Priyadarshini K

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RESEARCH INTERESTS

Multimodal learning, **Data-efficient machine learning**, **Distributed machine learning**, **Active and transfer learning**

My research is motivated by the goal of *modeling* and *synthesizing* a multimodal system using ML tools. To achieve data efficiency, I also work on developing *active and transfer learning* algorithms for data-scarce domains, including biomedical, computer vision, natural language processing, and AI for science applications.

APPOINTMENTS

- *Research Scientist,* **Sony Research** — Sept 2021 - present
- *Project Research Engineer,* **IIT Bombay** — Aug 2015 - Dec 2015
- *Risk Analyst,* **CitiCorp Service India Ltd, Pune** — Jul 2013 - Oct 2014
- *Research Associate,* **IIT Bombay** — Jul 2010 - Jun 2013

EDUCATION

Indian Institute of Technology Bombay — 2016 - 2021
Ph.D. in Electrical Engineering
Thesis: *Label-Efficient Distance Metric Learning*
Advisor: Prof. Subhasis Chaudhuri and Prof. Siddhartha Chaudhuri

Indian Institute of Technology Bombay — 2011 - 2013
Masters in Electrical Engineering
Thesis: *Multimodal Rendering of 3D Objects at Different Scales*

AWARDS AND HONORS

- TCS Ph.D. Research Fellowship for 4 years (2016 - 2019)
- Qualcomm Innovation Fellowship Finalist, 2019
- Department Excellence in Teaching Assistantship (TA), 2018
- Recipient of MHRD PhD Fellowship 2016
- Recipient of MHRD Post-Graduate fellowship 2011

PUBLICATIONS

1. Uchenna Akujuobi, **Priyadarshini K**, Jihun Choi, Samy Badreddine, Kana Maruyama, Sucheendra K. Palaniappan and Tarek R. Besold. Using the dynamics of discovery: A temporal graph-based hierarchical approach to automated hypothesis generation (under submission)
2. Daniel Shin, Gao Pei, **Priyadarshini K**, and Tarek Besold. Optimizing Learning Across Multimodal Transfer Features for Modeling Olfactory Perception, SIGKDD Multimodal Workshop 2023
3. **Priyadarshini K** and Michael Spranger. Perceptual metrics for odorants: learning from non-expert similarity feedback using machine learning (under submission)
4. Tanoy Debnath, Samy Badreddine, **Priyadarshini K** and Michael Spranger. Comparing molecular representations, e-nose signals, and other featurization, for learning to smell aroma molecules, PLOS One, 2023
5. **Priyadarshini K** and Subhasis Chaudhuri. Enhancing Haptic Distinguishability of Surface Materials with Boosting Technique. IEEE Haptics Symposium 2022
6. **Priyadarshini K**, Siddhartha Chaudhuri, Vivek Borkar and Subhasis Chaudhuri. A unified batch selection policy for active metric learning, ECML-PKDD , 2021
7. **Priyadarshini K**, Ritesh Goru, Siddhartha Chaudhuri, and Subhasis Chaudhuri. Batch Decorrelation for Active Metric Learning, IJCAI-PRICAI, 2020.
8. **Priyadarshini K**, Siddhartha Chaudhuri, and Subhasis Chaudhuri. PerceptNet: Learning Perceptual Similarity of Haptic Textures in Presence of Unorderable Triplets. IEEE World Haptics Conference (IEEE WHC), 2019.
9. **Priyadarshini K** and Subhasis Chaudhuri. Haptic Rendering of Thin, Deformable Objects with Spatially Varying Stiffness. EuroHaptics, 2016.
10. Praseedha K., Sreeni K., **Priyadarshini K**, Subhasis Chaudhuri. Combined Hapto-Visual and Auditory Rendering of Cultural Heritage Objects. Asian Conference on Computer Vision (ACCV) e-Heritage Workshop, 2014.
11. **Priyadarshini K**, Sreeni K.G. and Subhasis Chaudhuri. Scalable Rendering of Variable Density Point Cloud Data. IEEE World Haptics Conference (IEEE WHC), 2013.
12. Sreeni K.G., **Priyadarshini K**, A.K. Praseedha and Subhasis Chaudhuri. Haptic Rendering of Cultural Heritage Objects at Different Scales. EuroHaptics, 2012.

BOOK CHAPTER

Subhasis Chaudhuri and **Priyadarshini Kumari**. Cultural Heritage Object: Bringing Them Alive Through Virtual Touch, *Digital Hampi: Preserving Indian Cultural Heritage*, Springer, 2018.

MASTERS THESIS

Multimodal Rendering of 3D Objects at Different Scales

- **Summary:** Developed a **multimodal rendering** technique to synthesize a combined *hapto-visual-auditory* perceptual experience of interaction with 3D model of objects. The goal of this project was to provide access to the heritage objects to visually-impaired people.
- **Domains involved:** Image Processing, Computer Graphics, Computer Vision, Haptic Signal Processing.

PROFESSIONAL ACTIVITIES

- Senior program chair for WiML un-workshop @ ICML 2023
- Area chair for WiML workshop @ NeurIPS 2022
- Session chair for ECML-PKDD 2021
- Reviewer: IEEE World Haptic Conference, ECML-PKDD, IJCAI, Eurohaptics, ISMAR

TEACHING

Wavelet	[Spring 2020]
Computer Vision	[Spring 2016, Spring 2017, Spring 2018]
Statistical Signal Analysis	[Fall 2019]
Digital Signal Processing	[Spring 2019]
Signals and System	[Fall 2017, Fall 2018]
Communication Lab	[Fall 2016]