GARVIT CHUGH

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ORCID: 0000-0002-0354-9731 ◇ Date of CV: January 2026

Research Interests: Software Engineering, Mobile & Pervasive Computing, (W)Earables, IoT & AI-Driven Development, Human-Computer Interaction, Data Management for Software-Intensive Systems

Research Vision: AI-driven software engineering, sustainability, functional systems for all

EDUCATION

Dual Ph.D. – M.Tech. (Computer Science and Engineering)
Indian Institute of Technology Jodhpur, India — 2020 – Present
Co - Supervisor: **Dr. Suchetana Chakraborty** (**Associate Professor, CSE, IIT Jodhpur**)
Co - Supervisor: **Dr. Sandip Chakraborty** (**Associate Professor, CSE, IIT Kharagpur**)
Thesis Submitted
CGPA: 8.93/10

B.Tech. (Computer Science and Engineering)
Guru Gobind Singh Indraprastha University, Delhi, India — 2016 – 2020
CGPA: 9.10/10

PUBLICATIONS

Total Publications: 27 (21 peer-reviewed, 1 filed patent, 4 under review). [Under Review] papers are marked accordingly to ensure transparency under TENK 2020 guidelines.

Published and Accepted Papers

2026 **Chugh, G.**, Ghosh, I., Roy, N., Chakraborty, S., & Chakraborty, S. *MorsEar: Toward Generalizable Low-Resource Covert Messaging via Earable-Based Inertial Sensing* In **CHI** 2026 [Main Track] [CHI 2026 Honourable Mention Award] 🏆

2026 Layal, K., Kumar, A., **Chugh, G.*** & Chakraborty, S. *VectionSense: Multimodal Inertial-Physiological Cybersickness Detection in Consumer VR.* In *Proceedings of SAXR 2026: Shaping Future Human Connection: Social Augmentation through XR Technologies co-located with **CHI** 2026* [Workshop]

2026 **Chugh, G.** & Chakraborty, S. *HydratEar: Non-Invasive Hydration Monitoring using In-Ear Acoustic Reflectometry* In **PerCom** 2026 [Main Track]

2026 Dey, E., Ravi, A., Shinde, G., **Chugh, G**., Ghosh, I., Misra, A., & Roy, N. *Fed-CASQ: Enhancing Class-Wise Accuracy in Pervasive Federated Learning with Class-Aware Scaling and Quantization* In **PerCom** 2026 [Main Track]

2026 Vadthya, S., **Chugh, G.** & Chakraborty, S. *EarFence: Lightweight Ultrasonic Defense for Smart Earbuds Against Hidden Commands* In **PerCom** 2026 [WiP Track]

2026 Kumar, A.*, Sharma, S.*, **Chugh, G.*** & Chakraborty, S. *CompulsEar: Body-focused repetitive behaviors detection using earable-based inertial sensing* In **PerCom** 2026 [WiP Track] [*Equal Contribution]

2026 **Chugh, G.**, Chakraborty, S., & Chakraborty, S. *SpineSense: Earable-Based Inertial Sensing for Spine Movement Monitoring to Combat Neck Pain* In **PACMHCI** 2026 [**EICS** Track]

2026 **Chugh, G.**, Mondal, A., Chakraborty, S., & Chakraborty, S. WristSense: Sensing Hidden Wrist Strain in Routine Activities via Inertial Tokenization and LLM-Based Feedback, In **SenSys** 2026 [Main Track]

2026 **Chugh, G.**, Mondal, A., Osho, & Chakraborty, S. Experience: From Sensors to Service: Advancing Ambient Living with an AIoT Community Testbed In COMSNETS 2026 [Main Track]

2025 **Chugh, G.**, Ghosh, I., Chakraborty, S., & Chakraborty, S. BiteSense: Earable-Based Inertial Sensing for Eating Behaviour Assessment. In PerCom'25. [Main Track]

