artificial Intelligence: Deep Learning for Audio-to-Audio Processing, Foundations of Deep Learning, Algorithms in Machine Learning: Guarantees and Analyses

Signal Processing: Speech and Audio Processing, Random Processes in Communication and Control, Advanced Digital Signal Processing, Information Theory

Other: Compilers and Optimization

TECHNICAL SKILLS

Languages: Python, C/C++, Java, Matlab

Public Libraries: Pytorch, Tensorflow, OpenCV

Software and Tools: Kaldi, Latex