

SEJAL BHALLA

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RESEARCH INTERESTS

- Human-Computer Interaction
- Sensing and Interactions
- Ubiquitous Computing
- Mobile Health
- Applied Machine Learning

EDUCATION

University of Toronto | Toronto, Canada

2021 - Present

Ph.D. in Computer Science

Advisors: Dr. Alex Mariakakis, Dr. Eyal de Lara

Indraprastha Institute of Information Technology Delhi | Delhi, India

2017 - 2021

B.Tech in Computer Science & Engineering

PEER REVIEWED PUBLICATIONS

- **Sejal Bhalla**, Salaar Liaqat, Robert Wu, Andrea Gershon, Eyal de Lara, Alex Mariakakis. 2023. 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>
- **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" 2023 11th International Conference on Affective Computing and Intelligent Interaction (ACII '23), Cambridge, USA. [To Appear]
- **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>.
- **Sejal Bhalla**, Dhruv Verma, Dhruv Sahnan, 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>.
- **Sejal Bhalla**, Dikshant Sagar, Jatin Garg, Prarthana Kansal, Rajiv Ratn Shah, Yi Yu. 2020. PAI-BPR: Personalised Outfit Recommendation Scheme with Attribute-wise Interpretability. 2020. In IEEE BigMM 2020 - IEEE International Conference on Multimedia Big Data. <https://doi.org/10.1109/BigMM50055.2020.00039>.

EXPERIENCE

Student Researcher

August, 2023 - Present

Google AR

Working towards creating seamless interactions in AR.

Graduate Research Assistant

September, 2021 - Present

University of Toronto

Advisors: Dr. Alex Marikakis, Dr. Eyal de Lara

- Building scalable solutions for continuous remote monitoring of respiratory disorders based on speech and physiological data.
- Working towards a novel sensing technique that leverages low-cost ultrasonics to enable regular screening and early-stage detection of breast cancer.

Visiting Student Researcher
SmaSH Lab, HCII, Carnegie Mellon University

September, 2020 - August, 2021

Advisor: Dr. Mayank Goel

Built a privacy-preserving activity recognition system by leveraging transfer learning to train privacy-sensitive sensors.

Research Intern
IBM Research, India

May, 2020 - July, 2020

Mentor: Soumya Prasada

Built an AI solution based on the principles of Natural Language Processing to automate the process of business lead generation.

Undergraduate Researcher
Weave Lab & HMI Lab, IIIT Delhi

December, 2018 - May, 2021

Advisors: Dr. Aman Parnami, Dr. Jainendra Shukla

Designed and developed intelligent systems to enrich human-computer interaction, specifically through:

- Unobtrusive detection of facial expressions through Earables (work accepted at ACM UbiComp, 2021)
- Passive sensing of affective and cognitive state of a user via a brain-computer interface to enable applications that are more context-aware.

TEACHING EXPERIENCE

Teaching Assistant

- Introduction to Computer Programming | **University of Toronto** Fall, 2021
- Topics in Ubiquitous Computing | **University of Toronto** Winter, 2023
- The Design of Interactive Computational Media | **University of Toronto** Winter, 2023

SKILLS

Programming Languages	Python, Java, MATLAB, SQL
Frameworks and Tools	Keras, Scikit-Learn, Pandas, NumPy, Matplotlib, PyTorch, JavaFX, Processing, Arduino, Google API, Twitter API, LaTeX, PsychoPy
Design	Graphic Design (Adobe Photoshop, Illustrator, After Effects), Contextual Inquiry, Task Analysis, Wireframing

ACADEMIC SERVICE

Reviewer

- ACM UbiComp, ACM ISS 2022, 2023

Student Volunteer

- ACM UbiComp/ISWC 2022, 2021

AWARDS AND ACHIEVEMENTS

GHCI Student Scholarship , AnitaB.org ACM	July, 2020
Alberta Machine Intelligence Institute Talent Bursary University of Alberta	April, 2022

VOLUNTEERING

Mentor, Girls SySTEM Mentorship Program

In an effort to increase diversity in STEM, I mentor young girls in grades 7-12. I provide them with the tools and knowledge to explore and understand STEM.

August, 2022 - Present

Speaker and Panelist, Pursue STEM Workshops

Held workshops on mobile health and introduction to AI for grade 11 students as part of an outreach program that encourages and supports Black students interested in STEM.

August, 2022

REFERENCES

Dr. Alex Mariakakis, Assistant Professor, University of Toronto

Dr. Eyal de Lara, Professor, University of Toronto

Dr. Mayank Goel, Assistant Professor, Carnegie Mellon University

Dr. Aman Parnami, Assistant Professor, IIT Delhi

Dr. Jainendra Shukla, Assistant Professor, IIT Delhi