

# Rishiraj Adhikary

rishiraj.inbox@gmail.com — +91-8787360173 — [rishi-a.github.io](https://rishi-a.github.io) — [Google Scholar](#)

## 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*

## 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

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

[linkedin.com/in/rishiraj-in/](https://www.linkedin.com/in/rishiraj-in/)