Sai Krishna Charan Dara

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Education

2017-2021	**B.Tech(Hons) in Electronics and Communication Engineering** , *International Institute of Information Technology* , Hyderabad , **CGPA: 9.39* (6 semesters)**.
2015–2017	**Senior Secondary,Telangana Board**, *Narayana IIT Academy*, Hyderabad. **Percentage: 98.3 .**
2014–2015	**Secondary,SSC**, *Dr.KKR's CSR Aditya Concept School*, Sathupally. **CGPA: 9.8/10.**

Experience

2018 - Present **IIIT Hyderabad - Signal Processing and Communication Research Center(SPCRC)**, *Undergraduate Researcher*, Mentored by Dr.Sachin Chaudhari.
- Working on Beamforming in mmWave technology and how it can be used for spectrum sensing in Cognitive Radio scenario.
- Worked on research project **IoT Enabled Smart Cities: Pollution, Health and Governance** funded by Pernod Ricard India Foundation(PRIF).

Aug 2019 - May 2020 **Teaching Assistant, IIIT Hyderabad** ,
Courses: Signal Processing and Communication Theory.
- Handled tutorials and doubt clearing sessions for a class of **50+** undergrads. Duties also entailed providing the course instructor a timely feedback and assistance in development of assignments, quizzes and assessment of the course.

Publications

Beamformed Sensing using Dominant DoA in Cognitive mmWave Network, , M.Madhuri Latha, **Sai Krishna Charan Dara**, Sachin Chaudhari.
- Used Dominant Path Angle of Arrival in a clustered mmWave Rician fading channel to sense the Primary User(PU). Peak Tracking Algorithm(PETRA) and Maximum Energy method are used for finding dominant path. (Accepted in **ANTS 2020** Conference)

Beamformed Energy Detection in the Presence of an Interferer for Cognitive mmWave Network, M.Madhuri Latha, **Sai Krishna Charan Dara**, Sachin Chaudhari.
- Proposed beamformed energy detection (BFED) spectrum sensing scheme for a single secondary user (SU) or a cognitive radio (CR). The SU equipped with multiple antennas is used to detect a primary user (PU) transmission in presence of interfer.
- **Link:-** https://arxiv.org/pdf/2007.15974.pdf (Submitted to **VTC** Conference)

Major Research Projects

June 2019 - Dec 2019 **IoT for air pollution monitoring**, *Python, Pandas, Seaborn*.
Analyzed data collected by pollution monitoring nodes deployed in IIIT campus, using machine learning techniques such as Parallel coordinates, Pair-wise correlation matrix, Correlation heatmap, Joint plots and other Spatial interpolation techniques.

June,2020	**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.

Course Projects

June 2020	**Interactive shell**, *C*.
	Developed a user-interactive shell in C, implementing the major features of GNU/Linux shell like piping, redirecting, handling background and foreground processes.
April 2020	**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 .
April 2020	**File sharing protocol between client and server**, *Python*.
	File sharing protocol is created between client and server using socket programming which had functionalities like Indexed searching, File hashing(using MD5 checksum), File transfer(UDP and TCP) and caching.
April,2020	**OFDM and OFDMA**.
	End to end modelling of OFDM and OFDMA is studied and compared with other existing multiplexing and multiple access schemes.
March 2019	**Face Classification**, *Python*.
	Performed data reduction techniques like PCA, LDA and build classifier using Multi Layer Perceptron (MLP) for distinguishing image classes.
Mar,2019	**Class-D Power Amplifier**, *LTSpice*.
	Implemented Class D power amplifiers with efficiency around 80-90% on breadboard
Nov,2019	**Adaptive Modulation Applications**, *MATLAB*.
	Studied different adaptive modulation techniques for various scenarios and analyzed on how BER and average spectral efficiency improve with adaption.
Nov,2018	**Insertion Sort on FPGA**, *Xilinx Vivado*.
	Implemented accelerated Insertion sort on FPGA(Zedboard Zync-7000).
May,2019	**Wavlet 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.
May,2019	**Analog Circuit Design**, *Cadence*.
	Implemented Finite State Machine(Vending Machine),6-T SRAM, D-Latch, D-Flipflop, Compound gate, Inverter, Half-adder, Full adder, 2-bit Adder, 2-bit Multiplier all having minimum number of transistors and low power consumption .
Nov,2018	**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.
April,2020	**Neyman Pearson Detector for Variance Detection**, *Python*.
	Neyman Pearson theorem is used for binary hypothesis testing based on variance of received signal.
Oct,2018	**Audio Amplifier**, *Multisim*.
	Designed Audio Amplifier with noise cancellation and implemented it on Breadboard .

Technical Skills

Languages or Libraries	Python, MATLAB, Pandas, Keras, Sklearn, C, C++, Bash, Verilog, RISC-V and Blue Spec.
Web Dev	HTML5,CSS, Java Script.

| **Familiar Softwares** | Xilinx-Vivado, LTSPICE, Multisim, Cadence-Virtuoso, QGIS, LaTeX. |

Achievements

Dean's List, Awarded in $2^{nd}, 3^{rd}, 4^{th}$ and 5th semester for being in top 10% ,5% ,5% and 5% respectively in academics.

Extracurricular Activities

- NSS Volunteer at IIIT Hyderabad .

Relevant Coursework

- Statistical Methods in Artificial Intelligence
- Signal Detection and Estimation theory
- Wireless Communications
- Communication theory
- Computer System Organisation
- Digital Signal Processing
- Computer Programming
- Data Structures
- Digital VLSI Design
- Embedded Hardware Design
- Digital Logic and Processors
- Linear Electronic Circuits
- Multivariate Analysis
- Communication Networks
- Algorithms and Operating Systems*
- Digital Image Processing*
- Control Systems

* Ongoing Courses