SEJAL BHALLA

sejal@cs.toronto.edu sejal-bhalla Sejal Bhalla

RESEARCH INTERESTS

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

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 Mariakais. 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). [Under Review]
- **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

RESEARCH EXPERIENCE

Graduate Research Assistant September, 2021 - Present
University of Toronto
Advisors: Dr. Alex Marikakis, Dr. Eyal de Lara
- Building scalable solutions for remote monitoring of respiratory disorders based on speech and physiological data.
- Working towards a novel sensing technique that combines optics and acoustics to enable regular screening and early-stage detection of breast cancer.

Visiting Student Researcher September, 2020 - August, 2021
SmaSH Lab, HCII, Carnegie Mellon University
Advisor: Dr. Mayank Goel
- Built a privacy-preserving activity recognition system by leveraging transfer learning to train privacy-sensitive sensors.

Research Intern May, 2020 - July, 2020
IBM Research, India
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 December, 2018 - May, 2021
Weave Lab & HMI Lab, IIIT Delhi
Advisors: Dr. Aman Parnami, Dr. Jainendra Shukla
- Designed and developed intelligent systems to enrich human-computer interaction, specifically through:
  a. Unobtrusive detection of facial expressions through Earables (work accepted at ACM UbiComp, 2021)
  b. 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**

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

Student Volunteer
- ACM UbiComp/ISWC 2022, 2021

AWARDS AND ACHIEVEMENTS

GHCI Student Scholarship, AnitaB.org | ACM July, 2020

VOLUNTEERING

Mentor, Girls SySTEM Mentorship Program August, 2022 - Present
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.

Speaker and Panelist, Pursue STEM Workshops August, 2022
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.

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, IIIT Delhi
Dr. Jainendra Shukla, Assistant Professor, IIIT Delhi