

Dr. Saif Nalband

Assistant Professor, Department of Computer Science and Engineering

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RESEARCH INTEREST

Developing machine learning models for medical diagnosis using biomedical signal processing and imaging. Applying Machine learning and deep learning for different domains.

WORK EXPERIENCE

Assistant Professor	<i>October 2022 – Present</i>
Thapar Institute of Engineering and Technology, Patiala	
Assistant Professor	<i>January 2022 – October 2022</i>
Indian Institute of Information Technology, Pune	
Assistant Professor	<i>July 2020 – December 2021</i>
DY Patil International University, Pune	
Post Doctoral Researcher	<i>January 2019 – December 2019</i>
INFANT Research Centre, University College Cork, Ireland	
Assistant Professor	<i>July 2018 – December 2018</i>
Indian Institute of Information Technology, Pune	
Teaching Assistant (Instructor)	<i>August 2013 – May 2018</i>
BITS Pilani, Goa Campus, India	
Software Engineer (Retainership)	<i>August 2012 – May 2013</i>
HCL Infosystem, Mumbai	
Project Intern	<i>July 2011 – June 2011</i>
Indian Institute of Science, Bangalore	

EDUCATION

2018	PhD	Electrical & Electronics Engineering, Birla Institute of Technology & Science-Pilani, India
2011	M.Tech	Biomedical Signal Processing, Visvesvaraya University, India
2008	B.E.	Computer Engineering, University of Mumbai, India

TECHNICAL STRENGTHS

Computer Languages: C, MATLAB, Python, JAVA & Libraries

Software & Tools: HTML, LaTeX, Excel, MySQL

PUBLICATION

Journal

- [1] **S. Nalband**, M. Gupta, S. Kansale, T. Hazra, F. Robert, and A. A. Prince, "Explainable deep autoencoding of vibroarthrographic time-frequency distributions for robust knee disorder detection," *Biomedical Signal Processing and Control*, vol. 118, p. 109781, 2026.
- [2] **S. Nalband**, P. Kiratkar, M. Gupta, M. Gambhir, S. Sonam, F. Robert, and A. A. Prince, "Ensemble techniques for predictive modeling of leishmanial activity via molecular fingerprints," *BMC Medical Informatics and Decision Making*, vol. 25, no. 1, p. 378, 2025.
- [3] A. Patil, A. Mehto, and **S. Nalband**, "Enhancing skin lesion diagnosis with data augmentation techniques: a review of the state-of-the-art," *Multimedia Tools and Applications*, vol. 84, no. 22, pp. 25325–25364, 2025, doi: 10.1007/s11042-024-20145-7.
- [4] R. Mittal, A. A. Prince, **S. Nalband**, F. Robert, and J. Fredo, "Modified-MaMeMi filter bank for efficient extraction of brainwaves from electroencephalograms," *Biomedical Signal Processing and Control*, vol. 69, p. 102927, 2021.
- [5] R. Mittal, A. A. Prince, **S. Nalband**, F. Robert, and J. Fredo, "Low-power hardware accelerator for detrending measured biopotential data," *IEEE Transactions on Instrumentation and Measurement*, vol. 70, pp. 1–9, 2020.
- [6] **S. Nalband**, C. A. Valliappan, A. A. Prince, and A. Agrawal, "Time-frequency based feature extraction for the analysis of vibroarthrographic signals," *Computers and Electrical Engineering*, vol. 69, pp. 720–731, 2018.
- [7] **S. Nalband**, A. A. Prince, and A. Agrawal, "An entropy based feature extraction and classification of vibroarthrographic signal using improved complete ensemble empirical mode decomposition with adaptive noise," *IET Science, Measurement & Technology*, vol. 12, no. 3, pp. 350–359, 2018.
- [8] **S. Nalband**, A. Sundar, A. A. Prince, and A. Agrawal, "Feature selection and classification methodology for the detection of knee-joint disorders," *Computer Methods and Programs in Biomedicine*, vol. 127, pp. 94–104, 2016.
- [9] **S. Nalband**, R. R. Sreekrishna, and A. A. Prince, "Analysis of knee joint vibration signals using ensemble empirical mode decomposition," *Procedia Computer Science*, vol. 89, pp. 820–827, 2016.

Conference

- [1] Pujita, S. Khosla, and **S. Nalband**, "Architectural design and performance analysis of a CUDA-accelerated framework for collective flocking simulation," in *Proc. 32nd IEEE Int. Conf. High Performance Computing, Data, and Analytics (HiPC) Student Research Symp.*, 2025.
- [2] G. Singh, P. Agrawal, N. Sharma, A. Chaurasiya, A. Aswal, and **S. Nalband**, "Architecting scalable paradigms for Johnson's algorithm: harnessing multi-core and GPU acceleration" in *Proc. 5th Int. Conf. Advanced Network Technologies and Intelligent Computing (ANTIC)*, 2025.

