

NICHOLAS TAPP - HUGHES

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Full Stack Engineer focused on building web, AI/ML, and data applications that meet stakeholder needs.

EXPERIENCE

Software Developer

Epic Systems Corp., July 2023–July 2025

- Developed system that enabled hospital admins to configure clinical follow-ups from medical imaging insights.
- Drove 20% performance and UX improvements in admin application components by migrating from Visual Basic to .NET and React.
- Wrote 2 technical designs, presented to customers, and solicited user feedback for an LLM-extracted insights project that resulted in earlier diagnosis for 70% of lung cancer cases at Christ Hospital.
- Fixed bugs weekly across the client, server, and databases and shipped code to 500+ healthcare systems.

Graduate Student Researcher

UNC Computer Science, Aug 2021–May 2023

- Achieved 22% improvement in autism classification accuracy on 3D hippocampus dataset by developing new methods for extracting interpretable statistical features of 3D objects.
- Boosted research lab productivity by maintaining our Python repo, developing scripts for orchestrating experimentation, cleaning datasets, and introducing visualization tools.
- Published scientific paper in the Journal of Mathematical Vision and Imaging in 2025.

Graduate Research Assistant

UNC Gillings School of Public Health, Aug 2021–June 2025

- Improved policymaker's understanding of smoking behavior in the US adult population by building a microsimulation model that predicts year-over-year smoking behavior at the individual level.
- Accelerated the project team's productivity and synchronization by maintaining the codebase, building sensible data pipelines, sharing regular results, recommending technologies, and onboarding new people.
- Published in PLoS One, Nicotine and Tobacco, and Society for Research on Nicotine and Tobacco.

Software Engineering R&D Intern

Sila Nanotechnologies Inc., June 2022–Aug 2022

- Improved physical measurement accuracy in chemical R&D processes by developing improvements to a proprietary computer vision pipeline.
- Advocated for best programming practices, wrote documentation, recommended methodology, and advised maintenance and future development strategy.

PROJECTS & SYSTEMS BUILT

Nick Tapp-Hughes's Blog

- A personal website and blog built using Vite/React and hosted on AWS with Cloudflare DNS services. The posts range from highly technical to casually philosophical, with more underway. ([link](#))

Smoking Behavior Microsimulation Model

- A 2nd order Markov chain multinomial logistic regression model simulating the smoking behavior of individuals over the course of their lifetimes, scaled up to the entire US adult population. Accompanying logic for orchestrating experiments and visualizing the results. Developed while working as a research assistant at the UNC Gillings School of Public Health. ([link](#))

PUBLICATIONS

- Stephen M. Pizer, Zhiyuan Liu, Junjie Zhao, Nicholas Tapp-Hughes, James Damon, Miaomiao Zhang, JS Marron, Mohsen Taheri, Jared Vicory, "Interior Object Geometry via Fitted Frames," Available: Springer, <https://rdcu.be/eFX0G>.
- Nicholas Tapp Hughes, "A 3d U-net for Segmentation of Subcortical Structures In MR Images of 12 and 24 Month-old Infants," Available: Carolina Digital Repository, <https://cdr.lib.unc.edu/concern/theses/4f16c8286>.

SKILLS

Technologies: Python, git, Linux, Docker, AWS, C, C++, C#, Rust, SQL, MongoDB, Typescript, React, \LaTeX

Areas of expertise: Machine Learning and AI, Data Analysis and Processing, Full-Stack Web Development

EDUCATION

University of North Carolina at Chapel Hill

B.S. Applied Mathematics, B.S. Computer Science

- Cumulative GPA: 3.92/4, Math GPA: 3.87/4, CS GPA: 3.97/4

August 2017 – May 2021

M.S. Computer Science

August 2021–May 2023