

Mauricio Tedeschi

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Summary

Software engineer focused on building and optimizing production multi-agent systems for enterprise clients. Experienced in delivering reliable, high straight-through automations that reduce manual workload while maintaining low failure rates at scale. Strong foundation in CS and Physics with a track record of pragmatic iteration from prototypes to focused, high-impact production work.

Experience

- 03/2026 – Present **AI Solutions Engineer**, *Hyper Company*, Plantation, FL
- Build and operate production AI agents that automate business workflows for enterprise clients, from design through deployment and reliability at scale.
 - Develop multi-agent LLM systems with structured business logic and document processing for high straight-through automation in production.
- 06/2025 – 02/2026 **Software Engineer**, *Pacman HEF*, Sunrise, FL
- Built the React takeoff product UI with a PDF plan canvas, Konva annotation overlays, symbol templates, and detection review panels so estimators interact with CV results in-app.
 - Shipped the full-stack platform (React, Express.js, PostgreSQL, Redis) with Docker/Kubernetes and CI/CD around a CV symbol-detection backend.
 - Implemented CI/CD with automated testing and containerization for reliable releases of ML-integrated web features.
- 01/2024 – 06/2024 **Software Research Co-op**, *Forschungszentrum Jülich*, Aachen, Germany
- Developed and benchmarked enhanced local-search combinatorial optimization algorithms for specialized neuromorphic hardware, improving runtime scaling for constrained compute environments.
 - Built C++ and Python simulation tooling to validate solver behavior with tunable parameters and reproducible benchmark workflows.
 - Executed large-scale parallel simulation runs on the JURECA HPC cluster using OpenMP and Slurm across 256 CPUs.
- 01/2023 – 06/2023 **Software Engineer Co-op**, *Wayfair*, Boston, MA
- Designed and optimized Python FastAPI endpoints for internal platform tools, improving query performance for downstream teams.
 - Automated CI/CD pipelines across enterprise repositories, including Docker containerization and stress testing, accelerating safe and consistent deployments.
 - Wrote unit tests for full-stack components of an internal project catalog, ensuring robust platform security in Wayfair's cloud infrastructure.
- 09/2022 – 12/2022 **University Peer Tutor**, *Northeastern University*, Boston, MA
- Conducted 1:1 tutoring sessions with undergraduates enrolled in first-year computer programming, Calculus 3, Differential Equations, and Linear Algebra with outstanding student feedback.
 - Delivered personalized evaluations to students and faculty on progress, strengths, and growth areas, enhancing personalized learning outcomes.
- 05/2022 – 06/2022 **Software Development and IT Intern**, *Automated HealthCare Solutions*, Sunrise, FL
- Collaborated with DevOps scrum team using Agile methodologies to migrate full-stack features from discontinuing service to updated version of web-based prescription dispensing platform.

Projects

Retro-Style Video Game Graphics Emulator (code)

- Explored retro-style rendering constraints as part of a custom Java graphics emulator proof of concept.
- Recreated classic palette and low-resolution limitations in software.
- Used the project as a compact playground for graphics systems thinking and constrained rendering pipelines.

Cinemath — LLM-Driven STEM Animation Engine (code)

- Built an LLM-driven animation engine where local Manim visual-tool compilers turn structured lesson plans into short videos—from algebra boards and integrals through Feynman diagrams and RG flow sketches.
- Separates teaching (LLM planning) from animation (composable local visual-tool compilers) for algebra boards, proofs, integrals, paper arithmetic, and physics diagrams.
- Renders problem statement, equation chain, and final answer into publication-quality lesson videos from a single problem input.

Real-City Traffic Simulation and Signal Control (code)

- Loads real city and neighborhood road graphs from OpenStreetMap via a simple place-name query for city-scale simulation experiments.
- Simulates queue-based traffic flow with signal control, congestion metrics, and animated heatmap export.
- Includes baseline controllers plus a PPO training path for learned signal-timing policies on complex road networks.

Euler-Lagrange Symbolic Solver (code)

- Generalized a SymPy symbolic layer so new mechanics systems can be built from kinetic and potential energy expressions.
- Simulated resulting dynamics with JAX and added simple and double pendulum examples with generated animation GIFs.
- Built a drag-based setup UI for picking initial positions before running interactive pendulum simulations.

Exoplanet Parameter Estimation (code)

- Fits single-planet radial velocity curves with differential evolution plus local least-squares refinement.
- Generates synthetic Doppler datasets and recovers period, semi-amplitude, and eccentricity from noisy observations.
- Animates optimizer convergence and reflex-orbit visualization from a messy initial guess to the recovered Keplerian solution.

Mirage — LLM Hallucination Detection Tool (Hackathon) (code)

- Built a VS Code extension to detect and flag likely hallucinations in coding-agent output using npm registry checks, heuristics, and Claude-backed semantic endpoint review.
- Implemented debounced audit-on-change, editor diagnostics, a findings sidebar, and workspace JSONL logging for zero-touch verification during active editing.
- Explored post-processing and verification techniques to improve reliability of LLM-generated code in a hackathon setting.

Tutometry — STEM Tutoring Platform

- Built a Next.js product UI (marketing, student app, admin) with Tailwind, Framer Motion, and KaTeX on Supabase Auth and Postgres.
- Integrated an LLM lesson-generation worker so users submit problems and track visual lesson rendering stages in-app.

JobFinder — Full-Stack Job Tracking System

- Built a React SPA with auth-gated dashboards, company/keyword filters, and real-time WebSocket updates on a FastAPI + SQLite backend.
- Shipped JWT auth, Docker deployment to AWS EC2, and GitHub Actions CI/CD for a production-grade full-stack app.

In-Game Spotify Integration (code)

- Built a React Spotify hub inside an MMO client (search, queue, likes, comments) with Chakra UI components.
- Integrated Spotify PKCE auth and real-time town-area sync for in-game playback control.

Publications

D. Dobrynin, **M. Tedeschi**, A. Heitmann, and J. P. Strachan (2024). *Gradient matching of higher order combinatorial optimization in quadratic Ising machines*. IEEE International Conference on Rebooting Computing (ICRC 2024). *Best Paper Honorable Mention*.

Skills

Languages: C#, Python, Java, C++, TypeScript/JavaScript, SQL

AI & Agentic Systems: Custom agent platforms, multi-agent orchestration, LLM integrations (OpenAI, Anthropic, Gemini), evaluation & observability

Backend & Frameworks: ASP.NET Core, FastAPI, Next.js, Entity Framework Core, Dapper, React

Infrastructure & DevOps: .NET Aspire, Azure DevOps, AWS EC2, GCP, Docker, Kubernetes

Data & Automation: PostgreSQL + pgvector, Supabase, SQL Server, Playwright, document processing pipelines (QuestPDF, PDFsharp, PdfPig)

Education

09/2021 – 12/2024 **Northeastern University**, Boston, MA
BS in Computer Science and Physics · *Magna Cum Laude* · GPA: 3.8/4.0