# Thomas Minh Nguyen

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🐙 https://thomasmhnguyen.github.io

## Summary

Chemical engineer/computational physicist trained in developing computational fluid dynamics (CFD) simulations. 7+ combined years of applying interdisciplinary technical expertise and problem-solving/analytical capabilities to address and solve problems in engineering and biomedical research settings. Key strengths include technical writing, project management, leadership skills, communication, continuous learning, attention to detail, and cross-functional collaboration.

## Education

**University of California-Davis** *Davis, CA*
Ph.D. in Chemical Engineering | GPA: 3.69/4.00 *Sep. 2019 - Mar. 2025*
*Research Focus*: **Particle dynamics for tunable fluid flow in engineering and biomedical applications**

**North Carolina State University** *Raleigh, NC*
B.S. in Chemical & Biomolecular Engineering | GPA: 3.77/4.00 *Aug. 2013 - May 2017*
Minors: Biomanufacturing Sciences; Biotechnology

## Technical Skills

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|---|---|
| **Programming/Software** | Python (NumPy, SciPy, Pandas statsmodels), COMSOL, R, Bash/Unix/Shell, MATLAB, Git, GitHub, HPC Computing, AutoCAD, LaTeX |
| **Tools** | CFD, Fluid-structure interactions (FSI), Numerical methods, Data analysis and visualization, Statistical analysis |

## Selected Work Experience

**Graduate Student Researcher** *Davis, CA*
UC Davis Department of Chemical Engineering *Jan. 2020 - Present*
- Developed fluid-structure interaction (FSI) models for CFD simulations to predict particle dynamics in viscous fluid flows.
- Analyzed 500+ CFD simulations and 500+ experimental trials to inform of engineering approaches that reduce particle clogging around microfluidic flow bends by at least 25%.
- Authored technical documents associated with 3 research grant proposals, 4 professional research presentations, and 2+ peer-reviewed publications.

**Post-baccalaureate (Post-bac) Research Fellow** *Baltimore, MD*
National Institute on Aging, NIH *Oct. 2017 - Aug. 2019*
- Served as a subject matter expert for high-throughput sequencing data processing and analysis for 3 Post-doctoral fellows.
- Applied bioinformatics, statistical, and data science methods to determine age-associated changes within the immune system.
- Mentored junior Post-bac fellows, resulting in a 20% increase in team productivity and a 15% reduction in data analysis time through improved coding standards and practices.

**Flexible Volume Manufacturing Intern** *Durham, NC*
Biogen *Jun. 2017 - Aug. 2017*
- Coordinated a team of engineers and associates to develop a novel electronic system for tracking chemical reagents and solutions that surpassed FDA cGMP (21 CFR Part 210) regulations.
- Executed upstream animal cell culture fermentation studies utilizing single-use bioreactors and other single-use technologies, documenting involvement and progress in batch records via good documentation practices (GDP).

## Projects

Analysis of fiber-like particle bending and buckling in fluid flow *Available on Github Page*
- Developed a framework consisting of CFD-FSI simulations and image-processing techniques to quantify particle bending due to changes in the particle's mechanical properties.

Transport dynamics of fiber-like particles *Available on Github Page*
- Researched and developed methods for CFD-FSI simulations to model and quantify particle transport dynamics in constricted flow geometries.

Vectorization Calculations for Fast CFD Computation Times *Available on Github Page*
- Implemented an innovative vectorization algorithm to optimize intra-particle and multi-particle calculations in CFD-FSI simulations, decreasing computation times by at least 100x.