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* *Jan. 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