

JAN-PAUL VINCENT RAMOS-DÁVILA

PERSONAL DATA

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EDUCATION

2021 - 2025 | **Cornell University**
BACHELOR'S OF ARTS IN PHILOSOPHY, CONC. PHILOSOPHY OF MATHEMATICS AND LOGIC

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
- 2021 - 2023 | **Research Assistant, Cornell University, CAPRA Group**
› Implemented Graphicionado Graph Analytics algorithm in [Calyx](#) as a case study of the language. Found/solved soundness bugs in the front-end in the [Computer Architecture & Programming Abstractions group](#).
› 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 Co: 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

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| 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

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

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

ACHIEVEMENTS

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| 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

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| 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	TEX \LaTeX , Coq, OCaml, Scala, Python, Haskell, JS/TS, Java, C/C++, Rust
PL SCHOOLS	OPLSS'24, AFP Summer School'23