# 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

**Engineer - 5G Modem Systems Performance Test(MST)**                      **07/2020 − Present**
*Qualcomm Inc.*                                                                    *San Diego, CA*

- Versatile cellular modem systems engineer with commercialized contributions across major modem areas - SA/NSA, FR1, FR2, NRDC, single/multiple-carriers, PDCCH, PDSCH link adaptation/fixed MCS.
- In depth knowledge of RRC IEs and bring-up of bespoke tests for feature validation across 3GPP protocol stack using various TE vendor equipment (Keysight UXM, Qualcomm Test Base Station (TBS)), channel fading (AWGN, TDL-A/B/C, HST-SFN) and MIMO configurations.
- Delivered first NRDC (FR1+FR2) performance test on Consumer Premises Equipment (femto-cell CPE) with Qualcomm TBS, improving FR1 performance by 10%+ and test execution cost savings of 80%+.
- Skilled in IQ analysis, data visualization, test planning, automation using MATLAB, Python, AWS Quicksight and Insight. Well placed to take advantage of ongoing AI transformation due to grad school coursework and projects.

**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 MATLAB based simulation framework for FD performance based on real data and improved cancellation by 20 dB with 'successive' quantization method.
- Designed and developed cheap RF-PCB analog cancellation boards with 30dB cancellation and a testbed 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 $\approx 0.001$ 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