Tejas Jayashankar

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EDUCATION	**Massachusetts Institute of Technology** (MIT)	*Cambridge, MA*
	Ph. D. in Electrical Engineering and Computer Science	*2022—2025*
	Thesis: Score Estimation for Generative Modeling	*GPA: 5.00/5.00*
	Advisor: *Prof. Gregory W. Wornell*	

Massachusetts Institute of Technology (MIT) — *Cambridge, MA*
Master of Science in Electrical Engineering and Computer Science — *2019—2022*

University of Illinois at Urbana-Champaign (UIUC) — *Champaign, IL*
Bachelor of Science in Electrical Engineering with Highest Honors — *2015—2019*
Minor in Mathematics

RESEARCH INTERESTS Diffusion Models, Score Estimation, Few-step Generative Models, LLM Post-training, Reward Modeling, Neural Compression, Signal Processing

SOFTWARE SKILLS PyTorch, JAX, Tensorflow, Distributed training, Python, C++, C, Linux, Docker, Git

WORK EXPERIENCE

Meta Superintelligence Labs — *Menlo Park, CA*
Role: *Research Scientist* — *June 2025 — Present*

- Built and trained next-generation neural speech codecs with an improved diffusion-based prior for production deployment alongside multimodal LLMs.
- Developing reward models and judges to improve speech aesthetic and semantic naturalness, leveraging RLHF and DPO for multimodal LLM post-training.
- Investigating diffusion distillation and few-step sampling methods to reduce latency and compute for diffusion-based token-to-waveform decoders.

RESEARCH INTERNSHIPS

Adobe Research — *San Jose, CA*
Host: *Nikos Vlassis* — *May 2024 — August 2024*

- Trained one-step generative models by designing diffusion distillation algorithms leveraging maximum mean discrepancy (MMD) distribution matching.

Google Research 🔗 Final Presentation — *Cambridge, MA*
Hosts: *Fabian Mentzer and David Minnen* — *September 2022 — April 2023*

- Built multi-frame encoder/decoder components to scale transformer-based video compression training to longer sequences across TPUs, and introduced conditioning schemes enabling a single model to compress I/B/P frames with $> 2\times$ faster inference.

Meta AI 📄 IEEE paper — *Menlo Park, CA*
Hosts: *Vimal Manohar and Qing He* — *May 2022 — September 2022*

- Designed a HiFiGAN-based singing voice converter using ASR-fine-tuned Wav2Vec 2.0 features and a parallel bank of transposed convolutions (PBTC) for $f0$ modeling, and modeled rich vocal harmonics via strided/dilated transposed-convolution filterbanks.

Meta AI 📄 IEEE paper — *Cambridge, MA*
Host: *Qing He* — *June 2021—September 2021*

- Trained a variable-bitrate (3.2–12.8 kbps) neural speech codec with a hierarchical VQ-VAE backbone and adjustable compute, robust to packet losses up to 120 ms; MOS studies showed the lowest-bitrate setting outperformed Codec2, Opus (6 kbps), and Lyra.

Mitsubishi Electric Research Labs 📄 ISCA paper — *Cambridge, MA*
Hosts: *Jonathan Le Roux and Pierre Moulin* — *March 2019 — April 2019*

- Leveraged dropout-based uncertainty to detect audio attacks on ASR systems, achieving detection accuracies of 89%, 92%, and 94% on noise-robust, auditory-masked, and urban-sound adversarial attacks, respectively.

PUBLICATIONS, TECHNICAL REPORTS, PATENTS	(⋆ denotes equal contribution; title is hyperlinked to the online pdf of the paper)

1. **Tejas Jayashankar**, "Score Estimation for Generative Modeling", *Doctoral thesis, Massachusetts Institute of Technology* — *2025*

2. **Tejas Jayashankar**⋆, Jongha Jon Ryu⋆ Gregory W. Wornell, "Score-of-Mixture Training: Training One-Step Generative Models Made Simple via Score Estimation of Mixture Distributions", *International Conference on Machine Learning (ICML)* **Spotlight: Top 2.6% of papers** — *2025*

3. **Tejas Jayashankar**⋆, Jongha Jon Ryu⋆, Xiangxiang Xu, Gregory W. Wornell, "Lifted Residual Score Estimation", *ICML Workshop on Structured Probabilistic Inference & Generative Modeling* — *2024*

4. **Tejas Jayashankar**, Binoy Kurien, Alejandro Lancho, Gary C.F. Lee, Yury Polyanskiy, Amir Weiss, Gregory W. Wornell, "The Data-Driven Radio Frequency Signal Separation Challenge", *IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP)* — *2024*

5. **Tejas Jayashankar**, Gregory W. Wornell, "Model-code Separation Architecture for Data Compression using Sum-Product Networks", *International Patent WO 2024/030698* — *2024*

6. **Tejas Jayashankar**, Gary C. F. Lee, Alejandro Lancho, Amir Weiss, Yury Polyanskiy, Gregory W. Wornell, "Score-based Source Separation with Applications to Digital Communication Signals", *Advances in Neural Information Processing Systems (NeurIPS)* — *2023*

7. **Tejas Jayashankar**, Jilong Wu, Leda Sari, David Kant, Vimal Manohar, Qing He, "Self-supervised Representations for Singing Voice Conversion", *IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP)* — *2023*

8. **Tejas Jayashankar**, "Image Compression using Sum-Product Networks", *Master's thesis, Massachusetts Institute of Technology* — *2022*

9. **Tejas Jayashankar**, Thilo Koehler, Kaustubh Kalgaonkar, Zhiping Xiu, Jilong Wu, Ju Lin, Prabhav Agrawal, Qing He, "Architecture for Variable Bitrate Neural Speech Codec with Configurable Computation Complexity", *IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP)* *2022*

10. Jonathan Le Roux, **Tejas Jayashankar**, Pierre Moulin, "System and Method for Detecting Adversarial Attacks", *US Patent US16/84426* — *2021*

11. **Tejas Jayashankar**, Jonathan Le Roux, Pierre Moulin, "Detecting Audio Attacks on ASR Systems with Dropout Uncertainty", *INTERSPEECH* — *2020*

12. **Tejas Jayashankar**, Pierre Moulin, Thierry Blu, Christopher Gilliam, "LAP-Based Video Frame Interpolation", *IEEE International Conference on Image Processing (ICIP)* — *2019*

AWARDS AND ACHIEVEMENTS		
Claude E. Shannon Fellowship, MIT	*2024—2025*
Fano Fellowship & Hewlett Packard 2 Fellowship, MIT	*2019—2020*
Bronze Tablet for being in top 2% of the graduating class, UIUC	*2019*
Edward C. Jordan Award for exemplary undergraduate research, UIUC	*2017*
Jules D. Falzer Scholarship, UIUC	*2017–2018*

Leadership Experience

- Student Advisor, MIT EECS Visiting Committee of Scholars and Professionals *2022*

- President, MIT EECS Graduate Student Association *2021—2022*

- President, UIUC Tau Beta Pi Chapter *2018—2019*

Teaching and Mentoring Experience

- **Research Mentor**: Advised undergraduate students in research related to reinforcement learning, diffusion models and NeRFs *2021 & 2024*

- **Teaching Assistant**: Led office hours and recitations for graduate level statistical inference course. Topics included probabilistic graphical models, variational inference, belief propagation and MCMC. Overall rating of 6.9/7.0 *2021*

- **Lab Instructor**: Digital signal processing in Python and MATLAB *2018—2019*