Purnima Kamath, Ph.D.
purnima.kamath@gmail.com | **website: purnimakamath.com**

I am a Ph.D. graduate from the National University of Singapore (NUS) with 15 years of software engineering experience across different industry roles. I have helped build and architect solutions for financial institutions such as Credit Suisse and Lehman Brothers and consulting organizations such as Capgemini and Oliver Wyman.

My research interests lie at the intersection of generative AI algorithms and interaction design for audio. I am passionate about bridging the gap between technology and creativity by designing and implementing intelligent interactive tools.

I co-founded the Women Who Code (WWCode) network in Singapore, a platform and community for women and underrepresented groups in technology to stay connected and advance our careers.

EDUCATION

2020 – 2024   **Ph.D.**, Department of Communications and New Media, **National University of Singapore**
2000 – 2004   **Bachelor of Electronics & Telecommunications Engineering,** Cummins College of Engineering, **India**

PUBLICATIONS

- **Kamath, P.**, Gupta, C., & Nanayakkara, S. MorphFader: Enabling Fine-grained Controllable Morphing with Text-to-Audio Models. (Under Review), 2024. Demo Link.
- **Kamath, P**., Gupta, C., Wyse, L., Nananyakkara, S. Example-Based Framework for Perceptually Guided Audio Texture Generation. In **IEEE/ACM Transactions on Audio, Speech, and Language Processing (IEEE TASLP),** vol. 32, pp. 2555-2565, 2024. Demo Link.
- **Kamath, P**., Morreale, Fabio., Wei, Y., Nanayakkara, S. Sound Designer-Generative AI Interactions: Towards Designing Creative Support Tools for Professional Sound Designers. In Proceedings of the **CHI Conference on Human Factors in Computing Systems (CHI).** Association for Computing Machinery, New York, NY, USA, Article 730, 1–17, 2024. Demo Link.
- **Kamath, P**., Li, Z., Gupta, C., Jaidka, K., Nanayakkara, S., & Wyse, L. Evaluating Descriptive Quality of AI-Generated Audio Using Image-Schemas. In Proceedings of the 28th International Conference on **Intelligent User Interfaces (IUI).** Association for Computing Machinery, New York, NY, USA, 621–632, 2023. Demo Link.
- Gupta, C. [*], **Kamath, P.** [*], Wei, Y., Li, Z., Nanayakkara, S., Wyse, L. Towards Controllable Audio Texture Morphing. In Proceedings of the **IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP),** Rhodes Island, Greece, pp. 1-5, 2023. Demo Link.
  *Denotes equal Contribution
- Gupta, C., Wei, Y., Gong, Z., **Kamath, P.**, Li, Z., Wyse, L. Parameter sensitivity of deep feature-based evaluation metrics for audio textures. In Proceedings of 23rd **International Society for Music Information Retrieval (ISMIR)**, pp. 462-468, 2022.
- Wyse, L., **Kamath, P.**, & Gupta, C. Sound Model Factory: An Integrated System Architecture for Generative Audio Modelling. In **International Conference on Computational Intelligence in Music, Sound, Art, and Design** (Part of EvoStar) (pp. 308-322). *Springer, Cham.* 2022.
- Gupta, C., **Kamath, P.**, Wyse, L. Signal Representations for Synthesizing Audio Textures with Generative Adversarial Networks. In Proceedings of **18th Sound and Music Computing Conference (SMC).** 2021.

TECHNICAL SKILLS

Deep Learning Architectures: Generative Adversarial Networks (GAN; such as Progressive GANs and StyleGANs), Latent Diffusion Models (Text-to-Audio Models), and Transformers. Experience training GANs and Transformers from scratch.
Data/AI: Python, PyTorch, Pandas, Numpy, Librosa, Streamlit.
Middle Tier & DB: Java, Spring Framework, Spring Boot, Kafka, Hibernate, Elastic Search, Coherence, Hazelcast, SQL.
Javascript: Node.js, Vue.js, Highcharts,Tensorflow.js, JQuery, Angular, Backbone, Bootstrap.
Cloud/Infrastructure: Amazon Web Services (*AWS Certified Solutions Architect*), Docker, Unix shell scripting.

