Jon Rosario

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Education

Massachusetts Institute of Technology (MIT) Expected graduation date: May 2025
M.Eng. in Computer Science, focusing on Formal Verification Advised by Adam Chlipala
B.S. in Computer Science, B.S. in Mathematics | Link to all courses *GPA: 4.8/5.0*
Relevant Courses: Advanced Algorithms[G], Software Construction[T], Software Performance Engineering,
Advanced Complexity Theory[G], Machine Learning[T], Linear Algebra & Optimization[T], Quantum Computation[G]
> **G** = Graduate Level Course, **T** = Teaching/Lab Assistant or Grader

Experience

Massachusetts Institute of Technology (MIT) Sept 2024 - Current
MEng Research *C, Coq*
- Collaborating with Professor Adam Chlipala and former PhD student Andres Erbsen on designing and implementing a novel proof engine.
- Implementing core components, including context management, term representation with integrated type-checking, and convertibility checks, with an emphasis on performance.

Massachusetts Institute of Technology (MIT) Fall 2024
Graduate Teaching Assistant – Grading Coordinator *Theory of Computation, Michael Sipser*
- Supervised 30 problem set graders, coordinated grading via Gradescope, and ensured timely completion and accuracy.
- Designed rubrics, managed regrading, and participated in grading meetings to meet one-week release deadlines.

Amazon Summer 2023
Software Development Engineer Intern *Java, Python, TypeScript, AWS, Git*
- Developed the next version of the widely-used internal solution for fine-grained ML workflow orchestration.
- Implemented a dynamic custom scheduler, enabling task distribution among multiple worker groups with efficient management and scaling through a bin-packing algorithm. This innovation is projected to yield annual cost savings of approximately $0.5 million or a 25% reduction in compute expenses.
- Surpassed project expectations by revamping internal infrastructure to expand the range of compatible worker-types.

NASA JPL Summer 2022
Intern *Python, Machine Learning, Git, C/C++*
- Designed Python programs to carry out end-to-end assessment of radiometric terrain-corrected SAR products, using state-of-the-art C/C++ software to process spaceborne/ airborne InSAR (Mentor: Gustavo H. X. Shiroma)
- Worked on the open-source library InSAR Scientific Computing Environment ISCE3 currently being built by NASA JPL engineers in C++ and corresponding Python wrapper *COMPASS*.
- Analysis was presented in conference at IGARSS 2023. Published work is available at 1 and 2.

MIT Glaciers Group Summer 2021
Undergraduate Researcher *Python, Google Cloud, JavaScript, Machine Learning, Git*
- Researched and presented methods for analyzing glaciers in Antarctica and created software in Python/Javascript to efficiently pre-process radar files greater than 100GB for use in machine learning (Mentor: Brian Riel).
- Utilized Google Cloud tools, Python, and JavaScript for computer vision and pattern recognition. Successfully implemented two image speckle filtering methods: Frost filter and Gamma MAP filter, following Lopes et al. 1990.

Projects

- Implemented a multithreaded AI for a Chess-like game in C featuring LazySMP, bitboards, and an opening book.
- Developed and launched a Django-based website, migrating and scraping data into a structured database.
- Implemented a CW-randomness extractor in C and Python based on Carter and Wegman's construction to partially derandomize the Polynomial Identity Testing (PIT) problem, showcasing theoretical interest in randomness extraction.
- Created the first solution set available on programming exercises from Abstract Algebra: Theory and Applications.

Skills and Technologies

Languages: Python, TypeScript, JavaScript, C/C++, Java, Coq, Julia Lang, Bash, HTML, CSS
Technologies & Tools: Git, Linux, Docker, AWS, Google Cloud, PyTorch, CI/CD, IaC, Django