Tommie Clark
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PROFESSIONAL PROFILE

Data Science undergraduate with experience designing and deploying full-stack analytical systems, including retrieval-augmented generation (RAG) pipelines and computer vision platforms. Background in manufacturing operations and process improvement. Skilled in building data ingestion workflows, vector search architectures, ML pipelines, and cloud-deployed interactive applications.

TECHNICAL SKILLS

Programming: Python, SQL
Machine Learning: Regression, Classification, Tree-based Models, YOLOv8, Embedding-based Retrieval (RAG)
Data & Tools: pandas, NumPy, Supabase (PostgreSQL), OpenAI API, Git/GitHub
Deployment & Systems: Streamlit, Modal, Linux, Cloud Serving

PROJECT EXPERIENCE

USAA Fraud Intelligence RAG System — Applied Academic Project

- •Semantic Retrieval Architecture: Designed and deployed an embedding-backed RAG system indexing 4,337 regulatory and fraud-related documents using 1,536-dimensional vector embeddings for semantic fraud signal retrieval.
- •Adaptive Query Engineering: Implemented dynamic retrieval expansion (top_k scaling, deterministic backfill, min_results enforcement) to improve result consistency under sparse-query conditions.
- •Performance Optimization: Engineered cache lifecycle controls (12-hour TTL + persistent Modal volumes) to avoid repeated index rebuilds and reduce cold-start overhead.
- •Data Pipeline Integration: Built multi-source ingestion workflows (Federal Reserve, CFPB, BPI) with paginated complaint extraction up to 30,000 records and structured storage in Supabase (PostgreSQL).
- •Cloud Deployment: Delivered full-stack deployment (4 vCPU / 8GB runtime) with an interactive Streamlit interface for fraud monitoring and research workflows.

PPE Safety Detection Platform — Independent Project

- •End-to-End CV Pipeline: Engineered a YOLOv8 PPE detection system including model training (50 epochs, 640px, batch=16), batch inference, ETL output generation, and cloud-hosted UI delivery.
- •Modular System Design: Structured a 6-module codebase (~400+ LOC) separating training, inference, ETL processing, and violation logic for maintainability and reproducible experimentation.
- •Runtime Reliability Controls: Implemented multi-level fallback checkpoint resolution to keep inference stable across local and cloud environments.
- •Detection Data Logging: Persisted per-object detection metadata (filename, label, confidence, storage URL) to Supabase with integrated object storage for downstream analysis.
- •Cloud Deployment: Packaged lightweight inference weights (~5–6 MB) and deployed serving on Modal to support portable CPU and cloud inference workflows.

PROFESSIONAL EXPERIENCE

Process Technician — Owens Corning **Mar 2018 – Apr 2022**

- •Supported high-volume wetlaid nonwoven manufacturing operations in a continuous production environment.
- •Contributed to a process improvement initiative reducing chemical waste during changeovers, generating approximately $35,000 in annual cost savings.
- •Worked within TPM-based systems focused on process stability and operational consistency.

Maintenance Technician Trainee — Kurz Transfer Products **Apr 2022 – Feb 2023**

- •Assisted with preventive maintenance and troubleshooting of manufacturing equipment.
- •Coordinated vendor deliveries and inventory replenishment using SAP to support operational continuity.

EDUCATION

Bachelor of Science – Data Science
University of North Carolina at Charlotte
Expected May 2026