ALEX WASHBURN

Computational Engineer

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EST/EDT (UTC-5/UTC-4)
Last Updated April 19 2024

Education

The Graduate Center - CUNY — New York, NY
Ph.D. Candidate Computer Science — Aug 2022 — Present
Hunter College - CUNY — New York, NY
M.A. Computer Science — Aug 2022
University of Wisconsin - Milwaukee — Milwaukee, WI
B.S. Computer Science, Mathematics (Double Major) — Dec 2014

Technical Strengths

Languages	C, C++, C#, Dhall, Haskell, Idris 2, Java, JavaScript, ML, PHP, Python, SQL
APIs/Protocols	CSS3, DIMACS, HTML5, REST, XML
Databases	MariaDB, MySQL, MSSQL, Sybase
Tools	Cabal, Docker, Emacs, Git, LaTeX, Pandoc, PicoSAT, Spin, VS Code, Z3

Work Experience

City University of New York (CUNY) — New York, NY
Graduate Research Assistant — Aug 2022 - Present

Apply software design and project management experience to conduct, document, and publish novel research
Perform literature review to locate and accessibly present relevant state-of-the-art techniques to stake-holders
Make interactive program synthesis UX by composing oracle-based, type-driven, and example-guided techniques
Utilize formal methods techniques for cryptographic protocol verification used by billions of people worldwide

American Museum of Natural History — New York, NY
Software Consultant — July 2023 - Dec 2023
Lead Software Engineer — Sep 2015 - Jun 2020

Architect a modular, extensible, and well documented open-source bio-informatics framework
Lead and coordinate a team with varying levels of technical overlap from conceptual research to end product
Improve asymptotic complexity of core string alignment algorithm by a factor of n
Prototype novel and performance tune graph algorithms for operating on big data sets of several TiBs
Design a declarative DSL as a Free Monad computation & implemented an optimized monadic evaluator
Integrate legacy C codebase into modern Haskell via well-typed FFI achieving critical low-latency throughput
Develop efficient, well-typed file parsers for a variety of informally defined, bespoke formats
Define robust data normalization and unification procedures for a disparate input data sources

City University of New York (CUNY) — New York, NY
Adjunct Lecturer — Aug 2018 - Dec 2023

Plan and present curricula which encourages active learning, problem solving, and collaboration
Adaptively utilize multiple instructional strategies to comprehensively demonstrate computer science topics
Author and grade papers, presentations, programs, quizzes, and exams designed to provide meaningful feedback

MSI Data, LLC — Mequon, WI
Software Developer — Jan 2015 - Aug 2015

Expanded abstracted data synchronization capabilities between multiple backend ERP systems
Maintained and extensively refactored MVC web service, improving throughput by 33%