M. Tech - *Signal Processing, Communication & Networks*
Department of Electrical Engineering
Indian Institute of Technology, Kanpur

Aravind Potluri

Visakhapatnam, Andhra Pradesh
+91 9505831173 | aravindswami135@gmail.com

GitHub : cipherswami
LinkedIn : cipherswami
ORCiD : 0000-0001-9517-3649
website : cipherswami.github.io

To work in an innovative and challenging environment that fosters both professional and personal growth, while leveraging my skills and experiences to drive success and become a valuable asset to the company.

Education & Courses

Master of Technology - *Indian Institute of Technology Kanpur, Kanpur, CPI - 7.78* **2023 - 2025**

+ *Specialization*: Signal Processing, Communication & Networks

- Introduction to Signal Analysis - (EE605), Digital Communications and Networks - (EE673)
- Representation And Analysis Of Random Signals - (EE621), Image Processing - (EE604)
- Detection & Estimation Theory - (EE623), Mathematical Optimization - (EE798W)
- Introduction to Machine Learning - (CS771), Basics of Modern Control Systems - (EE650)
- Data Structures & Algorithms - (EE798B)

Bachelor of Technology - *Indian Institute of Space Science and Technology, Trivandrum, CGPA - 7.01* **2019 - 2023**

+ *Specialization*: Electronics and Communication Engineering

- Engg. Math-Physics & Chemistry, Basic Programming (c++), Basic Electrical and Electronics Engg., DSP.
- Calculus, Linear Algebra, Analog Ckts, Semiconductors Devices, EMT, Signals and Systems, Control Systems.
- Digital Ckts and VLSI, Instrumentation, Network Analysis, RF and MW COM., Communication systems.
- Computer Architecture, Computer Networks, Power Electronics, Navigation Systems, Advanced Sensors.
- Complex Networks, Intro to MEMs, Satellite and Optical COM., Intro to Aerospace Engg.
- *Miscellaneous*: Ethics, Principles of Management, Sci-Fi, Communication skills.

Intermediate - *Ascent Junior College, Visakhapatnam , Percentage - 95.5%* **2016 - 2018**

+ *Specialization*: Maths, Physics & Chemistry

- Mathematics, Physics and Chemistry, Communication Skills.

Matriculation - *Visakha Valley School, Visakhapatnam, CGPA - 10* **2015 - 2016**

+ *Specialization*: Maths & Sciences

- Math, Sciences, Social Sciences and Communication Skills.

Work Experience

Flight Software Intern - *Agnikul Cosmos, Chennai* **Jan' 2023 - Jun' 2023**

+ *Key Technologies*: TSN 802.11, SPI, UART with RS422 & RS232

- Implemented Time-Sensitive Networking (TSN 802.1) in the flight architecture to ensure low-latency, reliable communication, enhancing data control and system synchronization. And designed a robust network architecture integrating TSN, SPI, and UART (RS422/RS232) protocols for reliable and efficient in-flight communication.

Project Intern - *URSC:ISRO, Bangalore* **Jun' 2022 - Jul' 2022**

+ *Key Technologies*: AES, GCMP, CCMP & CTR

- Developed and optimized CCMP and GCMP protocols, targeting the reduction of AES encryption time complexity by achieving nearly tenfold increase in processing speed, greatly enhancing the efficiency of space communication systems.

Research

Robust Techniques for Indoor Localization and Sensing - *Indian Institute of Technology Kanpur* **May' 2024 - May' 2025**

- *M.Tech Thesis* under the supervision of Dr. S. Swamy Peruru and Dr. Amitangshu Pal, focused on enhancing localization accuracy in non-line-of-sight (NLOS) and sparse access point environments through the utilization of IEEE 802.11ac/ax devices. The research also explores innovative sensing methodologies.

