Shyam Venkatasubramanian

Personal website: https://shyamven.github.io/

2325 Third Street Unit 324
San Francisco, CA 94107
shyam@anthrogen.com

EDUCATION

Duke University 2021 – Present
Ph.D. Candidate in Electrical and Computer Engineering
Advised by Vahid Tarokh.

UCLA 2018 – 2021
B.S. in Electrical Engineering
Magna Cum Laude, Technical Breadth in Engineering Mathematics.

PROFESSIONAL EXPERIENCE

Head of Technical Staff, **Anthrogen** 2025 – Present

Machine Learning Intern, **Tesla** Spring 2024

- Autopilot AI and navigation team. Supervised by Dariush Dabiri.

Research Intern, **U.S. Air Force Research Laboratory (AFRL)** Summer 2023

- Joint project with SPAS (Duke). Supervised by Muralidhar Rangaswamy.

Engineering Intern, **Schweitzer Engineering Laboratories (SEL)** Summer 2019

- Developed fault-detection software. Supervised by Marcos Donolo.

Technical Assistant, **Washington State University EECS Department** Summer 2018

- Developed oscillation monitoring tools. Supervised by Anjan Bose.

RESEARCH EXPERIENCE

Duke Signal Processing and Applied Statistics Group (SPAS) 2021 – Present

- Broadly interested in the design and optimization of neural networks for signal processing and natural language processing applications.

UCLA Laboratory for Robust Information Systems (LORIS) 2020 – 2021

- Threshold and Early Waterfall Improvements of Structured LDPC Codes.
  - Supervised by Lara Dolecek (UCLA) and Robert Calderbank (Duke).
- Information Reconciliation in the Quantum Key Distribution.
  - Supervised by Lara Dolecek (LORIS) and Chee Wei Wong (CQSE).

WSU Systems-on-Chip Laboratory 2016 – 2018

- Sampled Time Delay Based Multi-Input-Multi-Output Baseband Receiver
  - Supervised by Subhanshu Gupta (WSU).

PUBLICATIONS, PREPRINTS, AND PATENTS

- Shyam Venkatasubramanian, Vahid Tarokh. *Learn2Mix: Training Neural Networks Using Adaptive Data Integration*. NeurIPS 2025. doi: 10.48550/arXiv.2412.16482
- Shyam Venkatasubramanian, Sean Moushegian, Ahmed Aloui, Vahid Tarokh. *An Information-Theoretic Lower Bound on the Generalization Error of Autoencoders* [Featured Certification]. Transactions on Machine Learning Research.
- Shyam Venkatasubramanian, Ali Pezeshki, Vahid Tarokh. *Steinmetz Neural Networks for Complex-Valued Data*. AISTATS 2025. doi: 10.48550/arXiv.2409.10075.
- Shyam Venkatasubramanian, Ahmed Aloui, Vahid Tarokh. *Random Linear Projections Loss for Hyperplane-Based Optimization in Neural Networks*. UAI 2024. doi: 10.48550/arXiv.2311.12356.
- Shyam Venkatasubramanian, Bosung Kang, Ali Pezeshki, Muralidhar Rangaswamy, Vahid Tarokh. *RASPNet: A Benchmark Dataset for Radar Adaptive Signal Processing Applications*. ArXiv preprint. doi: 10.48550/arXiv.2406.09638.
- Shyam Venkatasubramanian, Sandeep Gogineni, Bosung Kang, Ali Pezeshki, Muralidhar Rangaswamy, Vahid Tarokh. *Data-Driven Target Localization Using Adaptive Radar Processing and Convolutional Neural Networks*. IET Radar, Sonar, & Navigation. doi: 10.1049/rsn2.12600.
- Shyam Venkatasubramanian, Sandeep Gogineni, Bosung Kang, Muralidhar Rangaswamy. *Data-Driven Target Localization: Benchmarking Gradient Descent Using the Cramér-Rao Bound*. ArXiv preprint. doi: 10.48550/arXiv.2406.09638.
- Shyam Venkatasubramanian, Sandeep Gogineni, Bosung Kang, Ali Pezeshki, Muralidhar Rangaswamy, Vahid Tarokh. *Subspace Perturbation Analysis for Data-Driven Radar Target Localization*. 2023 IEEE Radar Conference. doi: 10.1109/RadarConf2351548.2023.10149781.
- Shyam Venkatasubramanian, Chayut Wongkhamthong, Mohammadreza Soltani, Bosung Kang, Sandeep Gogineni, Ali Pezeshki, Muralidhar Rangaswamy, Vahid Tarokh. *Toward Data-Driven STAP Radar*. 2022 IEEE Radar Conference. doi: 10.1109/RadarConf2248738.2022.9764354.
- Siyi Yang, Ahmed Hareedy, Shyam Venkatasubramanian, Robert Calderbank, Lara Dolecek. *GRADE-AO: Towards Near-Optimal Spatially-Coupled Codes with High Memories*. 2021 IEEE International Symposium on Information Theory. doi: 10.1109/ISIT45174.2021.9517931.
- Subhanshu Gupta, Erfan Ghaderi, Sudip Shekhar, Shyam Venkatasubramanian, Ajith Sivadhasan Ramani. *Spatial interference cancellation for simultaneous wireless and information power transfer*. United States Patent and Trademark Office. US Patent US10804988B2.

AWARDS AND ORGANIZATIONS

Student Member, IEEE	2019 – Present
IEEE Eta Kappa Nu (HKN)	2019 – Present
DOE National Science Bowl Finalist	2014, 2018