Rohit Kumar

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Education

University of California San Diego **2018 – 2020**
Master of Science in Electrical and Computer Engineering - Communication Theory and Systems *San Diego, CA*

SRM Institute of Science and Technology **2013 – 2017**
Bachelor of Technology in Electronics and Communication Engineering *Chennai, India*

Coursework

- Modern Communication Networks
- Linear Algebra & Applications
- Random Processes
- Communications Lab II
- Python Programming for Algorithms & Data Analysis
- Applications of DSP
- Machine Learning for Image Processing
- Information Theory
- Principles of Wireless Networks
- C++ III: Programming with Objects

Experience

5G Cellular Systems Performance Analysis Engineer **07/2020 – Present**
Qualcomm Inc. *San Diego, CA*

- Evaluated/debugged PDSCH link adaptation/PDCCH KPIs on Keysight UXM+Propsim, Qualcomm TBS platforms.
- In depth knowledge of RRC IEs and bring up of bespoke tests for features across 3GPP protocol stack (TDD/FDD, FR1/FR2, NR-DC, SA/NSA, multi-CC) under various channel fading scenarios (AWGN, TDL-A/B/C, HST-SFN).
- Resolved modem demod/firmware issues with cross functional teams using log analysis and post-processing.
- Delivered first NRDC (FR1+FR2) on Consumer Premises Equipment (CPE) Performance test with Qualcomm Test Base Station, improving FR1 performance by 10%+ and test execution cost savings of 80%+.
- Skilled in IQ analysis, data visualization, test planning, automation using batch scripts, AWS Quicksight and Python.

Summer Research Intern & Graduate Research Assistant **03/2019 – 06/2020**
University of California San Diego *San Diego, CA*
Sub-band Full Duplex Radios (Upcoming 3GPP Rel18 feature) **Research advisor: Prof Dinesh Bharadia**

- Mobicom 2022- BSMA: Scalable LoRa Networks Using Full Duplex Gateways (DOI:10.1145/3495243.3560544)
- Increased reliability and throughput of LPWANs and IoT networks using a full-duplex (FD) PHY layer at the base station and FD enabled MAC layer.
- Developed a simulation framework for FD performance based on real data.
- Improved cancellation by 20 dB with 'successive' quantization method.
- Designed and developed cheap RF-PCB analog cancellation boards with 30dB cancellation.
- Designed a small dev PCB for UCSD's first low power 'Backscatter' communication IC (news-clip).

Graduate Teaching Assistant **03/2020 – 06/2020**
University of California San Diego *San Diego, CA*
ECE161C - Applications of Digital Signal Processing **Course instructor: Prof Fred Harris**

- Taught DSP applications in a modem, such as shaping and matched filters, PLLs, frequency and timing loops, OFDM/Single Carrier-OFDM.

Projects

WiFi OFDM Project | *Modern Communication Networks* **10/2018 - 12/2018**

- Implemented OFDM receiver on MATLAB and achieved ≈ 0.001 BER with real world data.
- Implemented packet detection, channel estimation and CFO/SFO and Doppler shift compensation algorithms using preambles and pilots.

Investigating Multi-Object Detection | *Machine Learning for Image Processing* **09/2019 - 12/2019**

- Implemented YOLOv3 and CenterNet and achieved mAP of 0.67 and 0.8 respectively with PASCAL-VOC dataset.

Technical Skills & Tools

Skills: 5G Modem System Testing, Python, C/C++, RF Testing, Test Automation, Research, Analysis, Algorithms
Tools: Keysight PRT, QXDM, APEX, MATLAB, PyTorch, Git, Altium Designer, Vector Signal Analyzer

Leadership / Extracurricular

Cognitive Radio System and ABU ROBOCON 2015, 2016 **08/2014 – 03/2017**
SRM Institute of Science and Technology *Chennai, India*

- Cognitive Radio System - Adjudged best project by the ECE department.
- Fabricated wireless system with beam-steering and frequency hopping for secure communications.
- Built robots for ABU ROBOCON competition and reached national finals twice.