## Dr. Tilendra Choudhary, Ph.D.

Contact Information	Duke University, 304 Research Drive, Suite 107, Durham, NC 27710, USA Mobile: +1-4046675618Image: Markov Control of the second control of the secon
Objective	Placement in an academic or industrial research and development position that allows advanced research in the area of data science, signal processing, and machine learning (ML).
INTERESTS	Physiological signal analysis, health informatics, AI and ML for healthcare and other domains
EDUCATION	<b>Ph.D</b> , Electronics and Electrical Engineering, 2020 Indian Institute of Technology Guwahati (IIT G), Assam
	<b>M.Tech.</b> , Electronics and Communication Engineering (CGPA: 8.93/10), 2015 Indian Institute of Technology Bhubaneswar (IIT BBS), Odisha
	<b>B.E.</b> , Electronics and Telecommunication Engineering (CPI: 8.21/10), 2012 Chhattisgarh Swami Vivekanand Technical University (State Govt.), Bhilai, Chhattisgarh
Experience	*Post-doctoral Research Fellow, 2024 Mar Present
IN R&D (FULL TIME)	Dept. of Surgery, Duke University, Durham, NC-27707, USA         Post-doctoral Research Fellow,       2022 Apr 2024 Feb.         Dept. of Biomedical Informatics, Emory University, Atlanta, GA-30322, USA       [Jointly with] Georgia Institute of Technology (Georgia Tech), Atlanta, USA         Domains: To develop DSP and ML-based smart algorithms to analyze multimodal biosignals and EHR-data for assessing critical complications such as sepsis and ARDS. To analyze effect of VNS neuromodulation on PTSD patients using physiological and behavioral analysis.
	*Post-doctoral Industrial Experience: Research Consultant 2021 Nov 2022 Mar. Research Engineer 2021 Feb 2021 Oct. Brigosha Technologies Pvt Ltd (R&D), #780 HSR Layout Bangalore, Karnataka-560102, India <i>Domain:</i> Autonomous driving and machine learning: Developed a deep learning-based traffic scene perception from LiDAR 3-D sensor-data and assisted tracking, <i>Tools:</i> Python, MATLAB
	*Ph.D. Research Scholar 2015 July - 2020 Oct. Department of EEE, IIT Guwahati, Guwahati, Assam-781039, India <i>Dissertation:</i> Waveform Delineation and Analysis of Seismocardiographic Signals <i>Focus:</i> With signal processing and machine learning, I developed several SCG characterization and delineation frameworks for different applications (e.g., cardiac event detection, heart rate variability, breathlessness identification) and also developed sensing hardware devices, GUIs and mobile applications. <i>Tools:</i> MATLAB, Python, NI Multisim, BIOPAC system, Arduino *M.Tech. Scholar 2013 July - 2015 July School of Electrical Sciences, IIT Bhubaneswar, Argul, Khordha, Odisha-752050, India <i>Dissertation:</i> Delineation Frameworks for PPG and ECG Signals. <i>Tools:</i> MATLAB
Selected Journal Publications	<ul> <li>Tilendra Choudhary et al., "Derivation and Validation of Generalized Sepsis-induced Acute Respiratory Failure Phenotypes Among Critically III Patients: A Retrospective Study," <i>BMC Critical Care</i>, vol. 28, no. 1, pp. 321, Oct. 2024. (#citations:1, IF: 8.8)</li> <li>Tilendra Choudhary et al., "Identification of Human Breathing-States Using Cardiac-Vibrational Signal for m-Health Applications," <i>IEEE Sensors Journal</i>, vol. 21, no. 3, pp.</li> </ul>
	<ul> <li>3463-3470, 2021. DOI: 10.1109/JSEN.2020.3025384. (#citations:18, IF:4.3)</li> <li>Tilendra Choudhary et al., "Automatic Detection of Aortic Valve Opening using Seismocardiography in Healthy Individuals," <i>IEEE Journal of Biomedical and Health Informatics</i>, vol. 23, no. 3, pp. 1032-1040, 2019. (#citations:69, IF:7.7, It was featured on the cover of journal's sub-column, and as an 'Editor's Pick' for the May 2019 issue.)</li> </ul>

	• Tilendra Choudhary, M.K. Bhuyan, and L.N. Sharma, "Delineation and Analysis of Seismocardiographic Systole and Diastole Profiles," <i>IEEE Transactions on Instrumentation and Measurement</i> , vol. 70, Art no. 4000108, pp. 1-8, 2021. (#citations:12, IF:5.6)
