Jonna Dundi Phani Rithvik

Contact: +1 6576698019, rithvikjonna2000@gmail.com. **LinkedIn:** www.linkedin.com/in/rithvik-jonna/

Education

Johns Hopkins University, Whiting School of Engineering *Jan 2026 – Current*

PhD, Electrical and Computer Engineering

Johns Hopkins University, Whiting School of Engineering *Jan 2024 – Dec 2025*

MSE, Electrical and Computer Engineering **CGPA: 3.78/4**

Vellore Institute of Technology, Vellore, India. *July 2017 – July 2021*

B-Tech, Electronics and Communication Engineering **CGPA: 8.56/10**

Work Experience

HFCL Pvt Ltd., Bengaluru, Karnataka *May 2022 - Oct 2023*

Embedded Software Development Engineer

- Developed FSBL, U-Boot, and networking drivers (ETH, SFP) while integrating I2C and SPI communication for the **8T8R Macro Radio Unit**.
- Established I2C communication between **Xilinx Arm Cortex A-53 RFSOC** and **TI MSP430** Board Management Controller IC, enhancing system reliability.
- Designed and implemented an **Endurance Test Algorithm**, improving product robustness and performance evaluation.
- Led a **12-member team** in developing a **world-class 5G Macro Radio Unit**, driving innovation in O-RAN Management Plane Version 6 implementation.

HFCL Pvt Ltd., Bengaluru, Karnataka *August 2021 – May 2022*

Graduate Engineering Trainee

- Product Name: CICD pipeline for Macro and Micro Radio Unit.
- Tech Stack: C, Shell Script, Python, Gitlab, Docker, Jenkins, Klocworks (SAST), Valgrind.
- Created an integrated CICD multi-team pipeline for the product 8T8R Macro Radio Unit and EMS (Element Management System).
- Worked with Both external and internal stakeholders and converging all the software and tools requirements and designed the CICD pipeline for a set of three different teams to work on the same project
- Product Title: All in One indoor Small Cell.
- Tech Stack: Python, Wireshark, Microsoft- Excel, Elastic Search.
- Automated the process of capturing the logs 5G L2 – L3 Protocol stack and verification using the elastic search.
- With the help of this automation, we had successfully reduced 40 percent workload on the Team.

Indian Institute of Information Technology, Nagpur *February 2021 – May 2021*

Research Intern

- Project Title: Multi Datatype Image Steganography using Deep Learning.
- Tech Stack: Python, Jupiter Notebook, TensorFlow, NumPy, Pandas, Keras, Librosa, Matplotlib, SciPy and wave.
- Datasets used: Two different datasets containing images (Tiny Image Dataset) and audio datasets (The Flickr 8k Audio Caption Corpus dataset) are used.
- We have achieved multi data type steganography by passing image and audio in two CNN networks and concatenate both the outputs to the carrier image and then pass this through the hiding network to get the carrier image with hidden image and hidden audio data.
- Encrypted data is extracted from Stego Image through another revealing network to get the data back.

Papers

Edge-ATLAS: An On-Device Framework for LLM-Based Navigation with Adaptive Landmark Acquisition on Quadruped Robots Accepted — IEEE Pervasive Computing (2026); Edge AI Foundation, San Diego (2026)

M. Walczak, R. Jonna*, E. Humes, B. Hu, C. Chang, T. Mohsenin

- Developed an on-device LLM-based navigation system for quadruped robots, investigating how adaptive landmark acquisition can improve long-horizon navigation under edge compute constraints.

BIT-Nav: Brain-Inspired Trajectory Memory for Embodied Navigation

Accepted — CVPR LLM/VLA Workshop (2026) R. Jonna, A. Gurram, M. Namgung, W. Mackey, T. Mohsenin

- Developed a trajectory-memory approach for embodied navigation inspired by biological memory, using prior navigation experience to inform future decisions.

Enabling On-Device Medical AI Assistants via Input-Driven Saliency Adaptation

Accepted-IEEE BioCAS 2025 U. Kallakuri, E. Humes, R. Jonna, X. Lin, T. Mohsenin

- Investigated input-driven saliency adaptation for improving the efficiency of AI assistants operating under on-device compute constraints.

Projects

Super-Resolution and Vision-Language Modeling for Medical Image Captioning

- Developed a deep learning pipeline using SRGAN and ESRGAN to enhance medical image resolution from 256×256 to 1024×1024, improving diagnostic accuracy.
- Implemented VisionGPT2, Swin+LLaMA, and BiomedGPT to generate medical image captions, benchmarking performance using CIDEr and BLEU scores.
- Optimized model performance with fine-tuning and LoRA-based quantization, achieving state-of-the-art results in medical vision-language tasks

Steganographic Video and audio Hiding with Huffman Encoding and DCT with Deep Learning

- Developed a steganography algorithm for Video and Audio hiding, employing Huffman encoding and Discrete Cosine Transform (DCT) with deep learning in MATLAB. Implemented a process to embed a secret message or image within a carrier image while minimizing perceptible changes. Proficient in data compression methods and image processing algorithms

FPGA Synthesis – Single Precision Floating Point Calculator with IEEE 754 Rounding complacent

- Designed and implemented a **32-bit floating point calculator** on **Cmod A7-35T FPGA**, supporting addition, subtraction, multiplication, and division with special case handling.
- Developed **VHDL modules** for arithmetic operations, normalization, and UART communication, enabling seamless data transfer between **MATLAB GUI** and FPGA.
- Integrated a **MATLAB-based user interface** for real-time input, computation, and result visualization, ensuring accuracy through rounding-to-nearest methodology.

IOT based Emergency Alarm application.

- Developed a mobile application that connects to an IoT-enabled speaker via Bluetooth for emergency alarm notifications.
- Deployed the system in hospitals with limited infrastructure during COVID-19, enhancing emergency response capabilities.
- Applied technology to a real-world healthcare challenge, improving patient safety and response times.

Certifications

- 5G Masterclass: Architecture, NR RAN, Core and Call flows - Udemy
- Identifying Security Vulnerabilities in C/C++Programming by UC Davis - Coursera
- Open-Source Software Development Methods by Linux Foundation - Coursera
- Introduction to Satellite Communications by IMT - Coursera
- Electrodynamics – Analysis of Electric Fields by KAIST – Coursera
- Linear Circuits 1 & 2 AC & DC Analysis by Georgia institute of technology – Coursera

Accomplishments

- Pinnacle – performer award for leading the software team effectively for the Macro Radio product at HFCL Ltd.
- Ace Alliance award for the best performing team for the quarter of May – August 2022 at HFCL Ltd.
- Special Appreciation Award from Mr. Jayanta Dey for creating Embedded platform Macro Radio at HFCL Ltd.
- Gave the inauguration demo of 5G Macro radio unit at IMC'2022 to the Hon'ble Prime minister of India Shri Narendra Modi.
- Won **Innovators Fest' 19**. Presented a working ML application "Nutri-intake" where the application uses camera in the phone to measure calories in the food and our idea stood at the top 5 in the cohort of 20.