

# Thomas Marconi

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## EXPERIENCE

<b>Tactical Air Support</b> <i>Founding Software Engineer / Tech Lead</i>	Feb 2024 – Present Jacksonville, FL
<ul style="list-style-type: none"><li><b>Engineering Leadership &amp; Architecture:</b> Founded and led the core software division, designing the technical roadmap, establishing CI/CD pipelines (GitLab), and enforcing architectural standards for production systems.</li><li><b>Distributed Systems &amp; Scale:</b> Architected "ReTask," a mission-critical, real-time task management platform using <b>WebSockets (Socket.io)</b> and <b>Next.js</b>. Engineered a concurrent client-server architecture capable of handling sub-100ms bi-directional updates for 150+ daily active users.</li><li><b>System Impact:</b> Delivered over <b>\$850,000 in annual cost avoidance</b> by replacing expensive legacy software with custom high-performance internal tools, improving cross-departmental process efficiency by 45%.</li><li><b>Security &amp; Cloud Infrastructure:</b> Designed FedRAMP High compliant infrastructure on <b>Azure</b>. Implemented a Zero Trust architecture using <b>Azure Functions</b> (Serverless) and Key Vault to inject secrets at runtime, eliminating hardcoded credentials.</li><li><b>AI &amp; Search Engineering:</b> Built an enterprise RAG (Retrieval-Augmented Generation) system using <b>LangGraph</b>, <b>ChromaDB</b>, and Azure OpenAI. Implemented PDF parsing and semantic chunking pipelines to enable sub-second intelligent search across thousands of legacy technical documents.</li></ul>	
<b>Florida State University</b> <i>Teaching Assistant (Data Structures &amp; Algorithms)</i>	Aug 2022 – Dec 2022 Tallahassee, FL
<ul style="list-style-type: none"><li>Mentored 30+ students in C++ optimization, memory management, and algorithmic complexity (Big O notation), consistently improving student pass rates through rigorous code reviews.</li></ul>	

## EDUCATION

<b>Georgia Institute of Technology</b> <i>M.S. Computer Science — Specialization: Machine Learning</i>	Atlanta, GA Expected Dec 2027
<b>Florida State University</b> <i>B.S. Computer Science — GPA: 3.7</i>	Tallahassee, FL May 2023

## TECHNICAL PROJECTS

<b>Project Desert</b>   <i>Next.js 16, Python (FastAPI), PostgreSQL, Docker, Microservices</i>	Jan 2025 – Present
<ul style="list-style-type: none"><li><b>Microservices Architecture:</b> Designed a scalable full-stack ecosystem with a "Clean Architecture" pattern, strictly decoupling business logic from the API layer to ensure testability and maintainability.</li><li><b>Type-Safe Systems:</b> Engineered an end-to-end type-safe pipeline using <b>OpenAPI</b> specifications to auto-generate TypeScript clients from Python models, reducing frontend-backend integration bugs by nearly 100%.</li><li><b>High-Performance Auth:</b> Implemented a custom, secure JWT authentication flow ensuring stateless session management across distributed services, with server-side-only token rotation for maximum security.</li></ul>	
<b>CityScale</b>   <i>React, FastAPI, Machine Learning (PCA, LLMs)</i>	Oct 2025
<ul style="list-style-type: none"><li><b>Awarded 3rd Place</b> at "AI for Good Hackathon". Built a high-throughput geospatial analytics engine capable of rendering and filtering <b>580,000+ data points</b> with sub-second latency.</li><li>Implemented <b>Principal Component Analysis (PCA)</b> dimensionality reduction algorithms to transform complex high-dimensional economic datasets into intuitive, real-time visualization metrics.</li></ul>	

## 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