Jan-Paul Vincent Ramos-Dávila

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Education

Cornell University — 08/2021 - 05/2025, Ithaca, NY
Bachelor of Arts in Computer Science & Bachelor of Arts in Philosophy

Experience

Amazon — 06/2023 - 08/2023, Pittsburgh, PA
Software Verification Research Intern, advised by Dr. Jonathan Aldrich
- λ. Developed a second-order logic algorithm to significantly optimize runtime check assertions in Gradual C_0.
- λ. Participated in an industry experience workshop led by Amazonians Myles Shiroma & Korin Torrence Johnson.

Carnegie Mellon University — 06/2022 - Present, Pittsburgh, PA
Software Verification Research Intern, advised by Dr. Jonathan Aldrich
- λ. Exploring the application of gradual verification techniques to smart contracts on the *Algorand* blockchain platform in developing Gradually Verified Teal.
- λ. Worked on formal proofs for establishing semantic correspondence to ensure soundness between the static and dynamic verifier for Gradual C_0.
- λ. Fixed optimization bugs and implemented a Property Based Testing tool for evaluating the soundness of Gradual C_0 source code. Presented work at POPL '23 SRC.

Cornell University — 10/2021 - 12/2022, Ithaca, NY
Programming Languages Undergraduate Researcher, advised by Dr. Adrian Sampson
- λ. Worked on a symbolic execution tool for verifying parallelism in Calyx.
- λ. Fixed compiler front-end bugs and implemented *Graphicionado Graph Analytics* algorithm in Calyx.

Publications

Evaluating Soundness of a Gradual Verifier with Property Based Testing Jan-Paul Ramos-Dávila In Principles of Programming Languages Student Research Competition (POPL 2023 ↗) & In Cornell Undergraduate Research Journal (CURJ Vol. 2 No. 1 ↗). (POPL Video ↗) (POPL Poster ↗)

Notable Projects

Incremental Specification Mining (Cornell CS 6156 Runtime Verification ↗) Instrumentation for Maven-based projects that *incrementally* mines specifications for runtime verification. Significantly decreases overhead for evolutionary-aware specification mining.
RNAfoldml (Cornell CS 3110 Functional Programming ↗) OCaml package that enables users to input both RNA sequences in FASTA format and a set of constraints to predict RNA secondary structure.
Diffeq-lang (Senior High School Project ↗) Domain Specific Language for solving differential equations.

Honors

Winner, Third Place, ACM SIGPLAN Symposium POPL SRC — 2023
Travel Scholarship, ACM SIGPLAN Conference PLDI — 2022
Finalist, Mathematics, Regeneron International Science and Engineering Fair — 2020 & 2021

Academic Service

Student Volunteer, ACM SIGPLAN ICFP 2023 — Seattle, WA

Technical Skills

Languages: OCaml, Python, Scala, Haskell, Rust, Racket, Java, JavaScript, C, English, Español, Italiano
Tools: Unix, Git, VSCode, Bash, IntelliJ IDEA, Neovim, Docker, Heroku, LaTeX