

Morteza (Mort) Mogharrab

Software Architect · AI Systems · Industrial Applications

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Summary

Software architect specializing in AI-powered operational platforms for Alberta's industrial sector. Master's in Computing Science, 4.0 GPA, University of Alberta. Currently building the complete technical infrastructure at Entrek Engineering — full-stack, cloud-deployed, production AI extraction pipelines. Previously scaled Piko Digital's platform to 1,000+ daily active users as software engineer.

Professional Experience

Software Systems & AI Developer – *Entrek Engineering Ltd., Calgary, AB* Apr 2026 – Present

Architecting and deploying a comprehensive, AI-integrated engineering & knowledge management platform from the ground up:

- **Enterprise RAG Knowledge Base:** Engineered a multi-modal document ingestion pipeline (CAD, Excel, PPTX, PDFs, Vision) utilizing graph-based retrieval, LLM reranking, multi-hop reasoning, and citation-grounded AI chat.
- **P&ID Intelligence Copilot:** Built an autonomous engineering assistant combining deterministic DXF parsing and topology mapping with LLM agents to automate equipment extraction and process safety audits.
- **Procurement & Bid Automation:** Developed AI-driven engines to parse unstructured vendor proposals, extract technical/commercial data, and perform automated bid-spread leveling and validation.
- **Operations Platform:** Built a secure, end-to-end project management ecosystem tracking budgets, cost codes, field tickets, purchase orders, and meeting minutes with real-time financial dashboards.
- **Security & Identity:** Implemented enterprise authentication via Microsoft SSO (Azure AD) alongside granular feature-level and document-level Role-Based Access Control (RBAC).
- **AWS Production Deployment:** Architected a resilient, scalable cloud infrastructure using Docker, EC2, RDS, and S3 with fully separated staging and production environments.
- **Tech Stack:** Python, FastAPI, PostgreSQL, SQLAlchemy, React, TypeScript, Tailwind, AWS, Docker.

Independent Software & AI developer – *Independent Practice, Edmonton, AB* Sept 2025 – Apr 2026

Applied R&D period building domain-specific AI systems for Alberta's industrial sector:

- **AER Compliance Agent:** LangChain agentic system orchestrating 7 tools (ChromaDB RAG, equipment DB, email, calendar, maintenance logging) to execute autonomous compliance audits. Cut audit cycles from 2 hours to 30 seconds.
- **LLM Document Intelligence Pipeline:** Hybrid inference engine processing 1,000+ structured records concurrently across OpenAI, Anthropic, and local Ollama. 450+ records/minute with thread-safe rate limiting.
- **Marketing Automation:** n8n pipeline integrating Gemini and GPT-4 Vision — 200+ assets/day, 97.5% cost reduction vs. manual production.

Full Stack Software Engineer (Core Platform) – *Piko Digital Ltd., Edmonton, AB* May 2024 – Aug 2025

Software engineer responsible for the entire platform — microservice architecture, frontend, mobile, data layer, and operations:

- Scaled platform to 1,000+ daily active users through microservice architecture and full-stack ownership.
- Built real-time analytics dashboard aggregating 15+ data sources → 300% increase in platform intelligence.
- Automated JWT auth + RBAC user governance → 60% reduction in administrative processing time.
- Architected 50+ reusable React Native/TypeScript components for iOS, Android, and web → 40% faster dev.
- Mentored 3 interns, authored 20+ technical SOPs → 40% faster developer onboarding.

Technical Skills

- **Core Engineering:** React, React Native, TypeScript, Python, FastAPI, Java Spring Boot, PostgreSQL, REST APIs, GraphQL, Docker
- **AI & Data:** LangChain / Graph, RAG Pipelines, VectorDB, OpenAI, Anthropic, Tesseract OCR, ETL
- **Infrastructure:** AWS (VPC, EC2, ELB, RDS, S3, Route 53), Nginx, Alembic, CI/CD

Education

University of Alberta – *Master of Computing Science, Multimedia*

Sept 2023 – Apr 2025

GPA: 4.0/4.0 | Award: Graduate Community Engagement Award (Mar 2025)