# Abhishek Karwankar


**Personal Information**

Graduate Research Assistant
Department of Computer & Information Sciences
University of Delaware

karwabhi@udel.edu
Google Scholar
Personal website


## Education

**University of Delaware** — *Newark, DE*

*Ph.D. in Computer and Information Sciences* — *2024 - Present*
*M.S. in Computer and Information Sciences* — *2022 - 2024 (transitioned to Ph.D.)*
Advisor: Dr. Matthew Louis Mauriello

**Pune Institute of Computer Technology** — *Pune, Maharashtra*

*Bachelor of Engineering in Electronics and Telecommunication* — *2017 - 2021*

## Research Interests

- **Human-Computer Interaction (HCI):** Designing user-centered systems that integrate interaction, visualization, and intelligent feedback for meaningful user engagement.
- **Accessible Technology Design:** Exploring design approaches that accommodate diverse user needs, including sensory and cognitive variation.
- **Interactive and Tangible Media Systems:** Developing physical-digital tools that support creative expression through multimodal interaction and real-time visual feedback.
- **Machine Learning and Data-Driven Interfaces:** Applying ML and visualization techniques to personalize experiences, surface insights, and guide user behavior across domains.

## Preprints

C3. **Karwankar, A.**, Ruggiero E., Stevens, D., & Mauriello, M. L. (2025). "MusicVis: An Interactive Dashboard for Data-Driven Therapeutic Music Composition." *Proceedings of ACM Symposium on User Interface Software and Technology (UIST)*. (In Review)

## Referred Conference Proceedings

C2. **Karwankar, A.**, Ruggiero, E., Lipkin, Z., Iyer, M. K., Brugel, S., Khatiwada, P., Stevens, D., & Mauriello, M. L. (2025). "uCue: An Interactive Musical Interface to Enhance Formative Listening Experiences for Children with ASD". In *Proceedings of the ACM Interaction Design and Children (IDC'25)*, June 23–26, 2025, Reykjavik, Iceland. ACM, New York, NY, USA, 18 pages.
doi: 10.1145/3713043.3727053

C1. Wang, Q., Erqsous, M., Khatiwada, P., **Karwankar, A.**, Alhassan, F. M., Chandrasekaran, A., Abraham, B., Lovell, F., Ngo, A. A., & Mauriello, M. L. (2025). "Leveraging Large Language Models for Review Classification and Rating Estimation of Mental Health Applications". In *Proceedings of the International AAAI Conference on Web and Social Media*, 19(1), 2017–2029.
doi: 10.1609/icwsm.v19i1.35916

## Conference Presentations

CP1. "uCue: An Interactive Musical Interface to Enhance Formative Listening Experiences for Children with ASD" at the ACM Interaction Design and Children (IDC) 2025 conference in Reykjavik, Iceland, June 23-26 2025.

## Poster Presentations

PP2. "uCue: An Interactive Musical Interface to Enhance Formative Listening Experiences for Children with ASD" at the UD AI4Health Day, University of Delaware, Jan 31, 2025.

PP1. "Music for Autistic Listeners: A Music Theory Community Engagement Project." at the CIS 60th Anniversary Celebration, University of Delaware, May 4-5, 2024.

## Prototype Demonstrations

PD3. "Music for Autistic Listeners: A Music Theory Community Engagement Project." Artapalooza. Brennen School, Newark, DE, April 16, 2025.

PD2. "Music for Autistic Listeners: A Music Theory Community Engagement Project." UD Inventors Recognition. University of Delaware, October 22, 2024.

PD1. "Music for Autistic Listeners: A Music Theory Community Engagement Project." Artapalooza. Brennen School, Newark, DE, April 19, 2024.

