EDUCATION

Year	Degree/Exam	Institute	CGPA/Marks
2024	M.TECH	IIT Kharagpur	7.56 / 10
2020	Bachelor of Technology in EEE	GMR Institute of Technology	7.78 / 10
2016	Board of Intermediate Education	Sri Chaitanya Boys Junior College	97.7%
2014	Board of Secondary Education	Sri Chaitanya Techno School	9.8 / 10

COURSEWORK INFORMATION

- Linear Algebra for Signals and Systems
- Digital Image Processing
- Digital Signal Processing
- Statistical Signal Processing
- Medical Image Analysis
- Probability and Random Processes for Signals and Systems
- Artificial Intelligence Foundations and Applications
- Deep Learning Foundations and Applications
- Machine Learning for Signal Processing
- Convex Optimization in Control and Signal Processing

PROJECTS

M.Tech Project - Hybrid Deep Learning for Image Reconstruction   **[Jun 2023 - Ongoing]**
Guide: Dr. Pranab Kumar Dutta, EE Dept, IIT Kharagpur.
- The primary objective of my project is to eliminate artifacts in images and restore them from their degraded state.
- Generated diffracted images using the physics principles of optical diffractive imaging by using the BCCD dataset.
- Trained a neural network with a U-Net architecture that uses the outputs of DWT transformations as features.
- Evaluated the network's performance using a leukemia dataset and observed an average SSIM of 0.8.
- Enhanced the network's output by incorporating an attention mechanism that preserves edges, creating a Hybrid approach.

ECG-based Arrhythmia Detection using R-R Interval and Average Energy.   **[Autumn 2022]**
(Coursework Project | Biomedical Signal Processing | Instructor - Dr. Nirmalya Ghosh, EE Dept, IIT Kharagpur)
- Performed preprocessing and extracted the features RR interval using Pan Tompkins algorithm and average energy.
- Employed a prediction model using a Support Vector Machine and achieved 95 percent accuracy.

Filtering a Signal Corrupted by Gaussian Noise using Wiener Filter   **[Spring 2023]**
(Coursework Project | Statistical Signal Processing | Instructor - Dr. Rajiv Ranjan Sahay, EE Dept, IIT Kharagpur)
- Filtered noisy signals using a Wiener filter, calculated optimal filter weights using Wiener-Hopf equations.
- Visualized and analyzed the convergence of the Steepest Descent Algorithm on the Error performance surface.

Compression of Image and Text Data Files   **[Spring 2023]**
(Coursework Project | MLSP LAB | Instructor - Dr. Debdoot Sheet, EE Dept, IIT Kharagpur)
- Applied lossy compression to the Olivetti Faces dataset using Principal Component Analysis and Singular Value Decomposition.
- Performed lossless compression on both Texts of different lengths and Image files using Huffman Coding.

SKILLS AND EXPERTISE

- **Programming Languages :** C, C++, Python.
- **Software and Tools :** Google Colab, Jupyter Notebook, Matlab, Latex.
- **Operating System :** Windows, Linux.
- **Data Processing and Visualization Packages :** Numpy, Matplotlib, Scikit-Learn, Pandas, Librosa.
- **Deep Learning Frameworks :** Tensorflow, PyTorch, Keras.

POSITIONS OF RESPONSIBILITY

Teaching Assistant
- Worked as a Teaching Assistant for the Digital Signal Processing Lab under Professor Aurobinda Routray for the Autumn session 2023-24.

AWARDS AND ACHIEVEMENTS

- Secured All India Rank - 413 among 69,734 applicants in GATE (Electrical Engineering) - 2022.
- Secured All India Rank - 1683 among 87,559 applicants in GATE (Electrical Engineering) - 2021.

EXTRA CURRICULAR ACTIVITIES

- Attended a workshop on Embedded Systems at IIT Bombay 2017.
- Participated in National Level Techfest ENCURSO 2K19 in JNTU Kakinada.

!Self declared by the student, CDC could not verify the relevant documents