Michael Pignatelli

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EDUCATION

University of Pennsylvania, School of Engineering and Applied Science, Philadelphia, PA

May 2027

Bachelor of Science in Engineering in Computer Science and Cognitive Science (Dual Major)

Minor in Italian Culture | *GPA*: 3.5/4.0 | *Affiliations*: Wharton/Penn Data Science Group, ML Research at Penn, CS Society *Coursework*: AI, TinyML, Data Structures & Algorithms, Operating Systems, Big Data Analytics, Probability (Wharton) *Sub-matriculating at Penn into M.S.E. in Computer and Information Science (expected Aug. 2027).*

EXPERIENCE

Penn Engineering | Head Teaching Assistant - CIS 1100

Aug. 2024 – Present

- Manage team of 40+ TAs for Penn's largest intro CS course (~300 students), coord. recitations, office hours, grading.
- Develop and deliver instruction on data structures, recursion, OOP, functional programming, and Pandas.
- Guide students from "Hello, World!" through advanced topics to a final movie recommendation engine project.
- Maintain course infrastructure (cis1100.com) with HTML/YAML/CSS, reducing site errors and ensuring clarity.
- Built and maintained automated grading and deployment scripts, streamlining homework and exam.
- Collaborate with faculty to update curriculum, author exams, and lead weekly staff meetings.

Ava Labs | Software Engineering Intern - Platform Team

June 2025 – August 2025

- Implemented and productionized 4 gRPC APIs (+7.5k LoC) in the AvalancheGo blockchain client, replacing legacy JSON-RPC and enabling strongly-typed communication for all node operators. Leveraged gRPC's ~50% lower latency (vs. REST benchmarks) to improve efficiency for ~1,800 operators and support future protocol upgrades.
- Wrote end-to-end and integration tests (Ginkgo) to validate gRPC API adoption and ensure cross-version stability.
- Authored incremental deployment plan adopted for H2 2025 rollout, ensuring backward compatibility and multi-team adoption (Platform, Data Tooling, Cloudflare Workers). Collaborated with multiple teams to align protocol changes with performance and security standards, contributing to long-term network stability across testnets and mainnet.

Scale AI (via Outlier AI) | Prompt Engineer (Contract)

May 2024 – Aug. 2024

- Engineered and validated **500+ prompts** for LLM fine-tuning on math reasoning and algorithmic coding tasks, improving model accuracy and dataset consistency, across diverse math and programming benchmarks.
- Reviewed peer prompts and enforced quality standards, ensuring consistency across datasets and difficulty levels.

SELECTED PROJECTS

Pedestrian Buddies — Built embedded CV system (TensorFlow Lite, Keras) for real-time crossing guard gesture detection; optimized inference for hardware-constrained systems, deployed on Arduino using TensorFlow Lite runtime [GitHub].

Housing & Education Analysis — Analyzed 1.6M+ U.S. housing & education records, including state-level educational spending; applied ridge regression, bootstrapping, and random forests to study spending—price relationships [Report].

Guess Who? — Developed Java Swing multiplayer game with client-server architecture and robust state sync [GitHub].

Scopa! — Designing SwiftUI card game with GameCenter API; implemented scoring and live multiplayer (4 users) [GitHub].

Published: Journal of Future Economists (Vol. 2): "Competing in the Global Semiconductor Industry" (2023) [Article].

LEADERSHIP & TECHNICAL INVOLVEMENT

Penn High Powered Rocketry | Active Recovery Engineering Lead/Head Safety Officer

Sept. 2023 - Present

- Lead recovery system design for L3 rocket, implementing dual parachute deployment. Simulated flight dynamics (<5% error vs actual), contributing to successful 12,000 ft launch at Spaceport America Cup/IREC (120+ teams).
- Conducted 3,600 ft field tests validating parachute energetics and deployment timing under live launch conditions.
- Integrated telemetry and comms testing with recovery hardware to ensure redundancy and reliable system performance.
- Oversee safety compliance for 30+ members as Head Safety Officer, ensuring adherence to NAR/TRA regulations.

Penn Engineers without Borders | Ramp Committee Engineer

Ian. 2025 – Present

• Design ADA-compliant ramp in AutoCAD for Grace City Church, ensuring accessibility for 200+ weekly visitors.

SKILLS

Programming: Python, Java, Go, C, OCaml, SQL, Swift, HTML/CSS | Languages: English (native), Italian (advanced) ML/Data Science: TensorFlow, Keras, PyTorch, Pandas, NumPy, NLP, RAG, LLM Fine-Tuning, Prompt Engineering Systems/Tools: gRPC, REST, Docker, GitHub, GitHub Actions, Cloudflare, Jupyter, Ginkgo, Linux, LaTeX, XML/JSON