Toby J. Wade

Sarasota, FL. 917-647-5048. tobyjwade@gmail.com. US and British Citizenship.

Experience Summary

Investment and Machine Learning expert with over 20 years of experience in equities, cryptos, futures, and currencies at funds, exchanges, and banks, specializing in alpha research, portfolio management, risk, and trading. Skilled in NLP, Large Language Models (LLM), generative AI, and Machine Learning for financial markets research. Research has been cited in the Financial Times, Institutional Investor, CNBC, and Yahoo Finance.

Professional Experience

New College of Florida

Assistant Professor of Statistics/Data Science, Director of the AI/Crypto Institute 08/24-present

- Teaching Masters of Data Science Students Deep Learning and AI, Machine Learning and Programming for Data Science.

Gemini (top crypto exchange led by the Winklevoss twins)

Head of Machine Learning (Director), Remote 02/22-08/24

- Reported directly to the Winklevoss twins managing a 20 person team of Machine Learning, Data Engineering and Analytics Engineers responsible for all of Gemini's machine learning, data and analytics efforts.
- Built a support and educational chatbot from conception to production grade utilizing a retrieval augmentation generation (RAG) with ChatGPT 3.5 as base large language model. Evaluating and benchmarked chatbot against using other LLMs such as Claude2, Llama2 and Falcon. In addition, benchmarked a fine-tuned model using GPT 3.5 from OpenAI. FAISS was used for the vectorDB combined with BGE for the text embedding matrix, Langchain library was used for prompt abstractions and financial advice/moderation guardrails were put in place. Built using python.
- Used GPT-4 for a news summarization/sentiment product. News articles sentiment was first computed using a fine-tuned BERT model to estimate correlations between sentiment and market moves. Articles containing the highest correlations were combined into a summarized paragraph including source attribution. Built using python via HuggingFace and OpenAI.
- Other core products include a predictive coin ranking system, a principal market making system, a BitcoinBuzz indicator, fraud detection and an NFT copycat image detection model. All built using python.

Bank of America (BofA), Global Research

Head of Primary Research and Predictive Analytics, New York, NY 09/18-02/22

- I spearheaded the development of innovative NLP alpha research, such as utilizing earnings call transcripts to detect evasiveness using a fine-tuned Word2Vec and analyzing BofA analysts' sentiment using LSTM. Primarily used python.
- Additionally, I led the launch of several groundbreaking research products powered by machine learning, including predicting high yield default rates using earnings transcripts using TF-IDF via SVM, using Glassdoor text to predict stocks using LSTM, and employing Industrial Momentum to forecast PMI. Primarily used python.

CCTrack Solutions ($100 million start up hedge fund)

Head of Data Science, New York, NY 09/16-09/18

- Developed an ensemble of machine learning models for trading. I utilized techniques such as markov switching, dimension reduction, regression, and time series analysis. Additionally, I created and managed a real-time trading system in Java while backtesting in python and matlab.

Grantham, Mayo, Van Otterloo & Co. (GMO, $70 billion multi-asset manager)

Trading Quantitative Trading Strategist, Boston, MA 06/15-05/16

- Natural Language Processing research linking text sentiment with high frequency jumps in foreign exchange spot data leading to nontrivial price prediction. In addition, I was responsible for volatility prediction and systematic macro alpha signal research. Primarily used matlab.

State Street Bank, Global Markets

eFX Quantitative Analyst, Vice President, Boston, MA 03/14-06/15

- Created real-time trading algorithms for pricing, hedging and signals for the eFX marketing making system using clustering and recursive least squares. Primarily used Java, matlab and python.

Millburn Corporation ($8 billion CTA hedge fund)

Trading Quantitative Analyst, New York, NY 06/12-03/14

- Collaborated in effort to transition models from a static based approach to an ensemble of machine learning models outperforming competitors by 10 percent per year for the last five years. Leadership role in creating short-term trading signals, risk management and algorithms. Primarily used R and linux.

Royal Bank of Scotland, Global Markets

Quantitative Analyst, Associate, London, U.K. 10/06-12/11

- Part of a #2 ranked cross asset quantitative research team using cutting edge statistical models creating portfolio of alpha strategies.
- Developed a novel trend following model using a Monte Carlo Markov Chain model across equities, currencies, commodities and rates futures. Used Matlab and C#.

American Express
Risk Manager, London, U.K. 05/04-10/06

- Created an early warning macroeconomic detection models for unemployment rate, bankruptcies and housing prices per country. In addition, extract insights from customer segmentation and default modeling. Used SAS.

Education

London School of Economics
Part time PhD in Statistics (completed), London, U.K. 10/18-04/24

- Thesis: Transformers vs. Tradition: Using Generative AI and Deep Learning for Financial Market Prediction. Using Claude2, ChatGPT, Roberta, Aspect Embeddings, LDA, LightGBM, Concatenated CNNs and LSTMs as primary models using python.

University of Oxford, Keble College
Masters of Philosophy in Economics, Oxford, U.K. 10/09-06/11
Thesis Distinction

- Thesis: Estimating, modeling and forecasting intraday currency volatility using high frequency data utilizing nonparametric kernels combined with autoregressive time series analysis creating a model called PHEAVY. Supervisors were Neil Shephard (current Chair of Statistics at Harvard University) and Kevin Sheppard.

University of Utah
Masters of Statistics, Bachelors in Finance and Economics, Salt Lake City, UT 10/99-05/04

Courses and Certifications

Coursera: Deep Learning Specialization
Statistical Machine Learning: Taught by Trevor Hastie and Robert Tibshirani.
Certification of Quantitative Finance (CQF) (portfolio optimization, derivatives, etc): Taught by Paul Wilmott.
Teaching experience: Taught introduction to Natural Language Processing at NYU.

Technical Skills

Languages: Python, Java, Matlab, R, Linux, SAS.
Systems: Bloomberg, Factset, Reuters.
Database: Hadoop, KDB, OneTick, FAISS vectorDB, SQL, Snowflake, Spark.
Cloud platforms: AWS, Sagemaker, Databricks, Amazon Bedrock, DataRobot (Automated ML).
Resource management: Containerization and orchestration via Docker and Kubernetes.
Model Deployment, versioning and performance logging: CI/CD pipelines, model versioning, Datadog for API log monitoring and Looker for model performance dashboards.
Python packages: TensorFlow, Keras, pytorch, FastAI, Gensim, scikit learn, numpy, pandas, langchain, NLTK, hugging face.
NLP, ML and genAI knowledge: Natural Language Understanding (NLU), LLMs, Transformers, ChatGPT, GPT, Claude2, LoRa, ULMFIT, BERT, ROBERTA, LDA, Word2Vec, Bayesian Methods, Monte Carlo Markov Chain, Gibbs Sampling, Neural Networks, Deep Learning, CNN, RNN, LSTM, Classical Machine Learning models.