Jan-Paul Vincent Ramos-Dávila

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Education

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

Experience

Utrecht University, Advanced Functional Programming Summer School 07/2023
Lectured by Dr. Wouter Swierstra and Dr. Gabriele Keller Utrecht, Netherlands
Participated in a mix of lectures, labs and a busy social program, discussing advanced topics regarding the **theory and practice of Haskell programming**.

Amazon, Summer Undergraduate Research Experience 06/2023 - 08/2023
Industry experience workshop led by Amazonians Myles Shiroma & Korin Torrence Johnson Pittsburgh, PA
Selected for Amazon's summer research program at Carnegie Mellon University from a pool of ∼**1,900 applicants**. Continued work on Gradual Verification and developed **significant optimizations** for asserting runtime checks in Gradual C_0.

Carnegie Mellon University, Software and Societal Systems 06/2022 - Present
Research Intern, advised by Dr. Jonathan Aldrich & Dr. Joshua Sunshine Pittsburgh, PA
Summer '23 Exploring the application of gradual verification techniques to **smart contracts** on the *Algorand* blockchain platform in developing *Gradually Verified Teal*.
Spring '23 Worked on **formal proofs** for establishing semantic correspondence to ensure soundness between the static and dynamic verifier.
Summer/Fall '22 Fixed optimization bugs and implemented a **Property Based Testing** tool for evaluating the soundness of Gradual C_0 source code.

Cornell University, Computer Architecture & Programming Abstractions 10/2021 - 12/2022
Undergraduate Research Assistant, advised by Dr. Adrian Sampson Ithaca, NY
Fall '22 Worked on a **symbolic execution** tool for verifying parallelism in Calyx.
Fall '21/Spring '22 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