INVITED TALKS

- **(Invited Seminar)** *September'24*: Presented at a Hearing Seminar at **CCRMA** at **Stanford University**. Link.
- **(Invited Talk)** *March'23***:** NUS School of Computing Women in Technology forum on International Women's Day.

AWARDS

- **Ranked 3rd** in the DCASE Task 7 Foley Sound Synthesis Challenge in 2023
- "Special Recognition for Outstanding Review" at **CHI'24** and **UIST'24**
- **Best Paper Award** at gCON'20, Department of Communications and New Media, FASS, NUS
- **Gary Marsden Travel Award** awarded by **ACM SIGCHI** to present my paper at IUI'23 in Sydney

INDUSTRY EXPERIENCE

2019 –2020   **Lead Software Engineer, Oliver Wyman Digital**
- Responsible for architecting and developing financial and trading solutions for Oliver Wyman's clients in the banking and mining sectors.

2017 – 2020   **Director, Women Who Code Singapore**
- Co-founded the Women Who Code (WWCode) network in Singapore in January 2017, a platform for women and underrepresented groups in technology to stay connected and advance their careers.
- Designed workshops, hackathons, talks, and panels to bring the latest technology to the WWCode community. Provided opportunities to multiple first-time speakers at our meetups and conferences.

2018 – 2019   **Developer Relations, YOW! Conference & Depth First workshops**
- Responsible for building the YOW! Developer community and organizing the yearly conference in Singapore. Collaborated with various User Group partners in the city.

2016 – 2018   **Engineering Manager (Vice President), Client Technology Solutions at Credit Suisse, Singapore**
- Built and managed up to 30 members sized software engineering teams in India and Mexico to develop products such as Client Enablement (CET), Research Readership capture, and Access. Architected data pipelines using Apache Kafka and Elastic Search.
- Responsible for understanding requirements, conceptualizing product solutions, and driving end-user conversations in the Asia Pacific Region.

2012 – 2015   **Team Lead (Assistant Vice President), Client Technology Solutions at Credit Suisse, Singapore**
- Responsible for design, architecture, technology selection, and development of eChannel Platform (ECP/'one bank' Platform), a multi-tiered front-end content aggregation framework hosting CSPlus
- Designed and conducted experiments for distributed caching technologies to select Hazelcast as the best alternative caching strategy to replace Coherence

2010 – 2012   **Senior Developer, Client Technology Solutions at Credit Suisse, Singapore**
- Developed ECP, a front-end content aggregation framework, as a micro-service-driven multi-tiered enterprise application. Built and managed a 15-member offshore team in India

2008 – 2010   **Developer, Derivatives IT at Credit Suisse, Singapore**
- Developed a trade matching tool, used to match Credit Default Swaps using Drools for rules management and JBPM for workflow management

2008 – 2008   **Developer at Lehman Brothers, India**
- Lead developer for Sales Opportunity Management system and Client Relationship Management.

2004 – 2008   **Developer at Capgemini, India**
- Developed and maintained applications using the Vignette application portal

TEACHING AND RESEARCH EXPERIENCE
2022 – 2022   **Graduate Tutor** (IS3251 Principles of Technology Entrepreneurship), **Department of Information Systems & Analytics (School of Computing, NUS)** (Semester 1, 22/23)
2020 – 2022   **Research Assistant,** Art & Creativity Lab, **Department of Communications & New Media (NUS)**

SERVICE
- Member of Sustainability Organization at **CHI'24**
- Reviewer for **CHI'24**, **CHI'25**, **UIST'25, DAFx'23**, **ICIS'23, JNMR.**
- Chairperson and Tech. Director at **gCON'21**: FASS CNM Flagship Graduate Conference.

VOLUNTEER EXPERIENCE & CAUSES
2018 – 2021   **Volunteer, Engineers.sg**
- Engineers.sg is a voluntary organization that records and documents all technology events in Singapore. The website (https://engineers.sg) has a curated list of videos shot by volunteers.
2019 – 2019   **Mentor, Junior Dev SG**
- Mentored a group of 4 junior women engineers in the mentoring program, as a group and 1-1.
2020 – 2020   **Tech Lead, TechLadies**
- **TechLadies** (https://techladies.co) **Bootcamp#6** I led a team of 8 volunteers to mentor newcomers in the technology industry by helping them build solutions for various non-profit organizations.