

Hands-on Wireless Communications Engineer with expertise in satellite and underwater applications. Proactive problem-solver, strong communicator, and fast learner, excited to take on challenging projects and deliver innovative solutions.

EDUCATION

STANFORD – CONTINUING STUDIES PROGRAM

- Relevant Coursework: Crash course in AI, Machine Learning for Business with Python, Innovation and Creativity, Communicate with Impact and Purpose.

UNIVERSITY AT BUFFALO - THE STATE UNIVERSITY OF NEW YORK

Master of Science, Electrical Engineering

GPA 3.7/4.0

- Relevant Coursework: Wireless Communication in 5G, LTE and Extreme Environment, Internet of Things (IoT), Networked System Design, Cellular Communication Networks, MIMO, Programmable Networks, Modern Digital Communication.

K.J. SOMAIYA COLLEGE OF ENGINEERING, INDIA

Bachelor of Science, Electronics Engineering

GPA 3.6/4.0

- Relevant Coursework: Embedded Systems, Digital Signal Processing, Microcontrollers, Advanced Networking Technologies.

PROFESSIONAL EXPERIENCE

Paper Publications:

IEEE Wireless Communications and Networking (**Underwater distributed MIMO**. Conference version, March 2019), [PDF](#).

Computer Networks (**Underwater distributed MIMO**. Journal Version, March 2020), [PDF](#).

IEEE DCSS 2021 (Delay estimation in **5G** mmWave networks), [PDF](#)

Wireless Systems Lead (CTO R&D Group) – Skylo Tech Inc.

Apr 2022 – current

- End-to-End System Development: Led complete lifecycle of wireless features—from concept and algorithm development to simulations, patent filing, prototyping, development support, integration, testing, performance analysis, and continuous improvement.
- Work focus was on NB-IoT, 5G 3GPP protocols across Physical, MAC, RRC, and NAS layers.
- Hands-on experience and collaboration with cellular chipsets (Qualcomm, Samsung, MediaTek) and satellite partners (ViaSat, Ligado, EchoStar).
- Led satellite SOS and Voice feature development for Samsung Galaxy, Google Pixel, and Garmin watches.
- Authored **10 patents** (4 as first author) in wireless and satellite technologies.
- Developed Skylo NTN Certification Program with 60+ test cases for device and chipset certification.
- Contributed in 3GPP meetings, for uplink capacity enhancements and NAS overhead reduction.

KEY PROJECTS:

- Link Budget and Adaptation for NB-IoT over GEO Satellites: Developed algorithms optimizing DL SINR/RSRP/RSRQ thresholds for varied coverage areas.
- Uplink Performance Optimization: Designed and tested uplink channel estimation frameworks, enhancing preamble detection.
- Class of Service and Access Barring: Implemented a COS framework to prioritize emergency services.
- Voice over NB-IoT for GEO Satellites: Conducted link budget analysis, CODECs, transcoding, SIP, I1, non-IP to IP.
- Dynamic Power Allocation for Sparse Channels: Developed algorithms to optimize power usage, boosting performance for poorly performing devices.
- Channel Modelling for Satellite Systems: Generated ephemeris for SIB31 broadcast in GEO satellite systems, accounting for delay, Doppler, and propagation modelling.

Sr Engineer (Cellular R&D) – Samsung Semiconductor Inc.

Oct 2019 – Apr 2022

Uplink Transmit Power related feature development LTE and NR (Sub-6 and mm Wave):

- Maximum transmit power level (MTPL) feature development in C for LTE, based on customer requirements. Provided support for Uplink Carrier Aggregation (UL CA) scenarios and interface to SAR (Time Average SAR) algorithm.
- Review of FCC SAR and Power Density (PD) requirements, and thorough study of SAR algorithm from documentation and software implementation. Thorough study of Dynamic power allocation algorithm between LTE and NR (FR1 and FR2).
- Work closely with RF Systems team for optimization of SAR and Dynamic Power sharing algorithm based on MATLAB simulations.

- Development of SAR and Dynamic Power allocation algorithms changes for LTE in C.
- Debugging Physical Layer Protocol issues mainly for LTE and 5G Uplink power and RACH. Identifying and fixing bugs in code through UE log-based analysis and based on guidelines provided by 3GPP specification.
- Transmit Antenna switching/selection feature development in LTE in C.
- Providing answers to Customer's deep dive questions and queries about Physical/MAC layer implementation.
- Using test equipment (Keysight and Anritsu) for NR and LTE lab testing, using oscilloscopes, spectrum analyzers, etc. to debug and test scenarios.

Research Assistant - University at Buffalo

Underwater Distributed MIMO System (Thesis under Dr Zhi Sun):

May 2018– Sep 2019

- Proposed and developed a hybrid underwater distributed MIMO system using Acoustic antennas for beamforming/space time coding and magnetic induction antennas for synchronization amongst the distributed transceivers.
- Performed system level experiments and physical layer design using Software-Defined Radios (USRP N210), GNU radio companion, Acoustic Hydrophones, Magnetic Induction antennas and MATLAB. Numerical analysis and simulations conducted for SNR, BER and Throughput on MATLAB for transmit beamforming and Alamouti Schemes.

Internet of Underwater Things

Developed an underwater temperature telemetry system using acoustic tags and software-defined radio. Analysis and visualization on AWS EC2 and data stored live on Amazon S3

Initial Access Collision and Delay Estimation Modeling for 5G mmWave Network

Jan 2020 – Jul 2021

- Analyzed each step in Initial access procedure for 5G mmWave networks and provide estimation for potential delay in each of the steps.
- Modeled the system considering the time taken for SSB scan, Beam management procedure, Tx and Rx beamforming, RACH procedure collisions and delay estimation for each step.
- Performed simulation and numerical analysis for beam management steps using MATLAB.

FPGA Implementation of Orthogonal Frequency Division Multiplexing (OFDM) communication system

Designed the transmitter- receiver system on a DE2i-150 FPGA board using Verilog. Designed FFT, IFFT, 4-QAM modules and blocks.

Graduate Lab Assistant - Electronics Tinkering lab

Aug 2018 - Aug 2019

- Setup and helped run an experimental learning lab for the undergraduate students of School of engineering and applied sciences (SEAS), University at Buffalo.
- Designed project modules and assisted students in implementing them. Assisted project modules focusing on electronic lab equipment, basic electronics components and design, Arduino, PCB design, Soldering.

Co-Founder – EcoMappers (Air Quality Measurement Startup, India)

Mar 2014 - Feb 2016

- Founded and led a start-up, which manufactures and sells air and noise pollution measurement devices that wirelessly send live measured data to its website and mobile application using GSM and Bluetooth respectively.
- Developed the Bluetooth Low Energy (BLE) prototype and working model with microcontrollers like LinkitOne, Intel Edison

TECHNICAL SKILLS

- **Certifications:** [CCNA Routing & Switching](#), ARM University - Embedded Systems, Cypress Semiconductors - IoT
- **Programming Languages:** C, MATLAB, Verilog, C++, Python
- **Protocols and technologies:** 5G NR, NB-IOT, LTE, mmWave, OFDM, CDMA, Wi-Fi, LoRaWAN, TCP/IP, TCP, UDP, DHCP, DNS, GNURadio, AWS, LATEX, Visual Studio, ARM Mbed OS, RTOS, Intel Quartus-Prime, ns-3, Cisco Packet Tracer, Wireshark, Overleaf, Trace 32
- **Equipment:** SDR, Keysight, R&S
- **Collaboration:** Qualcomm, Google, Viasat, Echostar, Samsung