- [3] J. A. Kapoor, M. Mittal, A. Mehto, T. Hazra, and **S. Nalband**, “Explainable threshold-optimized ensemble learning for actionable infant mortality risk prediction,” in *Proc. 1st IEEE Int. Conf. Recent Trends in Computing and Smart Mobility (RCSM)*, 2025.
- [4] A. Mehto, A. Garg, C. Rana, R. Garg, V. Sherawat, P. Singh, V. Raj Singh, P. Masson, B. Singh, and **S. Nalband**, “Study Buddy: a virtual reality-based interactive learning application for kindergarten students,” in *Proc. 7th Int. Conf. Soft Computing and Its Engineering Applications (icSoftComp)*, 2025.
- [5] Navpreet, R. K. Roul, and **S. Nalband**, “An ensembled parking space classifier across diverse weather conditions,” in *Int. Conf. Distributed Computing and Intelligent Technology*, Springer Nature Switzerland, 2024, pp. 240–256.
- [6] R. K. Roul and **S. Nalband**, “Multi-document summarization by ensembling of scoring and topic modeling techniques,” in *Proc. 21st Int. Conf. Natural Language Processing (ICON)*, 2024, pp. 588–592.
- [7] R. K. Roul, Navpreet, and **S. Nalband**, “Unified scoring and topic modeling: a combined approach for superior multi document summarization,” in *17th SoCTA (Soft Computing: Theories and Applications)*, 2024.
- [8] R. K. Roul, Navpreet, and **S. Nalband**, “Innovating multi-document summarization through strategic fusion,” in *Int. Conf. Signal and Data Processing (ICSDP)*, 2024.
- [9] M. Gupta, Anirudh, and **S. Nalband**, “Data-driven visual chart predictions with machine learning,” in *2nd Int. Symp. Artificial Intelligence (ISAI)*, 2025.
- [10] E. Mascarenhas, **S. Nalband**, A. R. J. Fredo, and A. A. Prince, “Analysis and classification of vibroarthrographic signals using tuneable ‘Q’ wavelet transform,” in *Proc. 7th Int. Conf. Signal Processing and Integrated Networks (SPIN)*, 2020, pp. 65–70.
- [11] S. A. Raurale, **S. Nalband**, G. B. Boylan, G. Lightbody, and J. M. O’Toole, “Suitability of an inter-burst detection method for grading hypoxic-ischemic encephalopathy in newborn EEG,” in *Proc. 41st Annu. Int. Conf. IEEE Engineering in Medicine and Biology Society (EMBC)*, 2019, pp. 4125–4128, doi: 10.1109/EMBC.2019.8857000.
- [12] **S. Nalband**, C. A. Valliappan, R. G. A. A. Prince, and A. Agrawal, “Feature extraction and classification of knee joint disorders using Hilbert Huang transform,” in *Proc. 14th Int. Conf. Electrical Engineering/Electronics, Computer, Telecommunications and Information Technology (ECTI-CON)*, 2017, pp. 266–269, doi: 10.1109/ECTICon.2017.8096224.
- [13] R. R. Sreekrishna, **S. Nalband**, and A. A. Prince, “Real time cascaded moving average filter for detrending of electroencephalogram signals,” in *Proc. Int. Conf. Communication and Signal Processing (ICCP)*, 2016, pp. 0745–0750, doi: 10.1109/ICCP.2016.7754244.

PATENT

- [1] Paperless Notarization and Verification Platform Using Blockchain Technology, published in April 2024.
- [2] Vehicle to Vehicle Communication System for Road Safety, published in July 2025.
- [3] Lokniti AI - AI-Driven Legal Assistance for Commercial Courts, published in October 2025.

TECHNICAL REPORTS

- [1] S. N. Omkar, D. R. Mahapatra, A. M. Vanjare, K. P. Kulkarni, and **S. Nalband**, "Methodology for assessing and quantifying stability of humans while standing and during gait on stable and unstable platform," **Dept. Aerospace Engineering, Indian Institute of Science, Bangalore**, Rep. No. AE/ISTC/SNO/11/227/02, 2011.

ACADEMIC POSITIONS OF RESPONSIBILITY

Convenor

February 2024

7 Day SERB Sponsored Workshop on Explainable AI (XAI), TIET, Patiala

Member

December 2023 – Present

Department Time Table Committee, TIET, Patiala

Mentor

December 2024/25

Smart India Hackathon (SIH) 2024/2025 Winner Team, TIET, Patiala

Vice President - Membership

August 2017 – August 2018

Toastmasters International Margao, Goa, India

Created a climate that attracts new members to the club. Helped the club achieve its mission and supported member goal achievement.

Sports Secretary

August 2007 – August 2008

Zephyr Inter College Sport Meet, LTCOE, Navi Mumbai, India

Responsible for conducting the annual sports meet of the college. Organized the first inter-college football tournament at LTCOE.