Position of Responsibilities

Chair Person - *IEEE EdSoc Chapter IIST* **Jun' 2022 - Aug' 2022**

General Secretary - *IEEE Student Branch IIST* **Aug' 2022 - Dec' 2023**

Teaching Assistant - *EE320: PRINCIPLES OF COMMUNICATION under Prof. K. Vasudevan* **Aug' 2023 - Dec' 2023**

Teaching Assistant - *ESC201: INTRODUCTION TO ELECTRONICS Lab under Prof. K.S Venkatesh* **Jan' 2024 - May' 2024**

Teaching Assistant - *EE698K: PROGRAMMING FOR SIGNAL PROCESSING under Dr. Vipul Arora* **Aug' 2023 - Dec' 2024**

Skills

Programming Languages	C/C++, Bash, Power-Shell, Python, MATLAB, R, Go, HTML/CSS, JavaScript, PHP, MySQL, Rust, Brainfuck, VHDL/Verilog, Ada.
Software & Tools	Wireshark, NetSim, Cisco - Packet Tracer, Nmap, LTSpice, KiCAD, Xilinx-Vivado, Git, Docker, GCP, Simulink, Doxygen, LabVIEW, GNS3, ModelSim, Yocto Project, Buildroot, QEMU/KVM.
Technical Skills	Linux, Network Stack and Security, Kernel Programming, Computer Architecture, FPGA Programming, Web Development, Embedded Systems, Machine Learning/AI, Version Control Systems, ASIC Design, Timing Analysis, High-Level Synthesis (HLS).
Linguistics Skills	English, Hindi, Telugu.

Certifications

Coursera: The Bits and Bytes of Computer Networking, Operating Systems and You, Technical Support Fundamentals
The Linux Foundation: Open Source and the 5G Transition, A Beginner's Guide to Linux Kernel Development
Math Works: MATLAB OnRamp, Simulink OnRamp
Udemy: Verilog HDL, Learn Linux Kernel Programming

Projects

SVD Image Compression: [EE605 | Link]
- Implemented an image compression algorithm using SVD, focusing on dominant dimensions to optimize file size reduction. Achieved a compression ratio reducing a 1.1 MB image to 0.75 MB (appx 32% reduction) with minimal visual loss.

Python Library for Data Structures and Algorithms: [EE689 | Link]
- esigned and implemented pylibdsa, a comprehensive library offering efficient Python solutions for various data structures and algorithms. Focused on optimizing performance and usability, providing an educational tool for both students.

Assessing the Vulnerability of CAR-PUFs with Sparse Training Data Using SVM: [CS771 | Link]
- Investigated the security vulnerabilities of Companion Arbiter Physical Unclonable Functions (CAR-PUFs) and demonstrated their susceptibility to compromise with minimal training data using mathematical modelling and SVM.

Comprehensive Image Processing Techniques: Detection, Compression, and Filtering: [EE604 | Link]
- Implemented a variety of image processing methods, including detection, compression, and filtering. Enhanced image quality and performance across diverse applications.

UDP Based Live Video Streaming Application: [EE673 | Link]
- Designed and built pyVidStream, a lightweight Python application for live video streaming using UDP and OpenCV. Efficient solution for real-time video broadcasting, demonstrating proficiency in multimedia and network programming.

TCP Based Socket Implementation: [EE673 | Link]
- Developed a Python application for establishing basic TCP connections. Ensured reliable communication and efficient data transfer over TCP/IP networks..

Python Based Reed-Solomon Error Correction Code: [SELF | Link]
- Developed a Python-based ECC implementation to enhance data reliability and integrity. Applied advanced coding techniques for robust error detection and correction in data transmission.

Verilog based pipelined MIPS32 Implementation: [SELF | Link]
- Developed a 32-bit MIPS32 pipelined processor in Verilog with support for all core stages and efficient multi-instruction handling. Designed a detailed testbench with clock generation and memory initialization to validate robust functionality.

Verilog based 64x64 Memory Module Design: [SELF | Link]
- Designed and implemented a 64x64 memory module in Verilog with full control over read and write operations. Validated functionality through a comprehensive Verilog testbench and a range of test cases.

Termux Boot Utility for Nethunter's Kali-Chroot: [SELF | Link]
- Developed an executable for booting Kali-Chroot integrated with Nethunter in Termux. Simplified launching Kali Linux environments on mobile devices for improved penetration testing.

Backend Development for Navigation Correlator in IIST's NavIC Hardware: [SELF | Link]
- Developed the backend for the Navigation Correlator tailored for IIST's NavIC hardware. Enhanced data processing and correlation for accurate navigation and positioning.

Intra-WebShare: Internal Network File Sharing Application: [SELF | Link]
- Developed Intra-WebShare, a web-based tool for seamless file transfer within internal networks. File sharing to enhance internal collaboration and efficiency.