

# Shyam Venkatasubramanian

720 S Lasalle St, Apt R  
Durham, NC 27705  
(509) 432-9647

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

[shyam.venkatasubramanian@duke.edu](mailto:shyam.venkatasubramanian@duke.edu)

## EDUCATION

---

**Duke University** **2021 – Present**  
**Ph.D. Candidate in Electrical and Computer Engineering**  
Advisor: Dr. Vahid Tarokh

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

**Washington State University** **2016 – 2018**  
**Dual Enrollment** (Pullman High School)  
Relevant Coursework:

- Graph Theory, Linear Optimization, Nonlinear Dynamics and Chaos, Partial Differential Equations, Signals and Systems

## RESEARCH EXPERIENCE

---

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

- Broadly interested in the design and optimization of neural network architectures for signal processing, computer vision, and natural language processing applications

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

- Threshold and Early Waterfall Improvements of Structured LDPC Codes
  - **Collaborators:** Dr. Siyi Yang (UCLA), Dr. Ahmed Hareedy (Duke)
  - **Supervisors:** Dr. Lara Dolecek (UCLA), Dr. Robert Calderbank (Duke)
- Information Reconciliation in the Quantum Key Distribution
  - **Collaborators:** Dr. Siyi Yang (LORIS), Murat Sarihan (CQSE)
  - **Supervisors:** Dr. Lara Dolecek (LORIS), Dr. Chee Wei Wong (CQSE)

**WSU Systems-on-Chip Laboratory** **2016 – 2018**

- Sampled Time Delay Based Multi-Input-Multi-Output Baseband Receiver
  - **Collaborators:** Dr. Erfan Ghaderi (WSU), Ajith S. Ramani (UBC)
  - **Supervisors:** Dr. Subhanshu Gupta (WSU), Dr. Sudip Shekhar (UBC)

## PROFESSIONAL EXPERIENCE

---

**Machine Learning Intern, Tesla** **Spring 2024**

- **Supervisor:** Dr. Dariush Dabiri
- Autopilot AI and navigation team

**Research Intern, U.S. Air Force Research Laboratory (AFRL)****Summer 2022, 2023**

- **Supervisor:** Dr. Muralidhar Rangaswamy
- Joint project between SPAS (Duke) and AFRL

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

- **Supervisor:** Dr. Marcos Donolo
- Developed fault-detection software for SEL-700 relays

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

- **Supervisor:** Dr. Anjan Bose
- Developed tools to visualize power system oscillations

**PUBLICATIONS, PREPRINTS, AND PATENTS**

---

- Shyam Venkatasubramanian, Vahid Tarokh. *Learn2Mix: Training Neural Networks Using Adaptive Data Integration*. [ArXiv preprint](#). doi: 10.48550/arXiv.2412.16482.
- Shyam Venkatasubramanian, Ali Pezeshki, Vahid Tarokh. *Steinmetz Neural Networks for Complex-Valued Data*. [The 28th International Conference on Artificial Intelligence and Statistics](#). doi: 10.48550/arXiv.2409.10075.
- Shyam Venkatasubramanian, Bosung Kang, Ali Pezeshki, Muralidhar Rangaswamy, Vahid Tarokh. *RASPNNet: 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, Ahmed Aloui, Vahid Tarokh, *Random Linear Projections Loss for Hyperplane-Based Optimization in Neural Networks*. [The 40th Conference on Uncertainty in Artificial Intelligence](#). doi: 10.48550/arXiv.2311.12356.
- 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, and 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, and 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

---

<b>Student Member, IEEE</b>	<b>2019 – Present</b>
<b>IEEE Eta Kappa Nu (HKN)</b>	<b>2019 – Present</b>
<b>DOE National Science Bowl Finalist</b>	<b>2014, 2018</b>
<ul style="list-style-type: none"> <li>• Captained the Pullman High School Science Team at the United States DOE National Science Bowl Finals in Washington, D.C in 2014 and 2018</li> </ul>	