Chaitanya Shareef "Minchu" Kulkarni

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Summary

Software engineer with industry work and academic research experience. Interested in **Human-Computer Interaction and applied machine learning** (**computer vision, voice and speech interfaces, natural language processing, and user centered design)**. Strong expertise in large scale consumer software development and research. **Developed software for top-tier publishers that reaches millions of users.** Good at rapid prototyping, writing scalable, well documented, production quality code, debugging, designing and conducting user studies, and research. Passionate about creating new technology with a human touch.

Experience

Makeability Lab, University of Washington   Seattle, Washington, USA
Research Scientist, HCI and applied ML   September 2023 – Present
Advisor: Prof. Jon E. Froehlich
• Co-leading the design and implementation of a Crowd+AI tool to audit sidewalk and public transit infrastructure using computer vision and streetscape imagery.
• Led a team of 4 to generate a labeled dataset of 60,000+ images of sidewalk via Google Street View.
• Adapted and cleaned crowdsourced data that can be used for machine learning.
• Trained and fine-tuned YOLOv8 and DinoV2 models to predict classes pertaining to sidewalk conditions e.g. cracks on sidewalk and missing tactile strips on curb ramps—first ever system to do so.

Makeability Lab, University of Washington   Seattle, Washington, USA
Research Assistant, HCI and applied ML   September 2022 – August 2023
Mentor: Prof. Jon E. Froehlich
• BusStopCV: Co-led the design and implementation of a Crowd+AI tool to audit bus stop accessibility using computer vision. *Published a demo paper at ASSETS 2023 (first author)*. Video, Demo
• Led the implementation of a front-end inference of a machine learning model for "just-in-time AI interventions" in crowdsourcing systems.
• Developed a scalable UI module to effectively educate users about sidewalk accessibility and labeling for Project Sidewalk.

Amuse Labs   Bangalore, India
Global provider of web and mobile software for crosswords, sudoku and word search
Tech lead   July 2018 – August 2022
Mentor: Dr. Sudheendra Hangal

• Led the development of four new games—**sudoku, multimedia word search, multimedia quiz** and **The Washington Post Mini Meta**. Was responsible for the entire UX and implementation
• Led the front end development of **The Guardian Puzzles app** for iOS and Android.
• Led the development of **Indic language crosswords** and **the first voice driven crosswords** in the world.
• Designed and implemented **puzzle interfaces** for extremely **space constrained environments** such as **advertisements** and **messaging** interfaces.
• Developed **voice-over** for crosswords and quiz to make them **accessibility** friendly for the visually challenged.
• Worked directly with leading publishers such as **The Washington Post, The New Yorker, The Atlantic, The Guardian, and El Pais.**

McKinsey & Co.   Pune, India
Intern at the Smart City Practice   June 2017 – August 2017
• Coordination and communication between stake holders to ensure proper deployment of flood sensors, environmental sensors and Wi-Fi stations across Pune City, India.
• Conducted site visits, made site survey reports to ensure the deployment was as per the specifications.

Publications and Projects

BusStopCV
Video, Demo   University of Washington, Seattle, WA

Built a Crowd+AI tool to audit bus stop accessibility using computer vision and streetscape imagery. The tool automatically detects bus stop features such as shelter, seating etc. and allows humans to verify them and

add missing labels—and helps generate accessibility related data for city administrations. Trained a custom object detection model using YOLOv8 which achieved remarkable performance. Published (demo paper) at ASSETS 2023.

ACM Reference format: *Minchu Kulkarni et al. 2023. BusStopCV: A Real-time AI Assistant for Labeling Bus Stop Accessibility Features in Streetscape Imagery. In The 25th International ACM SIGACCESS Conference on Computers and Accessibility (ASSETS '23).*

Sailboat   Ashoka University, Delhi NCR, India
Final year thesis project   November 2017 – November 2019

Built a Google Chrome extension to enable task-based browsing while protecting user data privacy. Sailboat helped users organize their browsing by compartmentalizing tabs, history, bookmarks and downloads folder. Published a paper at India HCI 2019.

ACM Reference format: *Minchu Kulkarni et al. 2019. Compartmentalizing Web Browsing with Sailboat. In India HCI 2019 (IndiaHCI '19), November 1–3, 2019, Hyderabad, India. ACM, New York, NY, USA, 8 pages. https://doi.org/10.1145/3364183. 3364187*

LabelAid   University of Washington, Seattle, USA
                                                                                 March 2023 – July 2023

Just-in-time AI Interventions for Improving Human Labeling Quality and Domain Knowledge in Crowdsourcing Systems. Published at CHI 2024.

ACM Reference format: *Chu Li, Zhihan Zhang, Michael Saugstad, Esteban Safranchik, Minchu Kulkarni, Xiaoyu Huang, Shwetak Patel, Vikram Iyer, Tim Althoff, and Jon E. Froehlich. 2024. LabelAId: Just-in-time AI Interventions for Improving Human Labeling Quality and Domain Knowledge in Crowdsourcing Systems. In Proceedings of the CHI Conference on Human Factors in Computing Systems (CHI '24).*

Education _____

University of Washington, Masters in Human Computer Interaction and Design, 2023
- A one-year, full-time graduate course in human-computer interaction and design with a focus on user experience, product design and development.

Ashoka University, P.G. Diploma in Computer Science, 2018
- A one-year, full-time post-graduate diploma for conducting advanced research.

Ashoka University, B.Sc.(Hons.) in Computer Science, 2017
- A three-year full-time degree program for undergraduate studies.
- Dean's List, 4 out of 6 semesters.

- Co-founded the Ultimate Frisbee club and played for the college team.
- Co-founded 'Dhamma'—a students representatives group that gave the university the first student government president.
- Co-founded the 'Sustainability Center' which focused on the sustainability initiatives and issues on campus.

Skills _____

Programming (Expert: Java, Javascript, Typescript, Python, HTML and CSS, MATLAB/Octave, Intermediate: PyTorch, Swift, C, Arduino, MySQL, MongoDB), machine learning, design (Figma), need finding, user evaluations, Misc.: Photoshop, Sketch-up (3D modeling), Final Cut Pro.

Additional _____

- Gap year: Took a gap year after X grade to travel, meet people, intern etc. Travelled across the country, learnt to catch snakes and make footwear! Read my blog.
- Interests: nature photography, trekking, movies, philosophy.

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