Jan-Paul Vincent Ramos-Dávila

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Education

Cornell University 2021 - 2025
B.A. in Computer Science, B.A. in Philosophy Ithaca, NY

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.

Experience

Amazon, Summer Undergraduate Research Experience 06/2023 - 08/2023
Research Intern, advised by Dr. Jonathan Aldrich Pittsburgh, PA
Developed 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 *Gradual Teal*.
Spring '23 Worked on formal proofs for establishing semantic correspondence to ensure soundness between the static and dynamic verifiers.
Summer/Fall '22 Fixed optimization bugs and implemented a Property Based Testing tool for evaluating the soundness of Gradual C_0.

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.
Winter '21/Spring '22 Fixed compiler front-end bugs and implemented *Graphicionado Graph Analytics* algorithm in Calyx.

Publications

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

Notable Projects

Incremental Specification Mining *Cornell CS 6156 Runtime Verification*
Instrumentation for Maven-based projects that *incrementally* mines specifications for runtime verification.

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

Technical Skills

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