SAI KRISHNA CHARAN DARA

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EDUCATION

B.Tech (Hons) in Electronics and Communication Engineering

International Institute of Information Technology

2017 – 2021 Hyderabad, India

CGPA : 9.39*/10

RESEARCH PROJECTS

IoT for air pollution monitoring | *Python, Pandas, Seaborn*

- Analyzed data collected by pollution monitoring *NodeMCU* nodes deployed in IIIT campus.
- Used machine learning techniques such as Parallel coordinates, Pair-wise correlation matrix, Correlation heatmap, Joint plots and other Spatial interpolation techniques.

Fast DoA Estimation of Multiple targets using deep learning and sparse arrays | *MATLAB*

- Used denoising autoencoder (DAE) that predicts a statistically richer version of the sampled covariance matrix that is subsequently used for the DoA estimation using Maximum Interelement Spacing Constraint Array (MISC) with small number of snapshots.

PROJECTS

ALU Design, Working, Issues and Tradeoffs | *LTSpice*

- Designed a 4-bit Arithmetic and Logical Unit using Full Swing GDI technique with optimized Area, Speed and Transistor count.

Insertion Sort on FPGA | *Xilinx-Vivado, Verilog HDL*

- Implemented accelerated Insertion sort on FPGA (Zedboard Zync-7000).
- Also analyzed power consumption and complexity of algorithm compared to normal processor.

6T-SRAM Memory Array | *Cadence*

- Modelled Parasitic capacitances and analysis of Noise Margin, Power, Delay, Rise Time and Fall Time is done.

Wavelet based denoising of ECG Signal | *LabVIEW*

- Detrended and then denoised the ECG signal using wavelet denoising technique making QRS complex more distinct and identified peaks and valleys of denoised ECG signal.

Class-D Power Amplifier | *LTSpice, Hardware*

- Implemented Class D power amplifiers with efficiency around 80-90% on breadboard.

Square Wave Generator | *Cadence*

- Implemented Transistor level Design of Square wave generator on Cadence with minimum power consumption and MOSFET's being in subthreshold region of operation.

Adaptive Modulation | *MATLAB*

- Studied different adaptive modulation techniques for various scenarios and analyzed on how BER and average spectral efficiency improve with adaption.

OFDM and OFDMA

- End to end modelling of OFDM and OFDMA is studied and compared with other existing multiplexing and multiple access schemes.

EXPERIENCE

Undergraduate Researcher

SPCRC, IIIT-Hyderabad

2018-Present

- Working on Beamforming in mmWave technology and how it can be used for spectrum sensing in Cognitive Radio scenario under Prof. Sachin Chaudhari.
- Worked on research project ***IoT Enabled Smart Cities: Pollution, Health and Governance*** funded by Pernod Ricard India Foundation (PRIF).

Teaching Assistant

IIIT-Hyderabad

Aug 2019 - May 2020

- Teaching Assistant for courses *Signal Processing* and *Communication Theory*.
- Handled tutorials and doubt clearing sessions for a class of **50+** undergrads.

PUBLICATIONS

- M.Madhuri Latha, **Sai Krishna Charan Dara**, Sachin Chaudhari, **"Beamformed Sensing using Dominant DoA in Cognitive mmWave Network"** accepted in IEEE-ANTS 2020
- M.Madhuri Latha, **Sai Krishna Charan Dara**, Sachin Chaudhari, **"Beamformed Energy Detection in the Presence of an Interferer for Cognitive mmWave Network"**
  Link:- https://arxiv.org/pdf/2007.15974.pdf
  (Submitted to **VTC** Conference, under review)

TECHNICAL SKILLS

- Python, MATLAB, C, C++, Bash, Verilog
- Pandas, Keras, Sklearn, RISC-V, BlueSpec
- HTML, CSS, JavaScript
- Xilinx-Vivado, LTSPICE, Multisim, Cadence-Virtuoso, QGIS, LaTeX.

RELEVANT COURSES

- Statistical Methods in AI, Computer System Organisation, Digital Image Processing, Algorithms and Operating Systems, Communication Networks, MultiVariate Analysis.
- Digital VLSI Design, Digital Logic Processors, Embedded Hardware Design, Linear Electronic Circuits, Wireless Communications, Signal Detection Estimation theory, Communication theory, Digital Signal Processing.
- Data Structures, Computer Programming

ACHIEVEMENTS

- **Deans List**, Awarded in $2^{nd}, 3^{rd}, 4^{th}$ and 5^{th} semester for being in top $10\%, 5\%, 5\%$ and 5% respectively in academics