2025 Ghosh, I., **Chugh, G.**, Faridee, AZM., & Roy, N. High-Order Moments Conditional Domain Adaptation Networks for Wearable Human Activity Recognition In CIKM 2025. [Main Track]

2025 Zhingre, S., **Chugh, G.**, & Chakraborty, S. Tracking Ephemeral and Residual Emotions via Earable Inertial Sensing During Media Consumption. In PerCom'25 [WIP Paper]

2025 Zhingre, S.*, **Chugh, G.***, & Chakraborty, S. EarDesk: An Adaptive Desktop BLE Framework for eSense IMU Data Collection and Configuration. In PerCom'25 [Artefact Paper] [*Equal Contributions]

2025 **Chugh, G.**, Chakraborty, S., & Chakraborty, S. Unlocking Eye Gestures with Earable Inertial Sensing for Accessible HCI. In COMSNETS'25

2024 Ghosh, I., **Chugh, G.**, Roy, N., & Jayarajah, K. Unsupervised Domain Adaptation for Action Recognition via Self-Ensembling and Conditional Embedding Alignment. In ICDM'24

2024 Ghosh, I., **Chugh, G.**, Faridee, A., & Roy, N. β-Decode: Attention-based Decoding Temporal Artifacts via Unsupervised β-Variational Autoencoder. In CODS-COMAD'24

2023 **Chugh, G.**, Chakraborty, S., Bhandari, R., & Chakraborty, S. Exploring Earables to Monitor Temporal Lack of Focus during Online Meetings to Identify Onset of Neurological Disorders. In FCRC/CHASE'23

2023 **Chugh, G.**, Chakraborty, S., & Chakraborty, S. enVolve^{+}: Inertial Sensing to Reinforce Involvement of Silent Listeners during an Online Interaction. In COMSNETS'23

2023 **Chugh, G.**, and Chakraborty, S. Demonstration of LegalHelper: A Low-cost tool for Smart Translation and Creation of Legal Contracts. In COMSNETS'23

2022 **Chugh, G.**, Chakraborty, S., Bhandari, R., & Chakraborty, S. enVolve: Are You Listening? Inertial Sensing to Monitor the Involvement of Silent Listeners during an Online Interaction. In UbiComp/ISWC '22 Adjunct, Cambridge, UK

2021 Bhati, B. S., **Chugh, G.**, Al-Turjman, F., & Bhati, N. S. (2021). An improved ensemble based intrusion detection technique using XGBoost. Transactions on emerging telecommunications technologies.
Link: https://onlinelibrary.wiley.com/doi/abs/10.1002/ett.4076

Patent

2025 **G. Chugh**, Suchetana Chakraborty and Sandip Chakraborty. "A Multimodal Headband System For Activity Recognition And Biometric Data Collection." Patent Application Number 202531105540. (Filed, Date: 2025/10/31)

Under Review

2026 **Chugh, G.**, Ghosh, I., Faridee, A.N.Z., Roy, N., Chakraborty, S., & Chakraborty, S. *EarControl: Towards Earable-Based Hands-Free Interaction for Mobile Devices* [Under Review]

2026 **Chugh, G.**, Ghosh, I., Chakraborty, S., & Chakraborty, S. *An Evaluation of Earable-Based Inertial Sensing for Understanding Eating Behaviour* [Under Review]

2026 Mondal, A., **Chugh, G.**, & Chakraborty, S. *MSSL: Real-Time Complex Activity Recognition from Multiple Unlabeled IMU Data Streams* [Under Review]

2026 Zhingre, S.*, **Chugh, G.***, & Chakraborty, S. *Efficacy of Earables to Monitor Spontaneous Reactions (A Proxy for Mental Health) to On-Screen Stimuli in Real Time.* [*Equal Contributions] [Under Review].

