Samarjeet Das

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EDUCATION

- **IIT Guwahati** — Assam, India
  PhD - Signal Processing and Machine Learning; CPI: 8.75 — *2017 - Present*
- **IIEST Shibpur** — West Bengal, India
  M.Tech - Mechatronics; Percentage: 85 % — *2015 - 2017*
- **BPUT Rourkela** — Odisha, India
  B.Tech - Applied Electronics and Instrumentation; CGPA: 7.77 — *2007 - 2011*

PROFESSIONAL EXPERIENCE

- **IIT Guwahati** — Assam, India
  Teaching Assistant (TA), Dept. of EEE — *2017 - 2022*
- **IIEST Shibpur** — West Bengal, India
  Teaching Assistant (TA), School of Mechatronics — *2015 - 2017*
- **Einstein Academy of Technology and Management** — Odisha, India
  Lecturer, Dept. of ECE — *2011 - 2015*

RESEARCH INTEREST

- Biomedical signal processing especially automated diagnosis of cardio vascular diseases (CVDs) using phonocardiogram (PCG) signal, electrocardiogram (ECG) signal and seismocardiogram (SCG) signal.
- Time-frequency analysis of non-stationary signals
- Application of Machine learning and deep learning models
- Design and development of embedded systems

KEY COURSES TAKEN

- Linear Algebra and Optimization
- Probability and Stochastic Processes
- Biomedical Signal Processing
- Digital Signal Processing and Architecture
- Pattern Recognition and Machine Learning
- Foundations of Data Science
- Deep Learning
- Modern Computer Vision

SKILLS SUMMARY

- **Coding:** Python and Matlab
- **Documentation:** Latex and Microsoft Word
- **Machine Learning:** Theory and implementation of regression and classification models
- **Deep Learning:** Theory and implementation of supervised and unsupervised models for classification
- **Platforms:** Linux and Windows
- **Soft Skills:** Critical thinking, Technical writing, Public speaking, and Event management

PROJECTS

- **Automated Diagnosis of Heart Valve Diseases from Phonocardiogram Signals using Deep Learning**
  Mentor: Prof. S. Dandapat, EEE Department, IIT Guwahati.
  The Project is my PhD Thesis Work. The project aims to develop a robust framework consists of extracting novel features followed by deep learning models to detect different heart valve abnormalities. (2017 - 2023)
- **Predictive Maintenance Tool Development for Thrusters of Underwater Robot**
  Mentor: Prof. D. Sharma, ME Department, IIT Guwahati.
  The project aims to develop a predictive maintenance tool using unsupervised deep learning models for thrusters and other components of an underwater robot to enhance reliability and operational efficiency. (2023 - Present)
- **Studies on Development of an Underwater Acoustic Pinger System for Source Localization**
  Mentor: Dr. SRK Vadali, Principal Scientist, CSIR-CMERI, Durgapur.
  The Project was my MTech Thesis Work. The objective of the project was to design and develop an underwater communication system for source detection and localization. (2015 - 2017)

PUBLICATIONS

1. **Samarjeet Das**, D. Jyotishi, and S. Dandapat. "Automated Detection of Heart Valve Diseases Using Stationary Wavelet Transform and Attention Based Hierarchical LSTM Network". ***IEEE Transactions on Instrumentation and Measurement***, 72 (2023).
2. **Samarjeet Das**, D. Jyotishi, and S. Dandapat. "Heart Valve Diseases Detection Based on Feature-Fusion and Hierarchical LSTM Network". ***IEEE Transactions on Instrumentation and Measurement***, 71 (2022).
3. **Samarjeet Das** and S. Dandapat. "Multi-component oscillatory model based classification of heart sounds". ***Journal of Acoustical Society of India (JASI)***, (2020).
4. **Samarjeet Das** and S. Dandapat. "Synthesis and Classification of Heart Sounds Using Multi-component Oscillatory Model". ***National Conference on Communications (NCC), IEEE***, (2020).
5. **Samarjeet Das** and S. Dandapat. "Automated Detection of Heart Murmurs From the PCG Signal Using Stationary Wavelet Transform." ***India Council International Conference (INDICON), IEEE***, (2022).
6. **Samarjeet Das** and S. Dandapat. "Multiscale Kernel Residual Convolutional Neural Network to Detect Heart Valve Diseases." ***India Council International Conference (INDICON), IEEE***, (2022).
7. S. Kumari, D. Jyotishi, **Samarjeet Das**, S. Dandapat. "Analysing the Effect of Segmentation on PCG Based Biometric System." ***India Council International Conference (INDICON), IEEE***, (2022).
8. M. J. Singh, **Samarjeet Das**, L.N. Sharma, S. Dandapat. "Automated Detection of Aortic Stenosis Using Seismocardiogram signal". ***National Conference on Communications (NCC), IEEE***, (2023).
9. SRK Vadali and **Samarjeet Das**. "Design Development and Experimental Validation of an Underwater Acoustic Pinger System." ***India Council International Conference (INDICON), IEEE***, (2017).

AWARDS AND ACHIEVEMENTS

- **Ph.D. scholorship** holder of Ministry of Education, Govt. of India, 2017 - 2022.
- **M.Tech scholorship** holder of Ministry of Education, Govt. of India, 2015 - 2017.
- Student Member, Organizing Committee, **Hands-on Workshop on AI for All**, Research and Industrial Conclave, IIT Guwahati, May 14-16, 2023.
- Student Member, Organizing Committee, **Workshop on AI in Healthcare Engineering**, NECBH, IIT Guwahati, March 28-30, 2019.
- **Graduate student member** of IEEE community, 2022 - Present.
- Attended workshop on "**Tutorial Series on Deep Learning using Tensorflow (TSDLT)**," IEEE Branch, IIT Guwahati, Oct. 2018.
- **Reviewer** of IEEE and Elsevier Journals, 2020 - Present.
- **Event Manager** (Organizing technical events, workshops and talks), RSF-EEE, IIT Guwahati, 2018 - 2019.
- Second Prize, **National level hindi debate competition**, New Delhi, 2002.
- Participated in **district level kho-kho** competition in school level, 2004.
- Gold medal (2020) and Silver medal (2019), **Badminton Tournament**, EEE Dept., IIT Guwahati. (organized by RSF-EEE).