Yawen Guan

Doctoral student at EPFL

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INN 315 (Bâtiment INN), Station 14, 1015 Lausanne VD, Switzerland

Education

2022 – ongoing, Lausanne, Switzerland

EPFL, doctoral student in School of Computer and Communication Sciences

Advised by Prof. Clément Pit-Claudel, Systems & Formalisms Lab (SYSTEMF).

Tentative thesis title: Systematic Verification of Mutable Containers

2018 – 2022, Guangzhou, China

Sun Yat-sen University, B.E. in Computer Science and Technology (GPA: 4.4/5.0; Rank 1/187)

Selected honors: China National Scholarship (top 1%); SYSU Outstanding Student First-Class Scholarship (top 1%) for three years. Selected courses: Mathematical Analysis (4.8/5.0), Data Structure and Algorithms (4.7/5.0), Principles of Operating Systems (4.9/5.0).

Publications

CPP 2026

Precise Reasoning About Container-Internal Pointers with Logical Pinning Distinguished paper

Yawen Guan, Clément Pit-Claudel

Proceedings of the 15th ACM SIGPLAN International Conference on Certified Programs and Proofs (CPP 2026).

We present logical pinning, a lightweight borrowing model and proof discipline for specifying container APIs that temporarily expose those pointers to the outside, and for verifying programs that use these APIs.

TPSA 2026

Tracking Dynamically Bound Variable Dependencies

Tsung-Han Liu, Basil L. Contovounesios, **Yawen Guan**, Clément Pit-Claudel

International Workshop on Theory and Practice of Static Analysis (TPSA 2026).

We present an analysis that approximates the transitive dynamic-variable dependencies of Emacs Lisp programs, as well as those of Emacs Lisp primitives in C. Our prototype surfaces subtle bugs and reveals unexpectedly large dependency sets.

Technical Experience

Sep. 2022 - Feb. 2023, Lausanne, Switzerland

Programming Methods Laboratory, EPFL, doctoral fellowship project

Advised by Prof. Martin Odersky. **Implemented Safe Zone in Scala Native for memory-safe region-based allocation**, enforcing safety via capture checking in the type system (tracking safe zones as capabilities) and garbage-collection integration (tracking safe zones as GC roots). Safe Zone is merged in the Scala Native compiler and now available.

Jul. 2021 - Nov. 2021, Shanghai, China

Google LLC, software engineering intern at Connect Sales Platform, Ads

Received a full-time equivalent software engineering offer after the internship; **Frontend project:** built a real-time pipeline monitoring dashboard using AngularDart (lang: java, dart, javascript); **Static analysis project:** enhanced a GoogleSQL static analysis tool to support user-defined functions, table-valued functions, and nested fields of protocol buffers.

Feb. 2021 - Feb. 2022, Guangzhou, China

Deep Distributed System Lab, Sun Yat-sen University, research intern

Advised by Prof. Pengfei Chen. Worked on configuration optimization using a white-box approach, leveraging program analysis (taint analysis) to **build performance-influence models** for distributed configurable systems.

Jun. 2019 - May. 2020, Guangzhou, China

Matrix Team, Sun Yat-sen University, student backend developer

Matrix is an **integrated course management and online judging (OJ) platform** at SYSU, used for programming exercises and exams. Maintained the C++-based OJ system, improved the monitor module, and handled runtime issues during live exams (200+ students).

Teaching & Advising Experience

Springs 2024–2026

Interactive Theorem Proving (CS-428), EPFL, teaching assistant

Helped develop exercises; ran weekly exercise sessions; supervised and graded student projects. Introduction to formal verification and computer-checked mathematics. 8 credits (6 in '24 and '25), doctoral and master students.

Fall 2025 **Tracking Dynamically Bound Variable Dependencies in Emacs**, student project mentor
Resulted in an extended abstract at TPSA 2026. Student: Tsung-Han Liu; Master's project.

Spring 2025 **Proof Visualization for Separation Logic**, student project mentor
An early prototype for browser- and proof-assistant–based graphical renderings of proof states for separation-logic proofs, inspired by textbook diagrams. Student: Alexander Lukas Müller; Master's project.

Falls 2023–2024 **Software Construction (CS-214), EPFL**, teaching assistant
Helped develop exercises and lab assignments for the first ever iteration of the course. Served as one of the two lead TAs for the final exam: co-designed exam questions, and organized logistics for the **live VDI-based programming exam taken simultaneously by all 400+ students**. Functional programming and software engineering. 8 credits, 400+ bachelor students.

Spring 2023 **Large-Scale Data Science for Real-World Data (COM-490), EPFL**, teaching assistant
Graded lab assignments; provided one-on-one problem-solving support. 6 credits, 150 master students.

Honors & Awards

2026 **Distinguished Paper Award**, CPP 2026 — Rennes, FR

2025 **Distinguished Teaching Assistant Award**, IC School, EPFL — Lausanne, CH

2020 **Gold Medal, International Genetically Engineered Machine Competition (iGEM 2020)** — Online
Project: Maloadis | Team: SYSU-Software |
Maloadis is a multifunctional gene circuit design application. Backend developer on a four-member software team; built an SBOL-compliant database; designed and implemented algorithms to search for matching gene circuits from images and to generate gene circuits from specified topology structures.

2019 **Bronze Medal, CCF Collegiate Computer Systems Programming Contest (CCSP), National Final** — Suzhou, CN

Service & Leadership

2024 **Student volunteer, POPL 2024**

2023 **Organizer, Scala Center, Google Summer of Code (GSoC 2023)**

2019 – 2020 **Vice President (2020), Technical Lead (2019), Microsoft Student Club, Sun Yat-sen University**

Languages

Chinese Cantonese & Mandarin, mother tongue
English Fluent