Morteza (Mort) Mogharrab

Software Architect · AI Systems · Industrial Applications

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Professional Experience

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

Built the firm's AI-integrated engineering and operations platform from scratch, replacing file- and spreadsheet-based Microsoft 365 workflows with one cloud-deployed portal.

- **Enterprise AI Knowledge Base & Text-to-SQL:** Multi-modal ingestion pipeline (CAD, Excel, PPTX, PDF, Vision) with graph-based retrieval, LLM reranking and cited chat, plus a Text-to-SQL engine for multi-hop reasoning across relational and unstructured data. Cut document look-up from ∼**20 minutes to under 1 minute** per question.
- **Industry Intelligence Platform:** Monitors clients, competitors and projects via LLM web research and video summaries; delivers de-duplicated findings, executive briefings, an opportunity pipeline, trend detection, an entity directory and a RAG assistant with hybrid full-text/vector search. Replaces ∼**6 hours/week** of manual market monitoring.
- **P&ID Intelligence Copilot:** Combines deterministic DXF parsing and topology mapping with LLM agents to automate equipment extraction and process safety audits, reducing equipment-list extraction from ∼**3 hours to under 10 minutes** per drawing.
- **Automated Engineering Reports (DBM):** AI rewriting engine for Design Basis Memoranda plus an interactive Report Studio to generate, revise and export (DOCX/PDF) technical reports; first drafts in ∼**2 hours instead of** ∼**2 days**.
- **Procurement & Bid Automation:** Parses unstructured vendor proposals, extracts technical and commercial data, and automates bid-spread leveling, comparison and validation, cutting bid leveling from ∼**2 days of Excel work to under 1 hour** per package.
- **Operations Platform:** Tracks budgets, cost codes, field tickets, purchase orders, invoices and meeting minutes with real-time burn charts, replacing **a day of spreadsheet consolidation** with live dashboards.
- **Security & Cloud:** Microsoft SSO (Azure AD) with feature- and document-level RBAC; AWS deployment on Docker, EC2, RDS and S3 with separated staging and production environments.
- **Tech Stack:** Python, FastAPI, PostgreSQL, SQLAlchemy, Alembic, 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 run 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 at **450+ records/minute** with thread-safe rate limiting.
- **Marketing Automation:** n8n pipeline integrating Gemini and GPT-4 Vision, producing **200+ assets/day** at a **97.5% cost reduction** versus manual production.

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

Responsible for the entire platform: microservice architecture, frontend, mobile, data layer and operations.

- **Scale:** Grew the platform to **1,000+ daily active users** via microservices and full-stack ownership.
- **Analytics Dashboard:** Real-time view of **15+ data sources**, a **300% increase** in platform intelligence.
- **Auth & Governance:** Automated JWT auth and RBAC, cutting admin processing time by **60%**.
- **Component Library:** **50+** React Native/TypeScript components for iOS, Android and web; **40% faster** development.
- **Mentorship:** Mentored 3 interns and wrote 20+ SOPs; **40% faster** onboarding.

Technical Skills

Frontend & Mobile:	React, React Native, TypeScript, Tailwind
Backend & APIs:	Python, FastAPI, Java Spring Boot, PostgreSQL, SQLAlchemy, REST APIs, GraphQL
AI & Data:	LangChain / LangGraph, RAG Pipelines, Text-to-SQL, Vector Databases (Weaviate, Qdrant, ChromaDB), OpenAI, Anthropic, Perplexity, Tesseract OCR, ETL
Infrastructure:	AWS (VPC, EC2, ELB, RDS, S3, Route 53), Docker, Nginx, Alembic, CI/CD, Azure AD SSO

Education & Certifications

Master of Computing Science, Multimedia – University of Alberta — Sept 2023 – Apr 2025

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

Mitacs Innovation Leader – Mitacs — Issued Nov 2026