Falguni Bonawate

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**EDUCATION**

**Master of Science, Electrical & Electronics Engineering** Expected Feb 2021

University at Buffalo, The State University of New York

**Coursework:** Principles of digital communication, Introduction to Digital Signal Processing, Wearable and implantable Sensors, Probability and Stochastic Processes, Programmable networks, MIMO, Principles of networking, Communication electronics, Internet of things, LTE to 5g cyber physical system.

**ACADEMIC PROJECT EXPERIENCE:**

• **Introduction to digital signal processing (Dec- 2019): K - Means Clustering, Applications and Real Time Implementation (December 2019)**: This project involved python-based implementation of K means clustering, Color quantization, Histogram equalization, image segmentation, real time edge detection and real time color-based object tracking.

• **Wearable and implantable sensors (Nov-2019):** Developed an android application using Android Studio to extract data from sensors in a mobile phone in real time.

• **Principles of digital communication: MATLAB Simulation of communication System with optimum receiver detection: (Dec-2019):** Simulation of SER curve for various modulation schemes Comparison of theoretical and practical SER for all modulation schemes. Simulation of BER curve for all modulation schemes in terms of SNR per bit and SNR per symbol.

• **Programmable Networks: GNU Radio to Identify Packet Traffic** **(April-2020):** Identification of Packet Boundaries from given sets of data files by developing block in GNU radio which read the data from the given set of data files having five modulation schemes and gives packet boundary. Used python to understand the behavior of data and determined packet boundary using KL-Divergence.

• **Communication electronics: IoT based health monitoring system (April-2020):**

Temperature and Humidity Sensor (DHT11), Pulse Rate Sensor, Ultrasonic Sensor, Buzzer were connected to Arduino-UNO board to collect and view the data of the user. We used Wi-Fi Module (ESP8266) to the system so all data can be transferred to different device or cloud storage.

• **MIMO Communication System (March-2020):**

Generated 4 independent channels using Jakes Fading Simulator with 8 oscillators to showcase Rayleigh fading in MIMO environment. Analyzed 100000 samples for each SNR and plotted SNR vs BER by ML decoding for SISO, MISO and MIMO system and compared them based on BER.

**Domain Skills**: OFDM, MIMO, TCP, UDP, Channel Coding, QAM, NR, LTE-4G, RF propagation, CDMA, EVDO telecommunications concepts. Protocols: RLP, PPP, IP, TCP, IPV6, and MIPV6. IEEE 802.11 Specifications (Wi-Fi), 3 GPP ecosystem and working processes, RRC, MAC, RLC,PDCP. Radio Frequency, UMTS, cellular communications, wireless technology, GSM, 5G-NR, Bluetooth, v2x, LTE Carrier Aggregation.

**Programming Skills:** Python, C++, C, HTML

**Computer Based Tools:** Experienced in MATLAB, Simulink, Stateflow, GNU Radio, Multisim, Xilinx, IBM Rhapsody, IBM-DNG, Android Studio, Wireshark, CANoe tool, CANalyzer and CAPL Scripting, Adobe Photoshop.

**EXPERIENCE:**

**Research Assistant May 2020- Present**

• Supported research in CV2x technology.

• Working on LTEV2V simulator for CV2x research work.

• Executed scheduling algorithms in NS3.

**KPIT Technologies Electronics System Engineer**

• Led powertrain team in delivery of field data processing project, resulting in increase in profits for the company.

• Led HIL testing, failure investigations and corrective action planning for DAF trucks.

• Resolved vehicle communication issues by solving various test scenarios.