MATTHEW TINO

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SUMMARY

Nanotechnology engineer with 2+ years experience in scientific software development. Contributor to multiple open-source scientific libraries in areas such as image processing, machine learning, and computational fluid dynamics.

EDUCATION

Master of Applied Science in Chemical Engineering – *University of Waterloo* 2022 – 2024

- Ontario Graduate Scholarship, Engineering Excellence Master's Fellowship

Bachelor of Applied Science in Nanotechnology Engineering – *University of Waterloo* 2017 – 2022

- Class Valedictorian, Engineering Entrance Scholarship, Nanotechnology Mentorship Program

EXPERIENCE

Scientific Software Developer – *Continuum Engineering* Feb. 2024 – Aug. 2024

- Re-wrote a legacy MATLAB and C++ codebase for complex heat and mass transfer simulations in Python
- Developed a web application via `streamlit` to allow users to execute simulations without Python knowledge

Scientific Researcher & Programmer – *COMPHYS Research Group* Sept. 2022 – July 2024

- Creator and primary maintainer of the `shapelets` repository, an open-source Python library for image analysis
- Researched new image processing techniques for nanostructure analysis with two first-authored publications
- Used clustering methods to design a novel technique to identify structural defects from microscopy imaging
- Improved computational runtime of existing nanostructure characterization algorithm by 15x using C++

Software Engineer – *Continuum Engineering* May 2022 – Aug. 2022

- Worked on improving an open-source computational fluid dynamics library – github.com/uw-comphys/opencmp
- Implemented advanced nonlinear solvers to accelerate runtimes of multiphase flow simulations by more than 50%

PROJECTS

`shapelets` github.com/uw-comphys/shapelets

- Library implements several image processing and machine learning techniques using shapelet basis functions
- Designed and developed overall library structure, coordinating commit efforts for a small development team
- Implemented automated unit testing platform, along with detailed examples and library documentation
- Focused on user-library interaction, including custom command-line arguments & text-based configuration files

SKILLS

Languages: Python, MATLAB, C++

Technologies: Linux, NumPy, SciPy, Matplotlib, Pandas, PyTorch, Streamlit, Git, Mercurial, GitHub, LaTeX