

# SEJAL BHALLA

✉ [sejal@cs.toronto.edu](mailto:sejal@cs.toronto.edu) 🌐 [www.sejalbhalla.com](http://www.sejalbhalla.com)

## RESEARCH INTERESTS

Ubiquitous Computing, Mobile Health, Input and Interactions, Applied Sensing, Acoustic and Speech Analysis

## EDUCATION

**University of Toronto** | Toronto, Canada 2021 - Present  
Ph.D., Computer Science | Advisors: Alex Mariakakis, Eyal de Lara

**Indraprastha Institute of Information Technology Delhi** | Delhi, India 2017 - 2021  
BTech, Computer Science & Engineering

## EXPERIENCE

**Google** May 2024 – Jul 2024  
Student Researcher | Remote / Seattle, USA  
Built a microgesture recognition system using smartwatch sensor data (IMU and audio).

**Google** Aug 2023 – Apr 2024  
Student Researcher | Remote / Seattle, USA  
Explored interaction techniques for AR.

**SmaSH Lab, HCII, Carnegie Mellon University** Sep 2020 – Aug 2021  
Visiting Student Researcher | Remote / Pittsburgh, USA  
Built a privacy-preserving activity recognition system by leveraging domain adaptation techniques to train privacy-sensitive sensors using minimal training data.

**IBM Research** May 2020 – Jul 2020  
Research Intern | Remote / Bengaluru, India  
Built an AI solution based on the principles of Natural Language Processing to automate the process of business lead generation.

**Weave Lab & HMI Lab, IIIT Delhi** Dec 2018 – May 2021  
Student Researcher | Delhi, India  
Designed and developed intelligent systems to enrich human-computer interaction, specifically through (1) unobtrusive detection of facial expressions using earables, and (2) classification of human attention types using EEG data and deep learning.

## PEER-REVIEWED PUBLICATIONS

9. **Sejal Bhalla**, Cady Xu, Alex Mariakakis, Karan Ahuja, Ishan Chatterjee. Enabling Microgesture Recognition on COTS Smartwatches. *Under Review*.
8. **Sejal Bhalla**, Deshang Kong, Salaar Liaqat, Daniyal Liaqat, Robert Wu, Andrea Gershon, Eyal de Lara, Alex Mariakakis. Speech and Physiology in COPD: Association between Wearable Device Data and Daily Lung Condition. *Under Review*.

7. **Sejal Bhalla**, Tien Han, Andrea Gershon, Robert Wu, Eyal de Lara, Alex Mariakakis. Phoneme-Aware Acoustic Analysis of Natural Speech for Lung Function Assessment. 2025 IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP '25). *To Appear*.
- 🏆 6. Kenneth Christofferson, **Sejal Bhalla**, Joseph Cafazzo, Alex Mariakakis. On the Production and Measurement of Cardiac Sounds in the Ear Canal. In Companion of the 2024 on ACM International Joint Conference on Pervasive and Ubiquitous Computing (UbiComp '24). <https://doi.org/10.1145/3675094.3680526>. **Best Paper Award**.
5. **Sejal Bhalla**, Salaar Liaqat, Robert Wu, Andrea Gershon, Eyal de Lara, Alex Mariakakis. PulmoListener: Continuous Acoustic Monitoring of Chronic Obstructive Pulmonary Disease in The Wild. In Proceedings of the ACM on Interactive, Mobile, Wearable and Ubiquitous Technologies (IMWUT '23). <https://doi.org/10.1145/3610889>.
4. **Sejal Bhalla**, Dhruv Verma, S.V. Sai Santosh, Saumya Yadav, Aman Parnami, Jainendra Shukla. AttentioNet: Monitoring Student Attention Type in Learning with EEG-Based Measurement System. In Proceedings of the 11th International Conference on Affective Computing and Intelligent Interaction (ACII '23). <https://doi.org/10.1109/ACII59096.2023.10388212>.
3. **Sejal Bhalla**, Mayank Goel, Rushil Khurana. 2021. IMU2Doppler: Cross-Modal Domain Adaptation for Doppler-based Activity Recognition Using IMU Data. In Proceedings of the ACM on Interactive, Mobile, Wearable and Ubiquitous Technologies (IMWUT '21). <https://doi.org/10.1145/3494994>.
2. **Sejal Bhalla**, Dhruv Verma, Dhruv Sahnani, Jainendra Shukla, Aman Parnami. 2021. ExpressEar: Sensing Fine-Grained Facial Expressions with Earables. In Proceedings of the ACM on Interactive, Mobile, Wearable and Ubiquitous Technologies (IMWUT '21). <https://doi.org/10.1145/3478085>.
1. **Sejal Bhalla**, Dikshant Sagar, Jatin Garg, Prarthana Kansal, Rajiv Ratn Shah, Yi Yu. PAI-BPR: Personalised Outfit Recommendation Scheme with Attribute-wise Interpretability. In IEEE International Conference on Multimedia Big Data (Big MM '20). <https://doi.org/10.1109/BigMM50055.2020.00039>.

## INVITED TALKS

Google Product & Engineering, Enabling Microgesture Recognition on COTS Smartwatches	2024
Google AR, Enabling Microgesture Recognition on COTS Smartwatches	2024
AGE-WELL & APPTA Policy Rounds, Remote Patient Monitoring in the Wild	2024

## AWARDS AND HONORS

University of Toronto Departmental Fellowship (\$1,355 CAD)	2023
Alberta Machine Intelligence Institute AI Week Talent Bursary (\$1,500 CAD)	2022
University of Toronto Program-Level Fellowship (\$1,000 CAD)	2023, 2022, 2021
GHCI Student Scholarship	2020
IBM Blue Scholar	2020

## ACADEMIC SERVICE

Reviewer, ACM CHI	2024
Reviewer, ACM IMWUT/ISWC	2024, 2023, 2022
Reviewer, IEEE BSN	2024
Reviewer, ACM ISS	2022
Student Volunteer, ACM UbiComp	2022, 2021
Student Volunteer, ACM IUI	2022

## TEACHING EXPERIENCE

Teaching Assistant, University of Toronto   Topics in Ubiquitous Computing	2024, 2023
Teaching Assistant, University of Toronto   Design of Interactive Computational Media	2023
Teaching Assistant, University of Toronto   Introduction to Computer Programming	2022, 2021

## VOLUNTEERING AND OUTREACH

Mentor, <a href="#">ML4H Mentorship Program</a>	2024
Mentor, <a href="#">WISE Industry Mentorship Program</a>	2024
Mentor, <a href="#">Toronto Graduate Application Assistance Program</a>	2023
Mentor, <a href="#">Girls SySTEM Mentorship Program</a>	2023
Speaker and Panellist, <a href="#">Pursue STEM Workshop</a>	2022

## STUDENTS ADVISED

Zhizheng Zhang, Ph.D., Computer Science   University of Oxford	2024 - Present
Benson Chou, Undergraduate, Computer Science   University of Toronto	2024 - Present
Tien Han, Undergraduate, Computer Science   University of Toronto	2023 - 2024
Deshang Kong, Undergraduate, Computer Science (Currently Masters at HKUST   University of Toronto)	2023 - 2024

## REFERENCES

Alex Mariakakis, Assistant Professor, University of Toronto  
Eyal de Lara, Professor, University of Toronto  
Ishan Chatterjee, Google  
Mayank Goel, Assistant Professor, Carnegie Mellon University  
Aman Parnami, Assistant Professor, IIIT Delhi  
Jainendra Shukla, Assistant Professor, IIIT Delhi