Matias Freire

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Education

Stevens Institute of Technology Expected May 2028
B.S. in Computer Science *Hoboken, NJ*
Coursework: 3D Computer Vision, Operating Systems, Algorithms and Data Structures, Web Development 1, Computer Architecture, Systems Programming, Software Development Processes

Cornell Tech Break Through Tech Summer 2026
Machine Learning Fellowship *Remote*
Coursework: Completed an intensive AI/ML curriculum and built end-to-end projects using Python, scikit-learn, Keras, and LangChain, covering traditional ML, neural networks, RAG, Agentic AI and MCP

Technical Skills

Programming: Java, Python, C/C++, JavaScript, x86, SQL
Web Tools: TypeScript, React, Tailwind CSS, Next.js, Supabase, FastAPI
Libraries: PyTorch, Scikit-learn, Dash, Plotly, RTI Connext Python API, pandas, NumPy
Developer Tools: Git, GitHub/GitLab, Docker, Jupyter Notebooks, Linux, RTI Admin Console
Certifications: Bloomberg Market Concepts, Hugging Face AI Agents Fundamentals
Lenguages: Spanish(Fluent), English(Fluent), Mandarin Chinese(Basic Proficiency)

Experience

Software Engineering Intern May 2026 – July 2026
GE Transportation, a Wabtec company *Erie, PA*
- Engineered a real-time locomotive monitoring system by containerizing a multi-service architecture with Docker in WSL and integrating RTI Connext DDS, FastAPI, and Server-Sent Events to stream telemetry to a web interface.
- Built the system's diagnostic capabilities using scikit-learn classification and condition-boundary analysis, while caching diagnostic indexes, history, and UI state in Redis for faster interaction.
- Made 500K+ samples reusable across locomotive old and newer configurations by building Python/pandas signal and dataset pipelines and publishing them through an RTI Connext DDS Writer for playback testing.

Undergraduate Research Assistant| AI/ML Tools Intern Aug 2025 – Aug 2026
Advanced Quantum Materials Lab *Hoboken, NJ*
- **AI Extraordinary Magnetoresistance Geometry Optimization:** Achieved a test R2 of 0.90 and MAE of 20.51 for sensitivity prediction by engineering COMSOL datasets, benchmarking XGBoost, Gaussian Process, MLP, Ridge, and Random Forest regressors, and building a Bayesian optimization pipeline to identify high-sensitivity sensor geometries.
- **MoS2 Image Synthesis & Analysis Platform:** Unified three microscopy research workflows and generated 1,000+ synthetic samples in seconds by engineering a Dockerized Dash and Plotly platform for configurable defect synthesis, preprocessing, and PyTorch analysis while also studying models like CNN, ResUNet, and MobileNetV2.

Projects

SHPE and Colorstack Stevens Chapter Website | *Next.js, React, TypeScript, Supabase* Jan 2026 - May 2026
- Launched two responsive Next.js and React platforms serving 200+ combined SHPE and ColorStack members by owning end-to-end development with TypeScript, Tailwind, and Supabase.
- Accelerated full-stack development by using the Supabase MCP to implement authentication, database-backed CRUD workflows, and secure content management supporting member onboarding and sponsor outreach.

Interactive-Neural-Network-Digit-Classifier | *PyTorch, Streamlit, Pandas, NumPy, Pygame* Jan 2026 - Feb 2026
- Delivered real time digit predictions by connecting a trained neural network to an interactive Streamlit drawing interface built with Pygame, pandas, and NumPy.
- Achieved 96% test accuracy on handwritten digit classification by training and deploying a CNN.

Leadership

Chief Web Officer | *SHPE Stevens Chapter* March 2026 – Present
- Lead the development of the official chapter website in Next.js/Supabase, building the platform from scratch to **support 150+ registered members** and present the organization to corporate sponsors
- Planning and organizing technology-focused events and workshops to expand technical engagement across the chapter

Vice-President | **Former Head of External Relations** | *Colorstack Stevens Chapter* April 2025 – Present
- Led growth and technical engagement initiatives, **increasing membership by 150%** and **online engagement by 125% through social media** strategy and **15+ events per semester**
- Serve as the primary representative for partnerships and collaborations with major campus organizations, including CS Club, SHPE, NSBE, and others. Organized peer-led weekly technical sessions, guiding members through 32+ LeetCode problems

Tutor-Counselor/Resident Assistant | *STEP Bridge Summer Program* Jun 2025 – Aug 2025
- Strengthened STEM readiness and residential success for **52+ incoming freshmen** by **leading Calculus I/II and Physics** recitations, providing **weekly personalized tutoring for 25+ students**, and mentoring residents as a **Resident Assistant**.