Tanay Jagadeesh

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Education

University of Waterloo   Waterloo, ON
Bachelor of Applied Science in Management Engineering (Software/Industrial Equivalent)   *Sep 2025 – May 2030*

Experience

Backend Engineer, Hands AI | *TypeScript, PostgreSQL, Python, SupaBase, LLM*   Toronto, ON
Data and ML Infrastructure   *Sep 2025 – Dec 2025*

- Contributed to the production RAG pipelines using Ollama embeddings and vector search to deliver personalized recommendations to **250+ signup users** across **500+ recipes**
- Built hybrid recipe parser achieving **80%** extraction success rate across blog and social media sources through **JSON-LD** structured data parsing with **GPT-4o-mini** fallback for unstructured content
- Fixed critical signup and shopping-cart reliability and data-leakage risks by engineering concurrency-safe TypeScript services across normalized transactional schemas

Data Engineer, Sephira Institute | *Python, SQL, FastAPI, PostgreSQL, ETL, LLM APIs*   Remote
ML & Analytics Platform Development Under University of Cambridge Prof. Roberto Foa   *Dec 2025 – Present*

- Built an LLM-powered sentiment analytics platform processing **20K+** daily observations across **32** countries using GPT-4 with automated chart generation
- Implemented a **7-category** guardrail system using regex pattern matching, rate limiting, and response sanitization to prevent data extraction and ensure compliance
- Integrated NewsAPI for real-time news correlation with sentiment trends across **40+** country mappings

Projects

Canadian Tech Job Market Analytics Platform | *Python, PostgreSQL, Streamlit, pandas, Plotly*   *Dec 2025*

- Engineered automated ETL pipelines ingesting **1500+ job postings** into PostgreSQL star-schema warehouses and running **6 analytical SQL models** (CTEs, window functions, percentiles) to compute real-time skill demand and salary benchmarks across **17 companies**
- Built a **4-page interactive Streamlit BI dashboard** with Plotly visualizations, dynamic filtering, and co-occurrence heatmaps analyzing **10+ job titles** and **8 core skills**
- Implemented scheduled refresh and analytics workflows generating **daily market trend updates**, salary estimates for **10+ roles**, and **19 unique skill-pair insights**, revealing SQL in **84%** of data engineering roles using JSearchAPI

Code Clash, Real-Time Competitive Coding Platform | *Next.js, Supabase, WebSockets*   *Jan 2026*

- Built a real-time 1v1 competitive coding platform with WebSocket matchmaking, opponent tracking, and synchronized match state serving **400+ trial users**
- Designed concurrency-safe PostgreSQL schemas with triggers, functions, and RLS policies to persist **3,500+ match sessions** across normalized tables
- Designed and implemented real-time ranking and matchmaking pipelines computing win rates, Elo-style ratings, streaks, and percentiles across **1,000+ competitive problem attempts**

Signature Forgery Detection System | *Python, PyTorch, torchvision, CNN, scikit-learn*   *Jan 2026*

- Built a CNN-based signature verification model achieving **81% accuracy** detecting forged signatures across **6000+ images** using transfer learning with ResNet-18 and a custom classification head
- Implemented data augmentation pipelines (rotation, scaling, Gaussian noise) and preprocessing to handle real-world signature variation, improving model robustness by **12%**
- Evaluated model performance using ROC-AUC (**0.94**) and confusion matrix analysis, optimizing decision thresholds to minimize false negatives for fraud prevention use cases

Technical Skills

Programming & Backend: Python, SQL, TypeScript, JavaScript, Microsoft Excel (VBA), FastAPI, PowerBI, Git
Data Engineering & Analytics: Azure, Databricks, Apache Spark (PySpark), Delta Lake, PostgreSQL, Supabase, Star-Schema Warehousing, CTEs, Window Functions, Streamlit, Power BI
Machine Learning & Analytics: PyTorch, scikit-learn, XGBoost, TensorFlow, pandas, NumPy, Matplotlib