

# Noble Mushtak

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## WORK EXPERIENCE

### Software Engineer

Jul 2023 – Present

*Snowflake*

*San Mateo, CA*

- Working on performance enhancements to Snowflake's SQL engine using C++

### Software Engineer Intern

May 2022 – Aug 2022

*Snowflake*

*San Mateo, CA*

- Adapted the Eisel-Lemire algorithm to improve the accuracy of conversions from a decimal fixed-point number type to an IEEE 754 binary floating-point number type in Snowflake's SQL engine using C++
- Coauthored a technical note with Prof. Daniel Lemire about proving the Eisel-Lemire algorithm correct for all 64-bit significands using the theory of continued fractions

### Research Assistant

May 2021 – Jun 2023

*Northeastern University*

*Boston, MA*

- Coauthored two academic papers with Prof. Amal Ahmed published in PLDI, a premier forum in the field of programming languages research
- Made major contributions to the proofs for an academic paper presenting a novel method for verifying sound language interoperability
- Developed large parts of a Rocq project which formally verified type soundness for RichWasm, a version of WebAssembly with an enriched type system for supporting safe shared memory interoperability
- Won third-place in the undergraduate division of POPL 2022's Student Research Competition

## PUBLICATIONS

Michael Fitzgibbons, Zoe Paraskevopoulou, Noble Mushtak, Michelle Thalakottur, Jose Sulaiman Manzur, and Amal Ahmed. "RichWasm: Bringing Safe, Fine-Grained, Shared-Memory Interoperability Down to WebAssembly." In: *Proceedings of the 45th ACM SIGPLAN International Conference on Programming Language Design and Implementation (PLDI 2024)*. DOI: <https://doi.org/10.1145/3656444>

Noble Mushtak and Daniel Lemire. "Fast number parsing without fallback." In: *Software: Practice and Experience*. DOI: <https://doi.org/10.1002/spe.3198>.

Daniel Patterson, Noble Mushtak, Andrew Wagner, and Amal Ahmed. "Semantic soundness for language interoperability." In: *Proceedings of the 43rd ACM SIGPLAN International Conference on Programming Language Design and Implementation (PLDI 2022)*. DOI: <https://doi.org/10.1145/3519939.3523703>

## TECHNICAL SKILLS

**Languages:** C, C++, Java, Python, Rocq, Latex *Familiar:* Bash, Rust, HTML, CSS, JavaScript, Haskell

**Developer Tools:** Git, GDB, Valgrind, IntelliJ IDEA, Emacs *Familiar:* Google Apps Script, GitHub Pages

## ACTIVITIES

### Competitive Programming

Dec 2014 – Present

- Organized a team of three people to represent Northeastern University in ACM-ICPC, the largest worldwide university-level programming competition
- Placed 86th in the world at ACM-ICPC World Finals 2021
- Reached Meta Hacker Cup 2022 Round 3 and placed 145th out of 27604 overall contestants

### Northeastern Putnam Team

Sep 2019 – Apr 2023

- Attended weekly meetings where students solved past problems from the Putnam Competition, the principal mathematics competition for undergraduate students in the United States and Canada
- Placed 150th out of 2975 students in Putnam 2021, 164th out of 3415 students in Putnam 2022

## EDUCATION

### Northeastern University

Apr 2023

*Bachelor of Science in Computer Science and Maths*

*Boston, MA*

**GPA:** 4.0/4.0