Sidharth Santhi Nivas

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Summary

Fourth-year PhD student in the Department of Computer Science and Engineering at the University of Minnesota, Twin Cities, advised by Dr. Zhangyu Guan, with research interests spanning software-defined networking, cross-layer optimization, waveform design for modern wireless systems, hardware-in-the-loop simulation and digital twin.
Expected graduation: Fall 2027.

Education

- **University of Minnesota** — Minneapolis, MN
  Ph.D. in Computer Science and Engineering — *Aug. 2025 – Present*
  - Current GPA: 4.00/4.00
  - Research continuation from University at Buffalo (Ph.D. student 2023 – 2025).
- **University at Buffalo** — Buffalo, NY
  M.S. in Electrical Engineering — *2021 – 2022*
  - GPA: 4.00/4.00

Technical Skills

- **Problem Solving**: Data Structures, Algorithms, Computer Networks, Wireless System Design, Digital Signal Processing, Digital Logic Design, Computer Architecture.
- **Programming Languages and Frameworks**: Python, C++, C Programming, JavaScript, Java, Matlab, Simulink, Verilog HDL, VHDL, MongoDB, SQL Server, MySQL

Publications

1. **S. Santhi Nivas**, P. S. Pattanshetty Vasanth Kumar, Z. Zhang, C. Zhao, M. McManus, N. Mastronarde, E. S. Bentley, G. Sklivanitis, D. A. Pados, and Z. Guan, "BenchLink: An SoC-Based Benchmark for Resilient Communication Links in GPS-Denied Environments," in *Proc. of* ***IEEE International Conference on Computer Communications (INFOCOM)***, Tokyo, Japan, May 2026.

2. Y. Cui, Z. Zhang, **S. Santhi Nivas**, P. S. Pattanshetty Vasanth Kumar, M. McManus, C. Zhao, G. Sun, N. Mastronarde, G. Sklivanitis, D. A. Pados, E. S. Bentley, and Z. Guan, "StormWave: An Open-Source Portable SDR Platform for Over-the-Air Resilience Evaluation of Terrestrial and Aerial Communications," in *Proc. of* ***IEEE International Conference on Smart Applications, Communications and Networking (SmartNets)***, Rome, Italy, July 2026, pp. 1–6.

3. **S. Santhi Nivas**, P. S. Pattanshetty Vasanth Kumar, M. McManus, H. Nouri, G. Sklivanitis, D. A. Pados, E. S. Bentley, N. Mastronarde, and Z. Guan, "Resilient Communications with Lightweight Signature Synchronization on MPSoC Radios," Demo at ***IEEE Consumer Communications and Networking Conference (CCNC)***, Las Vegas, NV, January 2025.

4. M. McManus, T. Rinchen, S. Suhail, **S. Santhi Nivas**, A. Dey, S. Pagidimarri, Y. Cui, J. Hu, J. Zhang, X. Wang, M. Ji, N. Mastronarde, and Z. Guan, "Demo Abstract: UnionLabs: AWS-based Remote Access and Sharing of NextG and IoT Testbeds," in *Proc. of* ***IEEE International Conference on Computer Communications (INFOCOM)***, Vancouver, Canada, May 2024.

5. S. Thara and **S. Santhi Nivas**, "Aspect-Based Sentiment Classification Using SVD Features," in *Proc. of the* ***IEEE International Conference on Advances in Computing, Communications and Informatics (ICACCI)***, Udupi, India, September 2017.

Relevant Academic/Research Projects

- **Microprocessor design**: Designed and simulated a 32 bit single cycle processor based on MIPS instruction set architecture using Verilog HDL. Subsequently verified using FPGA board.
- **Analysis of Cache Performance and Trade-offs**: Analysed the changes in performance of an x86 processor for certain parameters, such as cache size, associativity, and block size in GEM5 simulator using several benchmarks.
- **Pneumonia Detection using DNN**: Developed classification tool using Deep Neural Networks for detecting Pnemonia from chest X-Ray. Improved classification accuracy using image processing techniques in spatial/frequency domains.
- **Aspect Based Sentiment analysis**: Improved the classification accuracy of polarity of sentences using Support Vector Machines (SVM) and Singular Value Decomposition (SVD) algorithms. Published in ICACCI-2017.

Experience

- **University of Minnesota, Twin Cities** Minneapolis, USA

  Research Assistant *2023 - 2025 Fall*

  - Design, development, simulation, and experimental evaluation of cross-layer optimized software-defined networking algorithms for modern wireless systems.
  - Regularly report research progress to the faculty advisor and collaborate with other researchers on joint projects.
  - Write and publish technical papers in peer-reviewed venues to disseminate research findings.

- **University at Buffalo** Buffalo, USA

  Teaching and Research Assistant *2023 - 2025 Fall*

  - Responsible for evaluating over 40 students in IoT Lab experiments, homework, and assignments, managing their grading throughout the semester.
  - Design, development, simulation, and experimental evaluation of cross-layer optimized software-defined networking algorithms for modern wireless systems.
  - Regularly report research progress to the faculty advisor and collaborate with other researchers on joint projects.
  - Write and publish technical papers in peer-reviewed venues to disseminate research findings.

- **Adysas Scientific Software Solutions** Bangalore, India

  Senior Software Engineer *2019 - 2021*

  - Involved in multiple phases of software development, including requirement gathering, development, testing and deployment using Agile methodology, TDD (test driven development) and Dev-Ops principles.

- **EY (Ernst & Young)** Bangalore, India

  Software Engineer *2017 - 2019*

  - Full stack web developer, involving in the development of various cloud based web applications in the financial regulatory compliance domain using a multitude of technologies.