Joey Dwonczyk

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AI Engineer

Mathematician with several years experience designing and implementing ML models and financial systems, now focused on LLMs, RAG, vision and multi-modal embedding in production. Over 10 years exp. of Python, SQL, and cloud infrastructure for scalable solutions (dynamic + load balancing + fail safe). ML Solutions deployed to AWS lambda production environments, particularly in financial services. *Preference for non-remote, but happy either way.*

Technical Skills

AI	:	Multi-modal RAG [5], Semi-automated prompt engineering, CNN/LSTM in small models, Recommendation Systems, Clustering [5]
Languages	:	**Python**, **Typescript**, **Dart**, C#, VB, Solidity / Rust
Frameworks	:	Node.js, **Flutter**, **React**, Firebase [3]
Libraries	:	Pandas, Dash, TensorFlow [3], PyTorch [3], Scikit-learn, OpenCV, FastAPI, Keras, OpenCV, Langchain [5], **HuggingFace**, YahooFinance, QuantLib, Web3Auth, Redux
Financial Models	:	CDS Pricing, Monte Carlo Simulations, PDE Solving, Vanilla Equity Options, Rate Swaps, OTC Eq. Options, IR Bonds, Inf-li Bonds, FX Swaps, Equity Basket Options
Cloud & DevOps	:	AWS [3] (EC2, S3, SES), **Docker**, GCP, Heroku [3]
Databases	:	Neo4j, SQL, MongoDB, **PostgreSQL**
Blockchain	:	Fuse Blockchains, Solidity Smart Contracts

Experience

Founder, Joey's Jars — Jan 2024 – Present
London, UK — *Remote*

- Launched and scaled a health-focused food tech business **successfully delivering over 200 jars / week** through both D2B and Shopify sales; overseeing operations, sales, and app development for corporate wellness.
- Shopify platform with custom features + fitness tracking app with smart fridge integration using a Flutter | Firebase | (GoogleAuth / OAuth) | Python FastAPI Back-end hosted on Heroku | CI CD Environment automated testing in git commit pipeline.

CTO, Founder, vegi — Summer 2022 – Dec 2023
Liverpool, UK — *Remote*

- Developed an eco-conscious debit card platform from scratch, featuring two PostgreSQL databases connected to a **NodeJS** back-end and a Sailsjs admin back-end. Built a cross-native Flutter (Dart) app for clients and merchants, integrating Ethereum layer 2 blockchain for payments. Designed real-time cashback algorithms using a Python FastAPI back-end hosted on Heroku. **Platform valued at £120,000 in December 2022.**
- Implemented computer vision and OCR technologies for product recognition, developing ML models using TensorFlow and PyTorch that achieved **90% accuracy in production** deployment (**AWS**).
- Dockerized complex Conda (**Python**) containers for machine learning algorithms and managed the entire AWS cloud infrastructure, lambda serverless functions, including S3, SES, and EC2 to host our PostgreSQL databases.
- Led the backend development with NodeJS and integrated Google authentication and experimenting with a Neo4j graph database for storing product embeddings.
- Responsible for communication of technology + payments infrastructure to all merchant clients to facilitate on-boarding and satisfy their technical requirements.
- Organised the second major fund-raise of £100K in end of 2022 building pitch assets and projections.

Senior Associate, Structured Equity Trading Desk — 2021 – 2022
River and Mercantile Derivatives (now Schroders Bank) — *London, UK*

- Analyzed complex financial datasets using Python and ML libraries (Scikit-learn, Numpy, Pandas) to identify patterns in interest rates and implied-volatilities, presenting internal cases for trade automation flows
- Developed proof-of-concept ML models for trade pattern recognition, demonstrating potential for automation in trading workflows

- Designed and executed 30+ structured equity strategies for pension schemes, balancing client risk preferences with market conditions, including hedging strategies and FX exposure management.
- Conducted risk management analysis that **reduced potential collateral shortfalls up to 99th percentile** and improved MTM calculation accuracy by adjusting pricing sheets to use latest quant pricing models.
- Automated client reporting processes, **reducing report preparation time by over 50% with less *human intervention*** making the servicing of an increasing number of clients possible for the existing team.
- Supported prospective client pitches by preparing decks and presenting structured strategies based on market insights and client needs.

Senior Associate, Quantitative Engineering Desk 2017 – 2021
River and Mercantile Derivatives (now Schroders Bank) *London, UK*

- Developed and maintained financial curve builders, **reducing valuation time by 30% and improving pricing accuracy by 20%** for bonds and swaps.
- Built and maintained bond valuation models, enhancing the VBA Excel add-in to reduce data retrieval time by 10% and adding more helper methods saving the FO team 10 hours weekly when creating new pricing sheets
- Enhanced swap leg pricing logic, decreasing processing errors by 60% for the new Swap Pricing engine and centralising all swap pricing methodology that had previously lived between spreadsheets and bespoke scripts.
- Implemented a SignalR streaming service in a web API to process real-time ticks from Bloomberg, rebuild financial curves, and stream updates to clients.
- Analyzed over 1 million data points using Python, improving risk assessment accuracy by 35% and informing strategic client decisions, using tools like Scikit-learn, Numpy, and Pandas.

EDUCATION

Cambridge Spark 2020
Certificate in Applied Data Science - Specialized in NLP Fine-tuning, Computer Vision and ML Model Deployment ***Distinction***

Fitch Learning 2019
Certificate in Quantitative Finance ***Distinction***

University of Warwick 2011 – 2015
Integrated Master of Mathematics and Statistics ***First Class Hons***

A-Levels 2011
*Mathematics **A***, Further Mathematics **A***, Physics **A***, French **A***

PROJECTS

Transcriby *Python, **LangChain, LangGraph*** Private Source

- Built an LLM agnostic user data owned application within WhatsApp and SMS to transcribe, query and automate media and messages from within messaging apps leveraging LangChain and agentic work flows using LangGraph.

ML Trade Pattern Analyzer *PyTorch, TensorFlow, AWS* Private Source

- Developed proof-of-concept ML system for analyzing trading patterns in financial markets using k-means & spectral clustering and Stochastic Block Model Community Detection
- Implemented data pipeline for processing market data and identifying potential trading signals
- Utilized AWS infrastructure for scalable data processing and model deployment

Basket CDS Pricer *Python, QuantLib, Cython* Source

- Built a sophisticated pricing model for basket credit default swaps (CDS), employing Monte Carlo simulations and PDE solving for accurate pricing and risk assessments.

Co-chef Recipe Recommendation System *Python + Langgraph* *Private Source*

- Combination of local/cloud LLMs; (instruct for scoring and ranking RAG); FAISS Embeddings => Langgraph to structure and research user requirements into recipe recommendations and instructions.

https://dwonczykj.github.io/cv/