RESEARCH FUNDING AND FELLOWSHIPS

- Prime Minister Research Fellowship, Government of India — 2023 - Ongoing
- Gary Marsden Travel Award for CHI 2026 — 2026
- International Travel Grants (PerCom'26 - ACM/IARCS, IEEE TCCC/TCPP) — 2026
- International Travel Grant - SenSys'26 - LRN Foundation — 2026
- National Travel Grants (COMSNETS'26) — 2026
- International Travel Grants (PerCom'25 - ACM/IARCS, IEEE TCCC/TCPP, LRN Foundation) — 2025
- National Travel Grants (COMSNETS'23, '25 Author Travel Grant) — 2023, 2025
- UbiComp Workshops Registration Grant — Nokia Bell Labs — 2023
- TCS Research Fellowship, Tata Consultancy Services — 2023
- Ph.D., MHRD – GATE Fellowship, Central Govt. of India — 2020 – 2023
- Merit Scholarship for Academic Excellence in B.Tech. — 2017 – 2020 (Government of Delhi, India)

TEACHING MERITS

Teaching Assistant At Indian Institute of Technology Jodhpur:

2025 CS7460, Mobile and Pervasive Computing [Fall], Class strength: 21 students, *Instructor: Dr Suchetana Chakraborty*

2025 CSL2020, Data Structure and Algorithms [Spring] Class strength: 84 students,*Instructor: Dr Suchetana Chakraborty*

2024 CSL3050, Database Systems [Fall], Class strength: 93 students, *Instructor: Dr Suchetana Chakraborty*

2024 CSL2020, Data Structure and Algorithms [Spring], Class strength: 204 students, *Instructor: Dr Dip Sankar Banerjee*

2023 AIL7460, Fundamentals of Distributed Computing [Summer], Class strength: 34 students, *Instructor: Dr Suchetana Chakraborty*

2023 CS7460, Mobile and Pervasive Computing [Spring], Class strength: 76 students, *Instructor: Dr Suchetana Chakraborty*

2022 CSL3030, Operating Systems [Fall], Class strength: 99 students, *Instructor: Dr Suchetana Chakraborty*

2021 CSL2040, Mathematics for Computing [Fall], Class strength: 89 students, *Instructor: Dr Anand Mishra*

2021 CSL1010, Introduction to Computer Science [Spring], Class strength: 245 students, *Instructor: Dr Dip Sankar Banerjee*

2021 CSL3020, Computer Architecture [Fall], Class strength: 150 students, *Instructor: Dr Angshuman Paul*

External Teaching Assistance (PMRF Duties)

2025 Tutorials and Demonstrations on *IoT* Indian Institute of Information Technology Sonepat, India

2024 Tutorials and Demonstrations on *Fundamentals of Computer Science* Nehru Inter College Kakarahwa, Siddharth Nagar (U.P.), India

2024 Tutorials and Demonstrations on *DBMS* Indian Institute of Information Technology Sonepat, India

2023 Demonstration and Tutorial on *Awareness on ICT Tools* Sarvodaya Boys Senior Secondary School, Bhola Nath Nagar, Delhi, India

SUPERVISION AND MENTORSHIP

- Mentored 2 Master's Thesis Projects (MTP), 2 Bachelor's Thesis Projects (BTP), and 20 research interns during Ph.D. at UbiSys Research Lab, IIT Jodhpur (2020–2025).
- Supervised ~ 60 undergraduate and graduate students on projects related to Mobile and Pervasive Computing, Ubiquitous Sensing, and Applied Machine Learning.

SCIENTIFIC AND SOCIETAL IMPACT

- Promoted open science by publishing source code, datasets, and study materials through institutional repositories and GitHub.
- Serving as Social Media Chair for ACM/IEEE COMSNETS 2027.
- Serving as TPC Member for HeadSys @ MobiSys 2026.
- Served as Social Media Chair for ACM/IEEE COMSNETS 2025, 2026.
- Served as a TPC Member of the ACM/IEEE COMSNETS Poster Session 2025, 2026.
- Served as Web Chair at ACM/IEEE COMSNETS 2024.
- Served as Reviewer for conferences such as IEEE CHASE, ACM/IEEE COMSNETS, IEEE AIoT, ACM CSCW, NeuRips, ACM KDD, IEEE SmartComp, ACM CHI.
- Served as Reviewer for Journals such as Pervasive Computing, IEEE Transactions on Mobile Computing and PACMHCI.
- Engaged in science communication through tutorials, outreach at government schools, and public dissemination of research via outreach programs at colleges and schools across India.

