Jan-Paul Vincent Ramos-Dávila

Personal Data

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Education

2025 - **Boston University**
Doctor of Philosophy in Computer Science
Interests: refinement type systems, formal verification, program synthesis
Advisors: Dr. Ankush Das, Dr. Marco Gaboardi

2021 - 2025 **Cornell University**
Bachelor's of Arts in Philosophy
Concentrations: Philosophy of Mathematics and Logic, Type Theory

Experiences

2024 - 2025 **Research Assistant, NASA Langley Formal Methods**
› Mechanized proofs that model correct behaviors of a Software Defined Delay-Tolerant Network's Match-Action pipeline for NASA's Interplanetary Overlay Network framework.
› Developed a formally verified Network Calculus IR in Rocq. Wrote an interpreter for a subset of P4 to target the IR.
› *Advisor:* Dr. Alwyn Goodloe

2022 - 2024 **Research Assistant, Carnegie Mellon University S3D**
› Core contributor on the early development of the Gradual Verification framework. Empirically evaluated the soundness of Gradual C_0, and provided formal proofs of completeness between the dynamic and static verifiers.
› Explored the application of Gradual Verification to smart contracts on the Algorand and Ethereum blockchain platforms and developed a prototype for Gradually Verified Teal.
› *Advisor:* Dr. Jonathan Aldrich

2022 - 2023 **Research Assistant, Cornell University, CAPRA Group**
› Implemented Graphicionado Graph Analytics algorithm in Calyx as a case study of the language. As a result, found/solved soundness bugs in the toolchain's front-end.
› Worked on a symbolic execution tool for verifying parallelism in Calyx.
› *Advisor:* Dr. Adrian Sampson

Publications

2025 | Jenna DiVincenzo, Ian McCormack, Hemant Gouni, Jacob Gorenburg, **Jan-Paul Ramos-Dávila**, Mona Zhang, Joshua Sunshine, Éric Tanter, Jonathan Aldrich. *"Gradual C0: Symbolic Execution for Gradual Verification"*, In **TOPLAS, 46(4), Article No.: 14 P.1-57** and **POPL 2025**

2023 | **Jan-Paul Ramos-Dávila**.*"Evaluation Soundness of a Gradual Verifier with Property Based Testing"*, In **Cornell Undergraduate Research Journal, 2(1), P.17-27** and **POPL 2023 Student Research Competition**.

Presentations

2025 | *"Formal Verification of a Software Defined Delay-Tolerant Network"*, In **IEEE Workshop on Optimizing Interplanetary Communication Through Network Autonomy** and **CoqPL 2025**.

2024 | *"Gradual Verification of Smart Contracts"*, In **PriSC 2024** and **POPL 2024 Student Research Competition**.

2023 | *"Optimization of a Gradual Verifier: Lazy evaluation of Iso-recursive Predicates as Equi-recursive at Runtime"*, In **MWPLS 2023** and **POPL 2023 Student Research Competition**.

Teaching

Teaching Assistant

2025 | **CS 4/5111 Practicum in Operating Systems**
Ran coding workshops with hands-on demos building and debugging C applications while teaching the EGOS operating system.
Cornell University

2024 | **CS 4114 Systems Programming**
Graded assignments and ran coding workshops with hands-on demos building and debugging C++/Linux applications.
Cornell University

CS 4/5110 Programming Languages and Logics
Examination czar in charge of the infrastructure of midterms, graded students' assignments, and held weekly office hours.
Cornell University

Awards

2024 **Travel Scholarship**, Verification Mentoring Workshop at CAV
2023 **Fellow**, Amazon Summer Undergraduate Research Experience at CMU REUSE
2023 **Third Place Winner**, ACM SIGPLAN POPL SRC
2022 **Travel Scholarship**, PLMW at ACM SIGPLAN PLDI
2020/21 **Finalist in Mathematics**, Regeneron International Science and Engineering Fair

Academic Service

2025 **Video Co-Chair**, ACM SIGPLAN PLDI'25
2025 **Video Co-Chair**, ACM SIGPLAN POPL'25
2024 **Virtualization Chair**, ACM SIGPLAN ICFP'24
2024 **Virtualization Chair**, ACM SIGPLAN PLDI'24
2024 **AV Committee**, ACM SIGPLAN POPL'24
2023 **Student Volunteer**, ACM SIGPLAN ICFP'23

Skills

English	Native
Spanish	Native
Tools	Unix, Git, Bash, Neovim, Docker, Heroku, HTML/CSS
Plangs	LaTeX, Coq, OCaml, Scala, Python, Haskell, JS/TS, Java, C/C++, Rust
PL Schools	OPLSS'24, AFP Summer School'23