Cristián Colón-Aponte

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EDUCATION

Massachusetts Institute of Technology (MIT) Cambridge, MA
GPA: 4.7/5.0 | *B.S. in Computer Science and Engineering* *Aug. 2022 – June 2026*
Relevant coursework: Design and Analysis of Algorithms, Calculus I & II, Linear Algebra, Discrete Math, Probability and Statistics, Programming in C and Assembly, Computation Structures, Computer Systems Engineering, Software Construction, Machine Learning

SKILLS AND INTERESTS

- **Skills:** Spanish (native), Python, JavaScript, C++, C#, C, RISC-V Assembly, SQL, Three.js, Redis, React, Node.js, TensorFlow, Pytorch, Numpy, Pandas, scikit-learn, Stable Baselines3, Vertex AI, Metasploit, Qt Framework, Streamlit, 3D Graphics, OpenGL, Unity, Docker, VirtualBox, Computational Geometry

EXPERIENCE

MIT Computer Science and Artificial Intelligence Laboratory (CSAIL) Cambridge, MA
ALFA Group Undergraduate Researcher *Aug 2024 – present*

- Leveraged LLMs and AI planning to analyze network weaknesses and identify realistic exploit chains, discovering and executing 15+ chains in containerized simulated systems
- Increased successful exploit chain generation by over 85% by refining stochastic algorithms used to sample and combine exploits
- Presented project at 2025 MIT AI Hardware Symposium and published paper on ArXiv

Formlabs Somerville, MA
Software Engineering Intern - PreForm 3D Print Preparation Software *June 2025 – Aug 2025*

- Designed, developed, and shipped CAD feature to auto-embed multiple models into frame, cutting post-processing time by ~60%
- Implemented C++ grouping algorithms that process 300+ parts in under 3s and QML UI controls, driving 45% beta adoption
- Added telemetry with SQL dashboards and led 23 PRs plus 12 code reviews to maintain a 99% CI pass rate and accelerate releases

Formlabs Somerville, MA
Software Engineering Intern - PreForm 3D Print Preparation Software *June 2024 – Aug 2024*

- Implemented CAD-like features like model labeling for 3D in C++ and QML for ~300,000 users, enabling embossing/engraving of text with surface-aware clamping and manipulators
- Devised efficient validation algorithms and benchmarking methods to improve label readability on complex geometries by 55%
- Conceived and built prototype for model measuring tool using ray casting algorithms to enable part evaluation with 0.1 mm accuracy

MIT Media Laboratory Cambridge, MA
Responsive Environments Undergraduate Researcher *Jan 2024 – May 2024*

- Created VR application in Unity with C# that enables real-time haptic and visual feedback between users and electronic textiles
- Developed textile and VR communication pipelines using UDP and socket programming in Python with ~10ms round-trip latencies
- Co-authored paper on dual-reality experiences through sensor-based networks in SIGGRAPH Asia 2024 (ACM Digital Library)

LEADERSHIP AND ACTIVITIES

Machine Learning (6.C01) Cambridge, MA
Course Staff Assistant *Feb 2025 - May 2025*

- Graded 150+ weekly assignments and exams on topics including MLPs, backpropagation, generative models, and RL
- Provided in-depth assistance and clarification during office hours, enabling students to excel on exams and project deliverables

PROJECT WORK

GPU Particle Simulation Engine Boston, MA
Independent Project *Aug. 2025*

- Built a real-time particle engine in C++ and OpenGL, leveraging GLSL compute shaders to model emergent, life-like patterns
- Optimized GPU parallelism and memory to render thousands of interacting agents with high frame rates and smooth visualization
- Designed modular, extensible architecture and detailed documentation to support future physics models and rendering features

Poker Bot Cambridge, MA
MIT Pokerbots Competition Class *Jan. 2025*

- Applied game theory, probability, and algorithm design to poker strategy using NumPy, Pandas, and scikit-learn
- Developed counterfactual regret minimization poker bot using PyTorch in an adversarial reinforcement learning environment
- Achieved top 10% finish among 300+ competitors in the final tournament

HONORS

- **Awards:** Presidential Scholar Nominee, AP Scholar with Honors, AP International Diploma, Hispanic Recognition Program