Thomas Minh Nguyen

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EDUCATION

University of California-Davis Davis, CA
Ph.D. in Chemical Engineering | GPA: 3.69/4.00 Sep. 2019 - Jun. 2025 (*expected*)
Research focus: Predictive particle dynamics for tunable fluid flow in engineering and biomedical systems

North Carolina State University Raleigh, NC
B.S. in Chemical & Biomolecular Engineering | GPA: 3.677/4.00 Aug. 2013 - May 2017

WORK EXPERIENCE

Graduate Student Researcher Davis, CA
UC Davis Department of Chemical Engineering Jan. 2020 - Present

- Developed and optimized **computational fluid dynamics (CFD)** to model **fluid structure interactions (FSI)** for predicting fiber-like particle dynamics in microfluidic flows.
- Authored technical documents for **2+ research publications** and **5 professional research presentations**.

Project: *Predicting fiber-like particle dynamics around microfluidic bends (**2024-Present**)*

- Analyzed **500+ CFD simulations and experimental trials**, informing of design approaches that reduce clogging around microfluidic bends by **at least 25%**.

Project: *Vectorization algorithm for fast CFD computation times **(2024)***

- Developed an **innovative vectorization algorithm** to optimize CFD-FSI simulations, achieving at least **100x decrease** in computation times.

Project: *Predictive analysis of fiber-like particle bending behavior in microfluidic flows (**2020-2021**)*

- Developed a **framework utilizing image-processing methodology** to predict and quantify fiber-like particle deformation from **6000 CFD simulations**. Achieved **>75% accuracy** in predicting the correct deformation shapes.

Post-Baccalaureate (Post-bac) Research Fellow Baltimore, MD
National Institute on Aging, NIH Oct. 2017- Aug. 2019

- Applied **bioinformatics, statistical modeling, and data science** techniques/methodology to analyze immune system aging from high-throughput **next generation sequencing (NGS)** data.
- Mentored junior Post-bacs, increasing team productivity by **20%** and reducing data analysis time by **15%**.

Project: *Longitudinal Analysis of CD4+ and CD8+ T-cell receptors (TCR) from 30 human patients (**2017-2019**)*

- Developed statistical models to predict age-associated changes to TCR repertoire, **improving predictive accuracy** by at least **20%**.

Project: *Identification and Analysis of CD8+ T-cell populations from scRNA-Seq NGS data (**2018-2019**)*

- Utilized **supervised clustering techniques** to identify CD8+ T-cell populations from flow cytometry data from **2M+ CD8+ T-cells**. Achieved **correlation coefficients** with NGS data as high as **0.89/1**.

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Flexible Volume Manufacturing Intern Durham, NC
Biogen Oct. 2017 - Aug. 2017

- Collaborated with engineers and manufacturing associates on multiple projects, leveraging cGMP manufacturing knowledge to complete continuous process improvement projects.
- Translated technical needs from employees into action items and objectives while adhering to timeframes.

Project: *Electronic Tracking System for Bulk Chemical Reagent Preparation for cGMP Manufacturing*

- Developed novel electronic system for tracking over **6 different** chemical reagents across **2 manufacturing suites**, surpassing **FDA cGMP (21 CFR Part 210)** compliance.

SKILLS

Programming/Data Science: Python, R, MATLAB, Julia, SQL
Scripting/Automation: Bash/Unix/Shell, HPC Systems
Engineering/Data Analysis: Computational fluid dynamics (CFD), fluid-structure interactions (FSI), numerical methods, predictive modeling, statistical analysis, machine learning (supervised clustering)
Data Engineering: ELT pipelines, structured/unstructured data processing
Software/Tools: COMSOL, Microsoft VS Code, Jupyter Notebooks, GitHub, Git, Spyder, RStudio, Anaconda/Miniconda, PyCharm, AutoCAD