

Thomas Marconi

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EXPERIENCE

Tactical Air Support

Feb 2024 – Present

Founding Software Engineer / Tech Lead

Jacksonville, FL

- **Engineering Leadership & Architecture:** Founded and led the core software division, designing the technical roadmap, establishing CI/CD pipelines (GitLab), and enforcing architectural standards for production systems.
- **Distributed Systems & Scale:** Architected "ReTask," a mission-critical, real-time task management platform using **WebSockets (Socket.io)** and **Next.js**. Engineered a concurrent client-server architecture capable of handling sub-100ms bi-directional updates for 150+ daily active users.
- **System Impact:** Delivered over **\$850,000 in annual cost avoidance** by replacing expensive legacy software with custom high-performance internal tools, improving cross-departmental process efficiency by 45%.
- **Security & Cloud Infrastructure:** Designed FedRAMP High compliant infrastructure on **Azure**. Implemented a Zero Trust architecture using **Azure Functions** (Serverless) and Key Vault to inject secrets at runtime, eliminating hardcoded credentials.
- **AI & Search Engineering:** Built an enterprise RAG (Retrieval-Augmented Generation) system using **LangGraph**, **ChromaDB**, and Azure OpenAI. Implemented PDF parsing and semantic chunking pipelines to enable sub-second intelligent search across thousands of legacy technical documents.

Florida State University

Aug 2022 – Dec 2022

Teaching Assistant (Data Structures & Algorithms)

Tallahassee, FL

- Mentored 30+ students in C++ optimization, memory management, and algorithmic complexity (Big O notation), consistently improving student pass rates through rigorous code reviews.

EDUCATION

Georgia Institute of Technology

Atlanta, GA

M.S. Computer Science — Specialization: Machine Learning

Expected Dec 2027

- Focus Areas: High Performance Computer Architecture, System Design, Databases, Networks

Florida State University

Tallahassee, FL

B.S. Computer Science — GPA: 3.7

May 2023

TECHNICAL PROJECTS

Project Desert | Next.js 16, Python (FastAPI), PostgreSQL, Docker, Microservices

Jan 2025 – Present

- **Microservices Architecture:** Designed a scalable full-stack ecosystem with a "Clean Architecture" pattern, strictly decoupling business logic from the API layer to ensure testability and maintainability.
- **Type-Safe Systems:** Engineered an end-to-end type-safe pipeline using **OpenAPI** specifications to auto-generate TypeScript clients from Python models, reducing frontend-backend integration bugs by nearly 100%.
- **High-Performance Auth:** Implemented a custom, secure JWT authentication flow ensuring stateless session management across distributed services, with server-side-only token rotation for maximum security.

CityScale | React, FastAPI, Machine Learning (PCA, LLMs)

Oct 2025

- **Awarded 3rd Place** at "AI for Good Hackathon". Built a high-throughput geospatial analytics engine capable of rendering and filtering **580,000+ data points** with sub-second latency.
- Implemented **Principal Component Analysis (PCA)** dimensionality reduction algorithms to transform complex high-dimensional economic datasets into intuitive, real-time visualization metrics.

TECHNICAL SKILLS

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

Backend & Distributed Systems: Node.js, FastAPI, Django, WebSockets, REST, Microservices, System Design

Frontend: React, Next.js, Zustand, TanStack Query, Tailwind CSS, HTML/CSS

Cloud & Infrastructure: Azure (Functions, Entra ID, Graph API), Docker, CI/CD (GitLab), Linux

AI & Machine Learning: RAG Architectures, Vector Databases (Chroma), LLM Integration (LangGraph, OpenAI), Pandas