# Shifa Somji

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## Research Interests

Human-robot interaction, robotics, personalized healthcare, autonomous vehicles, motion planning & prediction

## Education

**Purdue University** West Lafayette, IN

*Ph.D. in Computer Science*, GPA: 3.9/4.0 *Aug 2023 - present*

Advisor: Susanne Hambrusch & Sooyeon Jeong

**Harvey Mudd College** Claremont, CA

*B.S. in Computer and Cognitive Science*, GPA: 3.7/4.0 *Aug 2019 - May 2023*

Relevant Coursework: Artificial Intelligence, Machine Learning, Neural Networks, Computer Vision, Statistical Linear Models, Operating Systems, Databases, Managing Data at Scale, Algorithms, Programming Languages, Software Engineering, Computability and Logic, Cognitive Science, Linguistics

## Industry Experience

**Impinj** Seattle, WA

*Platform Architecture Intern* *May '23 - Aug '23*

- Primary engineer responsible for utilizing RFID to speed up sorting, routing, and tracking packages for a major shipping company.
- Trained and evaluated several machine learning models to increase overall accuracy of found packages to 95%.

**Harvey Mudd Clinic x FedEx** Claremont, CA

*Project Manager* *Aug '22 - May '23*

- Project manager for a team of five students working on a Harvey Mudd senior capstone project with the FedEx Autonomous Vehicle Deliverability Team.
- Created a Python model to determine necessary factors for autonomous vehicle delivery and provided an interpretable decision when to prioritize AV delivery for specific packages.

**Meta** Seattle, WA

*SWE Intern* *May '22 - Aug '22*

- Interned on the Curated Ads Data team, responsible for building the platform to enable transparency, control, and purpose in FB advertisements.
- Created a system that intelligently identified duplicate requests for curated ads, identifying 20% of curated requests as duplicates and significantly improving curation throughput.

**Harvey Mudd College** Claremont, CA

*Research Intern* *May '21 - Aug '21*

- Developed a new simulator that evolves sequences over a user-provided phylogenetic tree to test xenoGI, a software package helps us understand the adaptive path that has produced living species.
- Created a plotting feature to reconcile gene and species trees. Overlapped the species and gene trees and added different markers for origin, speciation, rearrangement, duplication, and transfer, identifying the location of each event.

**TeamTime** Claremont, CA

*Co-Founder/CTO* *May '20 - Aug '20*

- Co-founded TeamTime, a startup where members of a team can set group alarms for better collaboration and enhanced productivity.
- Created a JavaScript app using React Native and Firestore.

## Awards

- Graduate Teaching Award, *Purdue Department of CS*
- Class of '94 Award, *HMC Department of CS*
- Departmental Honors, *HMC Department of CS*
- Dean Chris Sundberg Prize, *HMC*

## Publications

- Liu, N., Gonzalez, T.A., Fischer, J., Hong, C., Johnson, M., **Somji, S.**, Wirth, J., Libeskind-Hadas, R., Bush, E. xenoGI 3: using the DTLOR model to reconstruct the evolution of gene families in clades of microbes. BMC Bioinformatics 24, 295 (2023).

## Research Projects

**Personalized Speech Therapy Robot for Aphasia Patients - HAI Lab** Aug '23 - present

- Using socially assistive robots as a long-term speech therapy solution for patients with aphasia, a post-stroke language disorder.

**Algorithmic Search Framework - AMISTAD Lab** Jan '21 - May '22

- Proposed an algorithmic search framework, unifying machine learning and artificial intelligence under the single research discipline of artificial learning. The framework bounds the performance and provides an intuitive understanding of artificial learning algorithms.

**Accurate & Early Detection of Metastatic Breast Cancer - BIDMC** Sept '17 - May '18

- Proposed a Convolutional Neural Network (CNN) based pipeline to discriminate invasive breast cancers in histopathological images.
- Achieved an AUC of 0.89 in classifying invasive lesions with twenty morphological, intensity, and texture features across various color channels.

## Teaching Experience

**Teaching Assistant**, Purdue University

- Human Computer Interaction (Spring 2024)
- Foundations of Computer Science (Fall 2023)

**Teaching Assistant**, Harvey Mudd College

- Programming Languages (Spring 2023, Fall 2022, Spring 2022)
- Software Engineering (Fall 2021)
- Data Structures and Program Development (Spring 2021)
- Principles of Computer Science (Fall 2020)

## Leadership

**Center for Innovation & Entrepreneurship • Business Development Manager** Aug '21 - May '23

- Prepared students to be innovative entrepreneurs by providing experiential learning and networking.

**Women of the Association of Computing Machinery • Co-Chair** Aug '21 - May '22

- Led resume workshops and company sponsored events for women in computer science.

## Skills

- Programming Languages: Python, Java, C++, JavaScript, React, Racket, MATLAB, SQL
- Tools: PyTorch, Jupyter, Git, Bash, Spark, Linux, Latex, HTML/CSS