## Honors & Awards

- **Outstanding Graduate Student Award** for Recognition of *Exceptional Promise in the Ph.D. Program with an Expectation of Continued Excellence in Research*, 2025
- **Special Recognition for Outstanding Review for DIS 2025**
- **UD CIS Distinguished Student Award 2024**
- **Special Recognition for Outstanding Review for CHI 2024**
- **Class Topper for Academic Year 2020-2021**

## Grants & Funding

**Music for Listeners with Autism: An Online Platform for Collecting Music Interaction Data from Children with Autism**
*University of Delaware, Institute of Engineering Drive Health – Seed Translational Research Project*
**Role:** Contributing Writer **Award:** $177,725
**PIs:** Dr. Matthew Louis Mauriello and Dr. Daniel B. Stevens

## Peer Mentoring

**Research Mentor**

- Liam Stapley, Undergrad Researcher (UD) *2025 - Present*
- Simon Brugel, Undergrad Researcher (UD) *2023 - Present*
- Malika Iyer, Undergrad Researcher (UD) *2023 - Present*
- Elise Ruggiero, Undergrad Researcher (UD) *2023 - Present*

- Trung Nguyen, Undergrad Researcher (UD) *2025*
- Christopher Bennet, Undergrad Researcher (UD) *2023-2024*
- Zoe Lipkin, Undergrad Researcher (UD) *2023-2024*
- Connor Penhale, Undergrad Researcher (UD) *2023*
- Ryan Schaffer, Undergrad Researcher (UD) *2023*
- Guru Nayak, Undergrad Researcher (UD) *2023*

## WORK EXPERIENCE

**Sensify Lab, Newark (USA)** *February 2023 – Present*
*Graduate Research Assistant*

- Working under Prof. Matthew Mauriello to make **formative musical experiences accessible to children with autism** and to create interfaces that can collect meaningful data about user interactions with sound.
- Providing valuable insights about listeners with **cognitive exceptionalities** and creating new avenues for research.

**_VOIS, Pune (India)** *August 2021 – July 2022*
*Graduate Engineer Trainee*

- Designed reactive microservice modules for enterprise-level services using **RESTful APIs**.
- Updated the **CI/CD pipeline in Jenkins** for deployment of Docker container images on **AWS EKS Kubernetes** cluster.
- Ensured 90% code quality by mitigating application vulnerabilities using **SonarQube**.
- Updated microservices under SCRUM to the latest **Spring Boot** version, improving performance and scalability.

**eGlobalDoctors LLC, San Francisco (USA)** *June 2020 – July 2021*
*Software Engineer Intern*

- Developed **Backend RESTful APIs** and integrated various data models using business logic.
- Implemented the data model for a full-stack web application using **PostgreSQL**.
- Built and deployed a web application from scratch that provided free health counseling to over **2500 people** during the COVID-19 second wave in India.

**Upcloud Technology PVT LTD, Mumbai (India)** *July 2020 – September 2020*
*Deep Learning Intern*

- Developed a **Deep Learning model** for a Menstrual Cycle Tracker and an Alert System.
- Designed models for adaptive prediction and improvement of next cycle estimation.

## SKILLS

**Programming Languages:** C, C++, Java, Python, JavaScript, MATLAB, C#, .Net
**Frameworks:** Keras, TensorFlow, PyTorch, RADTorch, Angular, PrimeNG, NodeJS, Flask, Spring Boot, REST Architecture, Docker, GIT, Unity3D, MoveNet
**Database:** MySQL, PostgreSQL, Oracle, Firebase
**Cloud:** Azure, AWS, Heroku, Kubernetes

## TEACHING

**Guest Lecturer, University of Delaware** *April 22, 2025*
Delivered a guest lecture in CISC655: Communication Skills for CS Researchers, taught by Dr. Kathleen McCoy.
*Topic: "Addressing Paper Reviews and Writing Rebuttals"*

SERVICES

**Reviewer**

- ACM SIGCHI Conference on Computer-Supported Cooperative Work & Social Computing (CSCW), 2025
- ACM Interaction Design and Children (IDC), 2025
- ACM Designing Interactive Systems (DIS), 2025
- ACM Interaction Design and Children (IDC), 2024
- ACM Conference on Human Factors in Computing Systems (CHI), 2024

**Community Service**

- Participated in the Brennen School's Artapalooza events on **April 19, 2024** and **April 16, 2025**, where we hosted a hands-on stall featuring our interactive music prototype *uCue* for children with ASD. Activities included guided play sessions and opportunities to engage with a live musical choir and other sensory-rich experiences.