AWARDS & RECOGNITIONS

- Departmental Rank 1 — M.Tech - PhD, IIT Jodhpur 2022-Present
- Recipient of CHI 2026 Honourable Mention Award for MorsEar! 2026
- Invited poster presentation at ACM ARCS'26 2026
- Received *OmniBuds*, by Nokia Bell Labs, UK 2025
- Finalist — Green Fintech Hackathon, RBI (Top 4 out of 519) 2024
- Finalist — IEEE Smart Mobility Challenge, Saudi Arabia 2023
  (Top 5 out of 175, Sole Representative of India)

- Best Poster Award, Industry Day Poster Session — IITJ 2023
- First Runner Up, iS^3 — IIT Jodhpur's ACM Student Chapter Ideathon 2022
- Outstanding TA Award — IIT Jodhpur (Mobile and Pervasive Computing) 2022
- Graduate Aptitude Test in Engineering 2020, Percentile: 98.74 2020
- Common Aptitude Test 2019, Percentile: 94.13 2019

EXPERIENCE

Visiting Researcher, **University of Maryland, Baltimore County** September 2023 – March 2024
Baltimore, MD, USA

Teaching Assistant, **Indian Institute of Technology, Jodhpur** January 2021 – Present
Jodhpur, India

Web Developer (Research), **Futural Solutions** January 2020 – July 2022
New Delhi, India

Android Developer (Internship), **Airports Authority of India** June 2019 – August 2019
New Delhi, India

SKILLS

Programming	C, C++, Java, Python, Swift, JavaScript, NodeJS, React, MySQL, Firebase
Tools & Frameworks	Git, Android Studio, NetBeans, Material UI, XCode, LaTeX
Research Skills	End-to-end user study design, survey creation, large-scale data collection, data preprocessing, statistical analysis, experimental design
Applied Domains	Ubiquitous Computing, Mobile and Pervasive Systems, Machine Learning for Sensing, Human Activity Recognition, Edge Computing
Soft Skills	Communication, Mentorship, Leadership, Teamwork, Time Management, Problem-solving, Technical Writing, Presentation

LANGUAGE SKILLS

- **English:** Fluent (C1, academic and professional)
- **Hindi:** Native
- **French:** Basic familiarity (A1, beginner)

OTHER EDUCATION AND EXPERTISE

Machine Learning & AI: Machine Learning I, Statistical Techniques, Optimization, Artificial Intelligence II

Systems & Networking: Computer Architecture, Virtualization and Cloud Computing, Vehicular Adhoc Networks, Software and Data Engineering, Algorithms for Big Data

Security & Cryptography: Security and Applications, Cryptography

Ubiquitous Computing: Mobile and Pervasive Computing

OTHER MERITS

- Member of the Association for Computing Machinery (ACM), the Institute of Electrical and Electronics Engineers (IEEE)
- Class Representative (M. Tech. Batch of 2022)
- Participated in University-level Football & Basketball Tournaments (2016 – 2020)
- Marketing Member of EDMVANS (234K Subscribers)

REFERENCES

Dr. Suchetana Chakraborty
Assoc. Professor,
IIT Jodhpur, India
Email: suchetana@iitj.ac.in

Dr. Sandip Chakraborty
Assoc. Professor,
IIT Kharagpur, India
Email: sandip@cse.iitkgp.ac.in

Dr. Nirmalya Roy
Professor,
UMBC, USA
Email: nroy@umbc.edu