

DARIUS FOO

darius.foo.tw@gmail.com | dariusf.github.io

RESEARCH INTERESTS

Program logics, automated verification, distributed systems

EDUCATION

National University of Singapore

PhD in Computer Science, under Graduate Tutorship-PhD Scheme (CAP: 4.08/5.0)

2020 – Present

- Advisor: Wei-Ngan Chin; working on verification for effectful, higher-order programs
- Dean's Graduate Research Excellence Award, AY 2023/2024

National University of Singapore

Bachelor of Computing (Honours) in Computer Science (CAP: 4.3/5.0)

2012 – 2016

- Focus areas: Programming Languages, Computer Graphics and Games
- Thesis: Higher-order Debugging and Logging for OCaml

EXPERIENCE

Senior Software Engineer

2016 – 2020

SourceClear, later Veracode by acquisition

- Worked on the SourceClear Agent, a tool which uses a combination of static analysis and instrumentation to discover and automatically upgrade library dependencies from CI/CD pipelines.
- Authored short papers on the following tools:
 1. **SGL** a domain-specific graph query language for representing security vulnerabilities.
 2. **Update Advisor** scalable static analysis for detecting breaking changes in auto library upgrades.
 3. **Sapling** optimizing story assignments for SAFe PI Planning using answer set programming.

PROJECTS

Heifer a deductive verifier for effectful higher-order programs

Choreographic PlusCal a choreographic specification language for TLA⁺

ppx_interact interactive breakpoints via the OCaml toplevel à la pdb/pry

ppx_debug a framework for record-and-replay debugging

PUBLICATIONS

Specification and Verification for Unrestricted Algebraic Effects and Handling

ICFP 2024

Yahui Song, [Darius Foo](#), Wei-Ngan Chin

Staged Specification Logic for Verifying Higher-Order Imperative Programs

FM 2024

[Darius Foo](#), Yahui Song, Wei-Ngan Chin

Protocol Conformance with Choreographic PlusCal

TASE 2023

[Darius Foo](#), Andreea Costea, Wei-Ngan Chin

Automated Temporal Verification for Higher-order Algebraic Effects

APLAS 2022

Yahui Song, [Darius Foo](#), Wei-Ngan Chin

Tracing OCaml Programs

OCaml 2022

[Darius Foo](#), Wei-Ngan Chin

SERVICE

Subreviewer

CAV 2022, POPL 2022, TASE 2024

Artifact Evaluation Committee

ESOP 2022

Student Volunteer

PLDI 2021, SPLASH 2022

TEACHING

Programming Methodology

2013-2015, 2021-2023

Software Engineering

2016, 2022

Database Systems

2020, 2022, 2024