Sneha Gathani

2nd year PhD Student in Computer Science
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RESEARCH INTERESTS

Information Visualization, Interactive Cross-Domain Systems, Data Exploration and Analysis

EDUCATION

PhD in Computer Science, *University of Maryland, College Park,* ***GPA:*** *3.77/4.* — *College Park, US*
Advisor: Prof. Leilani Battle, *BAD Lab* — *June 2020 – May 2023 (expected)*

Masters in Computer Science, *University of Maryland, College Park*, ***GPA****: 3.77/4*. — *College Park, USA*
Advisor: Prof. Leilani Battle, *BAD Lab* — *Aug 2018 – May 2020*

Bachelor of Computer Engineering, *University of Pune*, India, ***GPA****: 3.77/4*. — *Pune, India*
Top 10 in B.E.Comp Engg. batch of 2018 — *Aug 2014 – May 2018*

PUBLICATIONS

2020 P.1 **Debugging Database Queries: A Survey of Tools, Techniques, and Users**
Sneha Gathani, Peter Lim, Leilani Battle
CHI: ACM CHI Conference on Human Factors in Computing Systems. Honolulu, Hawaii. *(Acceptance Rate: 23.8%)* | **Oral**

TALKS AND CONFERENCE PRESENTATIONS

2020 T.1 **Debugging Database Queries: A Survey of Tools, Techniques, and Users**
Sneha Gathani, Peter Lim, Leilani Battle
CHI: ACM CHI Conference on Human Factors in Computing Systems. Honolulu, Hawaii. April, 2020

RESEARCH

University of Maryland — *College Park, USA*

Graduate Research Assistant, Advisor: Prof. Leilani Battle

A Programmatic Approach to Evaluating Visualization Taxonomies in Log Analysis Contexts, *Collaborator: Prof. Alvitta Ottley* — *May 2020 – Present*
Created general-purpose framework clustering 30 visualization taxonomies by the kinds of interaction log analyses they support to **assess whether taxonomies are generalizable** to automate. Developed **programmable templates, or *embeddings*** that label interaction logs with their corresponding categories from taxonomies to allow measuring the **applicability of taxonomies** to real-world visualization interaction log datasets quantitatively. Made **recommendations** on how existing taxonomies could be augmented, or new taxonomies could be developed, to better support and guide user interactions. **Under Review:** VIS 2021

A Comparison of Design Studies across Eight+ Domains — *Feb 2019 – Present*
Performing literature review of 90+ design study works to find **differences and similarities** between design studies conducted across eight+ domains; both related to and farther from CS. Goal is to present **updated design study models** targeted for fledgling researchers in specific eight+ domains use by providing step-by-step guidelines, concrete examples. **Under revision for resubmission. Target Conference:** *CHI 2022*

TraceInspector: A Visualization-based Reverse Engineering Tool for Android Apps, *Collaborator: Prof. Michelle Mazurek* — *Jan 2019 – April 2020*
Developed **an interactive tool**, that helps novice analysts **reverse engineer Android apps** for potential security and privacy vulnerabilities. The tool integrates both static and dynamic Android app data, connects relevant temporal event sequences and method dependencies and executes app code in a single visualization interface. Conducted user study to test usability, features and strengths and weaknesses of the tool. **Under revision for resubmission**

Debugging Database Queries: A Survey of Tools, Techniques and Users — *Feb 2019 – Sept 2019*
Performed interdisciplinary literature review of 110+ works to **understand database query debugging strategies and tools** proposed in research. Conducted interview study to **understand debugging approaches** being adopted by users in the industry. Proposed design guidelines to help system designers build features that match user's debugging strategies. **Paper:** P.1 *(Oral)*

Independent Researcher, MIND Lab, Prof. Ashok Agrawala

C.A.T.C.H. – Characterizing and Tracking College Health — *Jan 2019 – May 2019*
Analyzed temporal and geographic data of the university using Python and scikit-learn library by applying **machine learning algorithms**, specifically **K-nearest neighbour classification and K-means clustering** to find students in close proximities. **Detected patterns** were concluded to cause spread of contagious diseases

