Caspar Popova
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Education

University of Maryland, Ph.D in Computer Science — College Park, MD; 2024 - Present
Northwestern University, Bachelor of Science in Computer Science — Evanston, IL; 2019 - 2022
Relevant coursework: PL + Architecture (HLS), Compilers (Garbage collection, abstract interpretation), Theorem proving (Roq, Lean), PL + Security, Databases

Ongoing Research

Sized Types for Program Generation — May 2025 - Present
Random testing compiler transformation by focusing on recursion optimization, such as recursion elimination, and developing a program generator using sized types to ensure termination.
→ Random Testing, Compiler Testing, OCaml, Racket

Work Experience

PLUM Lab, University of Maryland — College Park, MD; Aug 2024 - Present
Graduate Research Assistant
Working with David Van Horn and Leonidas Lampropoulos in the intersection of property based testing, compilers, and contracts.

Epic Systems — Verona, WI; 2022 - 2024
Software Developer in Population Health Analytics
- Drove multi-year strategic direction of an analytics framework via client feedback and collaboration with other analytics teams.
- Built population health data models and visualizations within Microsoft SQL EDW in collaboration with multiple teams.
- Designed internal processes and utilities to improve best practices, development, testing completeness, and coordination with other teams.

→ Database Management, Data Models, Analytics, SQL, C#, TypeScript, Dashboard Design

Change Healthcare — Remote; June - Sep 2020
Data Engineering Intern
Developed serverless components based on AWS Lambda functions and Glue ETL to be used in production data pipelines.
→ AWS Lamba, Glue, Scala

Research Experience

PLUM Lab, University of Maryland College Park, MD; Aug 2024 - May 2025
Researching property based testing tools for Racket contracts by contrasting existing PBT techniques and evaluating existing generation tools for contracts.
→ Property Based Testing, Contracts, Racket

PLT Group, Northwestern University Evanston, IL; 2021-2022
Designed and implemented an SMT solver-based program synthesizer for higher-order functional programs to evaluate the usefulness of error-reporting mechanisms in gradually typed languages including Typed Racket.
→ Program Synthesis, Gradual Typing, Solver-Aided Programming, Racket

Arcana Compilers Group, Northwestern University Evanston, IL; Apr - Jun 2022
Implemented a compiler transformation that lowers object abstractions and performs stack vs. heap allocation analysis as part of the MemOIR compiler, which provides an intermediate representation for objects to enable specialized transformations.
→ Compilers, LLVM, C++

Awards & Honors

- 2023 CSGrad4US Fellow (NSF-sponsored fellowship similar to the GRFP)
- 2021 Fletcher Prize for Rising Undergraduate Research Star

Service & Teaching

- Teaching assistant for Design and Implementation of Programming Languages, Organization of Programming Languages (OCaml, Rust, Racket).
- Student volunteer at POPL 2025.
- Mentoring new developers at Epic Systems.