



Ragimanu BASHEER AHAMMAD  
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## ABOUT ME

Hi, I'm **Basheer**, and I'm on an exciting journey pursuing my Master's degree in Signal Processing and Machine Learning at the Indian Institute of Technology Kharagpur. I'm deeply passionate about Machine Learning, Deep Learning, especially in the domains of Image and Speech processing and computer vision. I aim to shape my career by actively contributing to innovative projects as a Machine Learning engineer.

## EDUCATION

<b>D A V HIGH SCHOOL</b>	2013-2014
SECONDARY EDUCATION - 9.7/10	
<b>NARAYANA JUNIOR COLLEGE</b>	2014-2016
INTERMEDIATE EDUCATION - 96.3/100	
<b>SREE VIDYANIKETHAN ENGINEERING COLLEGE</b>	2016-2020
BACHELOR OF TECHNOLOGY IN ELECTRONICS AND COMMUNICATION ENGINEERING - 83.89/100	
<b>INDIAN INSTITUTE OF TECHNOLOGY KHARAGPUR</b>	Pursuing
MASTER OF TECHNOLOGY IN SIGNAL PROCESSING AND MACHINE LEARNING - 8.29/10	

## MASTERS THESIS

<b>EMOTION ANALYSIS OF CALL CENTER CONVERSATION AUDIO DATA</b>	Ongoing
<ul style="list-style-type: none"><li>Performed Audio Denoising using Autoencoder.</li><li>Speaker Diarization: Segmentation through Voice Activity Detection, Embedding extraction, Spectral Clustering.</li><li>Currently focused on implementing emotion classification using attention mechanisms like Transformers.</li><li>Aiming to contribute to call center efficiency and customer experience enhancement.</li><li>GitHub: <a href="https://github.com/Basheer22EE65R19/Emotion_Analysis_of_Call_Center_Conversation_Audio_data">https://github.com/Basheer22EE65R19/Emotion_Analysis_of_Call_Center_Conversation_Audio_data</a></li></ul>	

## COURSEWORK PROJECTS

<b>UNSUPERVISED CLASSIFICATION OF PHONOCARDIOGRAM (PCG)</b>	2022
<ul style="list-style-type: none"><li>Preprocessed the PCG signals using the Shannon Energy envelope extraction approach.</li><li>Extracted time domain features and performed K-Means Clustering to differentiate normal vs abnormal signals.</li></ul>	
<b>LOSSY, LOSSLESS DATA COMPRESSION AND MUSIC CLASSIFICATION</b>	2023
<ul style="list-style-type: none"><li>Lossless Compression of both Text and Images using Huffman Coding.</li><li>Lossy Compression of Olivetti Faces dataset using PCA and SVD.</li><li>Music Classification with 512-DCT as a feature vector using Bayesian Classifier.</li></ul>	
<b>DECISION TREE CLASSIFIER AND RANDOM FOREST</b>	2023
<ul style="list-style-type: none"><li>Classification of XOR, Concentric circles and Spiral datasets using Decision Tree and Random Forest</li></ul>	
<b>ADAPTIVE PROBABILITY FILTER FOR REMOVING SALT AND PEPPER NOISES IN AN IMAGE</b>	2022
<ul style="list-style-type: none"><li>Initially, salt (255) and pepper (0) noises are detected in an image and stored in a matrix.</li><li>Removed salt and pepper noises based on the noise-free intensity distribution and repetition in the neighborhood.</li></ul>	
<b>WIENER FILTER DESIGN AND CONVERGENCE ANALYSIS FOR ENHANCED SIGNAL PROCESSING</b>	2023
<ul style="list-style-type: none"><li>Designed Optimal FIR wiener Filter for Signal Denoising.</li><li>Performed Convergence Analysis using Steepest Gradient Descent Algorithm</li></ul>	

## SKILLS

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**PROGRAMMING LANGUAGES :** *Experienced:* Python | Matlab *Familiar:* C | C++ | Basics of Data structures  
**SOFTWARES AND TOOLS :** Jupyter | Google Colab | LaTeX | MS Word | MS PowerPoint  
**FRAMEWORKS & LIBRARIES :** Matplotlib | Numpy | Pandas | Scikit-learn | Librosa | PyTorch | Tensorflow  
**DEEP LEARNING ARCHITECTURES :** DNN | CNN | Sequential Networks | Transformers | GANs | Autoencoder  
**COMPUTER VISION :** Object Detection | Object Tracking | Depth Estimation  
**IMAGE PROCESSING :** Segmentation | Classification | Histogram Equalization | Image Transformations  
**SPEECH PROCESSING :** MFCCs Extraction | Linear Predictive Coding | Speaker Recognition

## COURSEWORK INFORMATION

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- Probability and Random Processes for Signals and Systems
- Linear Algebra in Signals and Systems
- Digital Image Processing
- Machine Learning for Signal Processing
- Deep Learning Foundations and Applications
- Geometric Methods for Computer Vision
- Convex Optimization in Signal Processing
- Statistical Signal Processing

## CERTIFICATIONS

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- Visual Perception for Self-Driving Cars - Authorized by University of Toronto and offered through Coursera
- AI for Breast Cancer Detection - Authorized by Johns Hopkins University and offered through Coursera
- A Tutorial on Speaker Diarization - Udemy
- LaTeX for Technical Writing and Beamer Presentation - IEEE Young Professionals Affinity Group Kharagpur Section

## AWARDS AND ACHIEVEMENTS

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- Secured **98.38** percentile in **GATE 2022 IN** paper.
- Secured **97.36** percentile in **GATE 2022 EC** paper.
- Offered to the post of EET 2022 (Electronics) at **NTPC** through GATE score.

## POSITIONS OF RESPONSIBILITY

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- Teaching Assistant for Signal Processing Systems Design Lab under the instructions of Dr. Debdoot Sheet.

## EXTRA CURRICULAR ACTIVITIES

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- Participated in the Zonal-level THROW BALL Competition held at Srisailam Project and Kothapalli.
- Participated in the 12th State-level Maths Talent Test conducted by the Association for Improvement of Maths Education.