University of Pune — *Pune, India*

Undergraduate Thesis, Mentor: Prof. Hemlata Channe

Detection of Diabetic Retinopathy (DR) — *Aug 2017 – May 2018*
Built web application using Flask, HTML and CSS and trained **CNN models**, mostly adopting **transfer learning** using Keras on TensorFlow to automate detection of DR and perform a diagnosis of it's stages with an increase of 46% accuracy. Pre-processing performed by **augmentation strategies** using OpenCV library

WORK EXPERIENCE

Sigma Computing Inc. ***(Incoming Summer Intern)*** — *San Francisco, USA*

Research Engineer Intern, Mentor: Çağatay Demiralp — *(Remote)*

Aiming to build an interactive visualization research-based tool that allows users to automatically make decisions to answer *why* questions by allowing them to perform data experiments using what-if analysis. **Target Conference:** CHI 2022 — *Summer 2021*

Cybage Software Pvt. Ltd. — *Pune, India*

Summer Intern

Built prototypes of recommendation systems using **KNN and regression models** to aggregate it's clicks. Analyzed customers feedbacks using **NLP techniques**. Pitched features for optimization in inventory systems using computer vision — *Summer 2017*

SKILLS

Programming Languages	Python, C++, JavaScript, HTML/CSS
Web Frameworks	Flask, Ruby on Rails
Data Analysis Tools	Python (pandas, numpy, sklearn), Keras
Visualisation Tools	d3.js, cytoscape.js, Tableau
Database Tools	PostgreSQL, MySQL
Design Tools	Photoshop, Illustrator, CorelDRAW
Other Tools	LaTeX, GitHub
Qualitative Research	Interviews, Surveys

COURSES TAKEN

University of Maryland — *College Park, USA*

Interactive Data Analytics, Database System Architecture and Implementation, Computational Linguistics I, Interactive Technologies in HCI, Advanced Deep Learning, Advanced Computer Graphics, Wireless Technologies and IoT, Statistical Pattern Recognition, Computer Vision, AI Planning, AI and Existential Threats to Civilization

Pune Institute of Computer Technology — *Pune, India*

Data Structures, Discrete Mathematics, Databases, Compilers, Data Mining, Natural Language Processing

TEACHING EXPERIENCE

University of Maryland — *College Park, USA*

Graduate Teaching Assistant

School of Computer, Mathematical, Natural Sciences (CMNS) – Department of Computer Science (CMSC)

CMSC 250: Discrete Structures — *Fall & Spring 2018, Summer 2019, Fall & Spring 2019*

CMSC 411: Computer Architecture — *Summer 2019*

Pune Institute of Computer Technology — *Pune, India*

Undergraduate Teaching Assistant

Department of Computer Engineering

Natural Language Processing — *Spring 2018*

MENTORSHIP

Peter Lim *(Senior, UMD)*: Guided to learn Flask and develop a basic working application, directed forming interview questions, led exemplars to conduct interview studies, aided to write research report

ACHIEVEMENTS

Led the **CHI 2020 conference** reading group — Spring 2021

Led the **InfoVis 2018-20 conference** reading group — Fall 2020

One of the 70 students selected across universities worldwide for summer school at **The Cornell, Maryland, Max Planck Pre-doctoral Research School (CMMRS)** — Germany, Aug 2019

Institute of Electrical and Electronic Engineers (IEEE) Region 10 Coordinator (2018-19), Program Outreach Coordinator (2017-18), SYWLC Congress Event Coordinator (2017), head of student branch Graphics Team, lead designer of college technical newsletter; *P.I.N.G.* — 2015 – 2019

Pune Action Group Leader for **Child Rights and You (CRY)** NGO — 2016 – 2018

Established **TEDx** independent organisation in undergraduate school and led the Experience and Design team — 2016

Hack2Innovate Deep Learning Hackathon Winner — June 2017

Smart City Hackathon runner-up for designing and implementing prototype to make admissions and campus recruiting procedure less cumbersome — Sept 2016