NICOLE TRAPPE

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Education

BS in Cognitive Neuroscience — Neuroscience   2022
University of California, San Diego

Research Experience

Research Associate for AI for Healthy Living at UC San Diego   2017–2018
- $10M IBM research grant to identify signs of cognitive decline (CD) in the elderly
- Proposed metrics to track CD across speech, motor skills, and mental abilities
- Utilized physical and biometric sensors to measure physical health, routine formation, speech patterns, sleep quality, and social interactions
- Implemented sensors to isolate confounding variables like dehydration and air quality
- Presented poster on physiological sensors and cognitive measurements

Machine Learning Intern at IBM   Summer 2019
- Classified odorants, using models inspired by the brain, to develop an artificial nose
- Conducted a literature review of *Drosophila* olfactory circuits to understand how unique patterns of activation in Kenyon cells produce a hash (odor tag)
- Proposed an intensity matrix to represent Kenyon cell activation which could be projected onto Euclidean space to develop a unique odor tag
- Ran samples through an array of sensors (called "C-Eva") and collected data
- Built a flow controller in Python to set ideal environmental conditions in the lab
- Reduced large-scale drift in C-Eva sensors using the flow controller
- Trained and tested supervised classification models in Python

Student Researcher for Flap.JS at UC San Diego   2020–2021
- Authored a study to analyze learning behaviors and visualization tool use
- Reviewed screen recordings of user interactions with the Flap.JS tool to evaluate usability and design effectiveness
- Investigated whether hypothesis-in-action or trial-and-error learning was more conducive to learning advanced Computer Science topics like Automata Theory

Research Assistant at Operation Wallacea   Summer 2015
- Gathered biodiversity data in Cusco cloud rainforest and Tela coast (Honduras)
- Conducted measurements of tree diameters and spacing for carbon counting
- Aided coral reef restoration projects using cinder blocks
- Learned scanning and identification techniques for birds and amphibians
- Analyzed data from a variety of biomes to reach conclusions about population changes and responses to environmental forces

Manuscripts Under Review

Trappe, N. (2023). *Marked by History: Scarification, Identity, and Transformation in the Pre- and Post-Colonial Eras*. Manuscript submitted for publication.

Presentations

Applying Neuro-Inspired Models to Olfactory Data   2019
Internal IBM Almaden Research Presentation Series

Hierarchy-Aware Machine Learning for IoT   2018
Internal UC San Diego Research Presentation Series

Teaching & Mentoring

Computer Science & Engineering Tutor   Fall 2021
- Tutored upper-division Software Engineering for a class of 200+ students
- Graded quizzes on Agile principles and labs in web development
- Supported students in HTML, CSS, JavaScript, and Git
- Taught asynchronous functions, the DOM, responsive design and debugging
- Led short sections in lecture on incorporating accessibility and design

Mentor for EDGE   2020–2021
- Mission to encourage more girls to enter STEM fields to bridge the gender gap
- Program supports ninth to twelfth graders across San Diego
- Led a workshop with 5+ students to learn how to write college application essays
- Introduced mentees to the field of Computer Science and life in tech

Professional Experience

Software Engineer at Microsoft   2023–Present

- Built container images and deployed containers on Azure Kubernetes Service (AKS)
- Identified inconsistent and ambiguous errors with Docker for platform mismatches
- Supported third-party customers and developers on the Windows Containers GitHub
- Created a container health dashboard to improve the developer experience

Software Engineer Intern at Microsoft   Summer 2021
- Implemented an ACPI translation layer to be released in Windows
- Obtained latency and bandwidth data of different memory blocks from the BIOS
- Designed an API to expose these characteristics for devices with different needs
- Provided a testing framework for user- and kernel-mode validation
- Coded the translation layer, API, and tests in C/C++

Honors & Awards

Provost Honors   2018-2022
Awarded each quarter for a GPA greater than or equal to 3.5/4.0

Chancellor's Research Innovation Scholarship   2018
Granted for work on AI for Healthy Living

Winner of Hackxx   2018
Won the Women-Centric Hackathon with an app to teach girls math

National Advanced Placement Scholar   2017
Obtained title for scores on the Advanced Placement exams

Premio de Oro   2015
Received a Spanish Language Association Honor

Technical Skills

Programming — C/C++, React, Python, JavaScript, HTML, CSS, Java

Tools — GitHub, Docker, Azure Kubernetes Service, Jupyter Notebook, MATLAB

Design/Docs — Keynote, Figma, PowerPoint, Word, Adobe Suite

Languages

English — Fluent   **Spanish** — Advanced   **Danish** — Basic