

Rishiraj Adhikary

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RESEARCH INTEREST

Application of AI/ML and Signal Processing for Healthcare

Experienced in developing low cost health sensing equipment

EDUCATION

Ph.D., Computer Science, IIT Gandhinagar

Aug 2019 – Jan 2025, CGPA: 8.76

Thesis: Machine Learning based low-cost health sensing as alternatives to clinical gold standards

- Developed a wearable mask with embedded sensors to monitor respiratory flow; applied ML models for airflow pattern classification and validated against spirometry.
- Built a thermal + RGB imaging pipeline to detect nostril position and track breathing; integrated discriminative correlation filters, optical flow, and temporal convolutional neural networks (TCNs) for robust temporal breathing analysis.
- Designed image processing pipeline to analyze thermal breathing signals and diagnose sleep apnea, demonstrating feasibility of contactless, low-cost respiratory monitoring.

B.Tech., Electronics, Gauhati University, India

Aug 2011 – Aug 2015, CGPA: 8.19

EXPERIENCE

Enercent Technologies (JioThings – Reliance)

Aug 2024 – Present

Research Data Scientist, Bengaluru, India

- Finetuned and evaluated Large Language Models (LLMs) on domain-specific IoT data to strengthen guardrails and generate structured outputs, improving reliability and response quality in company products on smart electric meters and solar plants.
- Applied data science techniques on thousands of smart electric meter datasets to detect faulty meters, diagnose grid imbalance, and improve system reliability.

SELECTED JOURNAL PUBLICATIONS

1. **Rishiraj Adhikary**, Maite Sadeh, Nipun Batra, Mayank Goel
JoulesEye: Energy Expenditure Estimation and Respiration Sensing From Thermal Imagery while Exercising
*ACM Transactions on Interactive, Mobile, Wearable and Ubiquitous Technologies (IMWUT '24)
<https://dl.acm.org/doi/abs/10.1145/3631422>
[Media Coverage by Indian Express, CMU News, ZME Science, Knowridge, TechXplore and other news outlets](#)
2. **Rishiraj Adhikary**, Prerna Khanna, Tanmay Srivastava, Rohit Patil, Jacob Peplinski, Joe Breda, Nipun Batra, and Shwetak Patel
SpiroMask: Measuring Lung Function Using Consumer-Grade Masks
*ACM Transactions on Computing for Healthcare (HEALTH '23)
<https://doi.org/10.1145/3570167>
[Covered by The Ahmedabad Mirror](#)
3. **Rishiraj Adhikary**, Zeel Patel, Tanmay Srivastava, Nipun Batra, Mayank Singh, Udit Bhatia, Sarath Guttikunda

AWARDS AND FELLOWSHIPS

Commendation for Outstanding Research (PhD), IIT Gandhinagar <i>Recognized for excellence in doctoral research by IIT Gandhinagar during the convocation ceremony</i>	July 2025
UbiComp Gaetano Borriello Outstanding Student Award (Top 3) <i>Award for outstanding contributions to academia and society in ubiquitous and pervasive computing.</i>	October 2023
Presenter at the 11th Heidelberg Laureate Forum <i>My thesis work was covered by German popular science magazine Spektrum der Wissenschaft</i>	September 2024
Fulbright-Nehru Doctoral Research Fellowship 2022-2023 <i>Funded research at Carnegie Mellon on deployable respiratory health systems</i>	November 2022
Prime Minister's Research Fellowship, India	May 2022
Best poster award in PhD Research Showcase, IIT Gandhinagar	January 2024

SERVICE AND INVITED TALKS

Technical Program Committee Member: IEEE EMBC (2025), IEEE COMSNETS (2024), ACM SenSys DATA workshop (2021),

Reviewer for ACM IMWUT, ACM CHI, ACM COMPASS; IEEE EMBC; Nature Scientific Data.

Invited Talks:

- Represented **Reliance Jio** at the *ACM India Summer School, IIT Gandhinagar*, showcasing JioThings products and services. Delivered a tutorial session on health sensing. [\[Talk\]](#) [\[Tutorial\]](#)
- Invited talk on “*Sensing Respiration Rate*” at the **NetHealth Workshop**, ACM/IEEE COMSNETS 2024.
- Expert talk on “*Mobile Computing in Health*” during the **GUJCOST-sponsored 3-day workshop on IoT and Wearable Technology**, Sarvajanic College of Engineering and Technology (SCET).

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