Nicole Sullivan

Email: nicolesullivanmarie@gmail.com **Website:** nicolesullivan.xyz **Github:** github.com/nmsulliv

Skills: C++, Python, Java, R, C, HTML, CSS, Javascript, PyTorch, Git, Docker

Interests: Database, Human-Computer Interaction, Data Science

Education

Ph.D. in Computer Science Sep. 2022 - Present
University of Washington, Seattle, WA **GPA: 3.97**

B.S. in Computer Science Aug. 2018 - May 2022
Howard University, Washington, D.C. **GPA: 4.0**

Relevant Coursework: Databases, Computer Systems, Artificial Intelligence, Intro to Machine Learning, Applied Data Science, Affective Computing, Linear Algebra, Discrete Structures, Fundamentals of Algorithms

Research Experience

Graduate Research Assistant Sep. 2022 - Present
Database Group, University of Washington

- Conducting research on how users debug SQL queries, focusing on differences between novice and expert strategies in real-world workflows
- Designing and running user studies to evaluate SQL debugging behaviors and tool use

Graduate Research Intern Jun. 2023 - Aug. 2023
CIPHER Lab, Georgia Tech Research Institute

- Optimized the neural network verification process by smoothing the model training loss landscape
- Ran experiments comparing the smoothed and unsmoothed models using the current state-of-the-art verification tool, α, β-CROWN

Undergraduate Researcher May. 2021 - Aug. 2021
Urban Innovation Group, Microsoft Research

- Created an interactive dataset visualization tool with R to enable environmental justice community groups to explore air quality concerns in their community
- Found and fused open-source datasets to provide more context surrounding air quality data

Undergraduate Researcher Jan. 2021 - May 2021
CDS Undergraduate Research Program, New York University

- Trained Gaussian Processes and Neural Networks to reduce uncertainty in sea level forecasts
- Compared spatiotemporal sea level extrapolations between two Gaussian Process kernels- the spectral mixture kernel and radial basis function kernel

Undergraduate Researcher Oct. 2020 - May 2021
Social and Technological Action Research Group, University of California - Irvine

- Conducted a content analysis of university websites in order to design a sustainable solution for improving college campus digital mental health support
- Created interview questions that explore culturally relevant mental health services for students and counselors

Undergraduate Researcher Sep. 2019 - May 2021
Affective Biometrics Lab, Howard University

- Prototyped an Augmented Reality platform, Bison Hacks the Yard, to create culturally relevant computer science pedagogy for underrepresented university students

- Analyzed survey data to create data structure questions that will improve fundamental CS skills for undergraduate students

Industry Experience

System Engineering Intern May 2022 - Aug. 2022
IBM

- Ported the natural language processing and vision classification MLPerf inference benchmarks over to IBM's Z16 system
- Used MLPerf to benchmark Z16 system's performance on machine learning inference tasks
- Helped the IBM Z AI performance team determine whether to continue using the MLPerf benchmark or create a new benchmark

Student Training in Engineering Program Intern May 2020 - Aug. 2020
Google Inc.

- Developed a web application, UniteBySTEP, to simplify the sharing of events relating to social good for Black Lives Matter protests
- Managed the processing and storage of data objects with the App Engine Datastore API
- Designed and implemented voice-to-text features to increase user accessibility for low-vision users

Student Training in Engineering Program Intern May 2019 - Aug. 2019
Google Inc.

- Refactored the Google Assistant Conversation Engine (ACE) to increase query fulfiller readability
- Improved ACE maintainability by removing access to internal properties and separating framework code from query fulfiller logic
- Launched the punt fulfiller feature to contribute to ACE standardization for Software Engineers at Google

Publications

- **KathDB: Explainable Multimodal Database Management System with Human-AI Collaboration** [Paper]
  Guorui Xiao, Enhao Zhang, Nicole Sullivan, Will Hansen, and Magdalena Balazinska. CIDR 2026.

- **Self-Enhancing Video Data Management System for Compositional Events with Large Language Models** [Paper]
  Enhao Zhang, Nicole Sullivan, Brandon Haynes, Ranjay Krishna, Magdalena Balazinska. SIGMOD 2025.

- **Virtual Fidgets: Opportunities and Design Principles for Bringing Fidgeting to Online Learning.** [Paper]
  Sam H Ross, Nicole Sullivan, and Jina Aris Yoon. CHI EA 2023.

- **Bison Hacks the Yard: Assisting Underrepresented Students Overcome Impostor Syndrome with Augmented Reality and Artificial Intelligence** [Paper]
  Nicole Sullivan. AAAI EA 2021.

- **The Bison Hacks The Yard: Developing a Sense of Belongingness in the Computer Science Community (Imposter Syndrome)** [Poster Presentation]
  I. Yesir, D. Scott, J. Sow, N. Sullivan. Richard Tapia Conference 2020.

Fellowships, Scholarships and Awards

NSF Graduate Research Fellowship, National Science Foundation (**$111,000** + tuition & fees)	Mar. 2024
GEM Employer Fellow, GEM Fellowship & Georgia Tech Research Institute (**$16,000**)	Nov. 2022
College of Engineering Dean's Fellowship, University of Washington	Mar. 2022
GEM Employer Fellow, GEM Fellowship & IBM (**$16,000**)	Nov. 2021
UC-HBCU Fellowship, University of California, Irvine (**$5,000**)	May 2021
CS Research Mentorship Program, Google	Feb. 2021
Undergraduate Consortium Scholar, Association for the Advancement of Artificial Intelligence	Feb. 2021
FOCUS Scholar, Georgia Tech	Jan. 2021
Explore Hopkins Scholar, Johns Hopkins University	Nov. 2020
Exposure to Research and Graduate Education Scholar, Stanford University	Oct. 2020
Richard Tapia Diversity Conference for Computing Scholar, Dropbox	Aug. 2020
Grace Hopper Conference Scholar, GoDaddy (**$1,000**)	Oct. 2019
Karsh STEM Scholars Program Cohort II, Howard University (**4-year undergrad full-ride**)	Jun. 2018

Selected Press

News article featured in the University of Washington's Allen School Newsletter — Apr. 2020
I Am First-Gen: Allen School students reflect on their trials, triumphs and what it means to be the first

News article featured in Howard University's College of Engineering and Architecture — Apr. 2020
Meet Karsh STEM Scholar Nicole Sullivan

News article featured in Howard University's College of Engineering and Architecture — Jan. 2020
Meet Our Bison STEM Scholars

Service

A Vision for Electronic Literacy and Access (AVELA), PhD Mentor — Aug. 2022 - Present
Teaching and creating original STEM content for Black, Brown, and Indigenous middle and high school students spanning the greater Seattle area

Microsoft Code Academy, Lead Learner — Jan. 2019 - May 2022
Taught weekly Introduction to Computer Science classes to K-5 NSBE Jr. students

Microsoft Code Academy, Lead Learner — Jan. 2019 - May 2022
Taught weekly Introduction to Computer Science classes to K-5 NSBE Jr. students

National Society of Black Engineers, Jr., VEX IQ Robotics Mentor — Aug. 2018 - May 2022
Mentored four teams of six 4th-6th grade Black scholars in the field of robotics by helping them build a robot to compete in the National NSBE Jr. Robotics Competition

National Society of Black Engineers (NSBE), Pre-College Initiative Chair — Aug. 2019 - May 2020
Planned several events for NSBE Jr. students (K-12) to inspire their interest in STEM fields

Data Science Bootcamp, Bit Project — Oct. 2020
Taught a 4-week data science boot camp to 15 college students at Howard University