/natetheadequate

Nathaniel White

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Education

> **Northeastern University** | Khoury College of Computer Sciences | Honors — Boston, MA
Candidate, B. S. Computer Science & Mathematics \\ Physics & Chemistry Minor \\ 3.84 GPA — *2021 – May 2025*

Research and Work | * = *Part-Time*, † = *Under Non-Disclosure Agreement*

> **Computational Protein Design Co-op @ Tessera Therapeutics†:** Gene Therapy — *Jan. 2024 – June 2024*
- Used statistical techniques to test biological hypothesis from protein engineering data.
- Built an internal web app to expedite and democratize protein design analysis using Flask and Plotly.
- Integrated molecular structure libraries and custom plot configurations to enable interactive visualizations.

> **Software Engineering Co-op @ Nth Cycle:** Metal Refining Startup — *Jan. 2023 – June 2023*
- Identified problems with data capture and analysis such as manually transcribing pdfs, siloed data analysis procedures, nonstandardized datasheets, and exclusively using Excel/paper. Designed and implemented a webapp (see LUCAS project) which used drag-and-drop libraries and MongoDB for a no-code solution.
- Fixed problems with internet, printers, laptops, AzureVPN and Remote Desktop in lieu of an IT department.

> **Peer Tutoring***: Discrete, Fundies 1 & 2, OOD, Algo, Phys 2, Calc 3, LinAlg, Prob & Stats — *Sep. 2022 – June 2023*
- Demonstrate patience and professionalism with tutees having a variety of skill levels. 164 hours total ≈ 4 hrs/wk

> **Sijia Dong Lab***: Computational chemistry research group — *Dec. 2021 – Jan. 2023*
- Used automation scripts and ML to investigate ligand-protein binding.

> **Northeastern Undergrad Computer Architecture Research Group***: — *Nov. 2021 – May 2022*
- Learned C and beginner CUDA through programming challenges given by Prof. Kaeli.

> **Internship with Town of Holliston Director of Technology***: — *Nov. 2020 – Feb. 2021, Apr. 2021 – May 2021*
- Setup and resolve problems with phones, printers, desktops, software, and file storage for municipal departments.

Courses and Tech Stack | * = *In progress/learning*, † = *Included lab portion*

> **Tech**: Javascript/Typescript, React, Python, MongoDB, Java, Lean4, Bash, Linux, C, Mathematica, Rust*
> **CS**: Robotics*, AI*, Software Dev*, Networks & Distributed Systems, Object Oriented Design, Logic & Computation
> **Math**: PDEs*, Statistics & Stochastic Processes, Linear Algebra, Number Theory, Group Theory, Calculus 3
> **Chemistry**: Organic Chemistry 1† & 2†, Physical Chemistry†, Analytical Chemistry*†, Quantum Chemistry*†
> **Physics**: Electronics*†, Quantum Computation and Information, Modern Physics

Projects

> **LUCAS** | *ReactTS, MongoDB, Azure, RJSF, Blockly* /lucas-demo-screenshots — *Feb. 2023 – Jun. 2023*
Webapp which enabled drag-and-drop design of forms and data analysis pipelines and graphics. Enabled parsing of files output from a specific machine to upload multiple documents with same metadata, dimensional analysis in pipelines, linking a sample to the other steps in its history, which could have both branching and merging, and the capability to make graphs and tables, all without (them) coding. *Access to live demo available on request. Written for Nth Cycle.*

> **ML Excitation Model** | *Python, Maestro, MATLAB, Bash, TensorFlow* — *Aug. 2022 – Jan. 2023*
Identify what aspects of chloramide, flavins, and styrene influence their excitation wavelengths when they are in proximity to each other. Have written a MATLAB/Python/bash script that transforms the raw coordinates of each atom into more usable and interpretable features, which then can be used as input for a neural network or rounded for use in a neural network to predict excitation wavelengths and strengths. *Completed as part of Sijia Dong Lab.*

> **Automated Docker** | *Python, Schrodinger, Slurm, QtPy* /automated_docking_script — *July 2022*
Designed a GUI add-on and backend script for Schrodinger Maestro that automated a time-consuming and error-prone process of generating docking poses for three molecules in all permutations. *Completed as part of Sijia Dong Lab.*

> **N-Bullets in Racket** | *Intermediate Student Language (Racket subset)* /nbulletsrkt — *Apr. 2022*
Rewrote a project for a Java-based course in Racket to compare the two languages. Racket was terser, easier to properly test, and (subjectively) more readable. Additional findings and opinions are in the README.

> **Grave Finder** | *ReactJS, PHP, MySQL, Cloudflare, cPanel, SSL* /findagravemiddleborough.ml — *Dec. 2020*
Website to view grave data for a local cemetery preservation nonprofit. Makes use of join tables, searching, filtering, React+MaterialUI forms, and an administrator login with a cooldown period after too many login attempts.