PATENTS FILED	1) "Method and Technology for Accelerometric Signal Recording of a Novel Vibrocarotido- gram (ViCG) with Seismocardiogram (SCG)," in <i>Indian Patent</i> , 2020. Ref. No.: 202031026802
	2) "Device and Method for Seismocardiography Recording and Monitoring in Mobile Device for Healthcare Applications," in <i>Indian Patent</i> , 2020. Ref. No.: 202031027314
ACHIEVEMENTS & OTHER EXPERIENCES	<ul> <li>#PUBLICATIONS: 16 Journals, 12 Conferences, 2 Preprints, 2 filed patents.</li> <li>EPIC system deployment of the sepsis-induced ARF phenotyping model is currently under process at Emory University for its prospective use in ICU.</li> <li>Administered brain imaging and physiological waveform data acquisition of acute stressed and PTSD patients at Emory University Hospital.</li> <li>Project member of a working group to standardize the physiological waveforms format in the Bridge2AI for Clinical Care Project [zenodo link].</li> <li>Worked in collaboration with Evren Technologies Inc., GeorgiaTech, University of Pittsburgh, MIT, Altanta VA medical center.</li> <li>Mentored many PhD, MS and undergraduate students.</li> <li>MHRD, Govt. of India Scholarship for my PhD (2015-20) &amp; MTech (2013-15).</li> <li>Young Researcher Award 2021 by Institute of Scholars (InSc), 2021.</li> <li>Invited talks: <ul> <li>Speaker, Research Friday Duke University, "ML-derived Unique Phenotypes for Sepsis-induced Acute Respiratory Failure (ARF) in ICU", Oct. 18, 2024.</li> <li>Speaker, AI in Healthcare Engineering, NECBH, IIT Guwahati, Mar. 28-30, 2019,</li> <li>Speaker, Workshop on MATLAB, RSF-EEE, IIT Guwahati, Mar. 28-30, 2019.</li> </ul> </li> <li>Reviewer of many IEEE, Elsevier, npj, Nature and ACM, journals and conferences.</li> <li>Grant proposal development experience: Assisted for NIH R01 submission, Jul 2023.</li> <li>Developed hardware circuit design for SCG and ViCG signals.</li> <li>Contributed for book-preparation, "Computer Vision and Image Processing: Fundamentals and Applications," CRC Press, 2019.</li> <li>Attended workshop on "Tutorial Series on Deep Learning using Tensorflow (TSDLT)," IEEE Branch, IIT Guwahati, Oct. 2018.</li> </ul>
TEACHING Assistance	Digital Electronics Circuit Lab, Analog Electronics Lab, Signal and System Lab and Tutorial, Design Laboratory, Basic Electronics Tutorial, Probability and Randam Processes Tutorial
Editorial Experience	*Review Editor, Biomedical Signal Processing, Frontiers in Signal Processing (SP) *Topic Editor, Smart Biomedical Signal Analysis with Machine Intelligence, Frontiers in SP
Media Coverage	<ul> <li>Physician's Weekly: Sepsis-Induced ARF Phenotypes Show Special Organ Injury Characteristics &amp; Clinical Outcomes Differences, Oct 2024. [Link]</li> <li>MedScape: Transcranial VNS Tied to Improved Cognition in PTSD, Jul 2023. [Link]</li> <li>GLOBE NEWSWIRE: gammaCore (Non-Invasive Vagus Nerve Stimulation; nVNS) Improves Attention and Memory in Patients with PTSD, Jul 2023. [Link]</li> <li>GLOBE NEWSWIRE: gammaCore nVNS Improves Attention and Working Memory in Patients with Post Traumatic Stress Disorder (PTSD), Sept 2023. [Link]</li> </ul>
Skills	<b>Coding skills :</b> MATLAB, Python, basic C/C++, Pytorch, Tensorflow <b>Software editor tools :</b> Spyder, Pycharm, Power BI <b>Simulation skills :</b> NI Multisim, MATLAB, Simulink, PSpice <b>Embedded programming skills :</b> Arduino; <b>Type-setting skills :</b> LATEX, MS Office <b>Lab-equipments handled :</b> DSO, BIOPAC system (MP36,45,150,160), CNAP 500 BP monitor
REFERENCES Available to Contact	Dr Rishikesan Kamaleswaran, Asso. Prof. Duke Univ., USA, r.kamaleswaran@duke.edu[url] Prof M.K. Bhuyan, Prof. Dept. of EEE, IIT Guwahati, India, mkb@iitg.ac.in [url]] Prof Shaik Rafi Ahamed, Prof. Dept. of EEE, IIT Guwahati, India, rafiahamed@iitg.ac.in[url] Dr L.N. Sharma, Senior Technical Officer, Dept. EEE, IIT Guwahati, India, Ins@iitg.ac.in [url]