Sudhanshu Sharma

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EDUCATION

University of Southern California, *Master of Engineering in Electrical Engineering, Los Angeles* Aug 2021-May 2023
Relevant Coursework: Advance Wireless Communication, Probability, Linear Algebra, Information Theory, Quantum Information Theory, Wearable Technology.

National Institute of Engineering, *Bachelor of Engineering in Electronics and Communication, India* Aug 2015-Jul 2019
Relevant Coursework: Computer Networks, Digital Communication, Machine Learning, Digital Signal Processing, Simulation-Based Design of 5G Wireless Standards, Introduction to Radar, DSP algorithms.

SKILLS

- **Languages**: MATLAB, Python, C, C++
- **Technologies**: MIMO, MU-MIMO, OFDM, mm Wave, Digital Signal Processing Algorithms, Wireless Communications, V2X, Radar Signal Processing, Networks Protocol, Joint Communication and Sensing, Test strategies, Cellular Algorithm (5G and LTE), BMI.
- **Network Protocols**: 3GPP, LTE R16, 5GNR R15, 5GNR R17, OSI, TCP/IP, RAN4, RAN5.

EXPERIENCE

Wireless Devices and Systems Group (WiDeS), *Research Assistant,* USC Oct 2021-Present

- Enabling JCAS in Cellular Vehicular Communications using Standards-Compliant Waveforms.
- Radar Signal Processing algorithm for joint sensing and communication for monostatic OFDM radar.
- System Simulations for OFDM-based Radar processing.
- Submitted a patent and a paper on" Bistatic RADAR Sensing with 5G-NR signals".
- Developing algorithms for Static Clutter Elimination with moving receiver.
- Developing a novel way of communicating wirelessly on Terahertz with low power constraints
- Designing a Low Power Biomedical Transmitter system for wireless transfer of data

Apple Inc, *Cellular Intern,* San Diego May 2022-Aug 2022

- Worked on system block to help test planning for LTE.
- Execute 3GPP-defined performance test cases in the lab for LTE and write Beyond RAN4 test plans.
- Automating LTE test for Performance testing using UXM, TEST APP, and R&S instrument.

Indian Institute of Technology, *Senior Project Associate (Full-Time),* IIT-Kanpur Nov 2020-July 2021

Initiated 5G NR PHY layer algorithm development for sub-6 and mm-wave systems acc. to 3GPP.

- 5G NR wireless communication system modelling and MIMO algorithms.
- Programmed end to end MATLAB chain for downlink shared channel (PDSCH).
- Constructed an algorithm for Channel estimation for OFDM system utilizing DMRS, CSIRS.
- Performed different equalization techniques by implementing MMSE, ZF for sub-6GHz systems.
- Demonstrated Channel estimation using SRS assuming Channel reciprocity.

MMRFIC Technology Pvt. Ltd, *Digital Signal Processing System Engineer (Full-Time)*, Bengaluru Jul 2019-Oct 2020

- GPS Rx (Beamforming) using MVDR – (Minimum Variance Distortion Less Response)
- Analysed Error-Correcting codes and Angle estimation with Cholesky decomposition.
- Fountain Code implementation and Fixed-point conversion.
- Worked on NT1065 (RF Front-End IC for reception of Global Navigation Satellite System (GNSS) signals).

PROJECTS

Data compression and comparing algorithms | MATLAB 2022
- Developed algorithm like LZ78, Arithmetic coding, Huffman and LZW for text *Classroom Project*

Blockchain implementation using socket programming | Linux, C++ 2022
- Implemented block-chain with two back-end servers, one main server, and serving multiple clients. The connection between the client & main the server is TCP, and between servers, it is UDP. *Classroom Project*

5G NR Channel Estimation by DM-RS and CSI-RS | MATLAB, 3GPP, 5G NR 2021
- Developed algorithm for estimating channel using DMRS and CSI-RS for multiple users. *Classroom Project*

Indoor mapping leveraging Ultrasonic frequencies | Embedded C and Kotlin 2019
- Frequency above 20KHz is used to map indoor location. *Final year Project*

Handwriting Clustering | *Python* 2018
- Grouping of handwriting samples into number of clusters based on similarity (k-means clustering). *Personal Project.*

Smart headphones | Python and Embedded C 2018
- Hardware module for headphone, and software which toggles audio based on status of headphone. *Personal Project.*

Other Personal Projects Wireless Irrigation System(2017), Game playing glove, Robots using 8051 and Arduino(2016), Attendance Management(2016), Smart Water Pump(2017), Speech to Image generation(2019)