# JOY TOLIA

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## SKILLS

Computing: Python (Advanced), Java (Advanced), q/KDB+ (Advanced), Matlab (Advanced), VBA (Advanced), Microsoft Excel (Advanced), LaTeX (Advanced), Bash (Intermediate), SQL (Intermediate), Git (Intermediate), C++ (Intermediate)

## WORK EXPERIENCE

**Auguration** - *Senior Quantitative Researcher*                      July 2021 - Current

· Researching equity market neutral and statistical arbitrage alpha signals
· Managing a team of researchers and developers
· Building and maintaining a graph based code structure using Java and Python
· Designing and developing the live trading system
· Built infrastructure for intraday trading signals including a tick market data service
· Running simulations on signals derived from custom regression methods. Investigating different transformations on raw data
· Conducting hyperparameter tuning for a multi period optimiser

**Mizuho** - *Quantitative Trader*                      June 2020 - July 2021

· Managing the eFX spot trading book
· Researching and analysing data to improve the eFX platform. This includes working with large data, backtesting, simulations, A-B testing, alpha signal generation, optimisation and markout analysis
· Categorising and assessing profitability and market impact of clients to help optimise performance of pricing groups
· Guiding the development team to improve the systematic market making algorithms by incorporating quantitative modelling
· Established a code base in Python and q, for quantitative analysis and research, allowing for better collaboration within the team
· Building a pricing engine for forwards and NDFs, to expand the product range within eFX
· Writing internal papers on recent developments in machine learning and applying it to our datasets to enhance our performance
· Created Symphony bots for notifications, such as loss, event, volatility and client alerts as well as for infrequent admin tasks, to increase productivity
· Made FIX applications to allow voice traders to automate intraday trading strategies

**Norges Bank Investment Management** - *Quantitative Trader*          October 2017 - June 2020

· Researched, developed and ran systematic standalone trading strategies for spot FX using Python and Matlab. Focusing on strategies with a holding period between hourly and monthly
· Traded 20 free floating currencies in spot FX for execution purposes for the whole fund
· Systematised the FX execution of the fund by building intra-day models balancing risk and transaction costs. Analysing internal order alpha profiles to help with trading decisions
· Experience with four different streams of strategies; standalone systematic, standalone macro discretionary, systematic execution and manual execution
· Helped manage macro discretionary positions using portfolio analysis and optimisation to reduce exposure to a range of risk factors
· Built a code base for backtesting hypotheses. This can be run over multiple asset classes and the run time is optimised using object orientated code, parallelisation and dependency networks. The output includes structured summaries to compare numerous parameters efficiently

- Wrote internal papers on topics such as the inverse of a covariance matrix and deriving its practical impact in Markowitz portfolio optimisation and linear regression
- Supervised an MSc university student on their thesis manipulating and visualising large (tick) data sets
- Working with alternative data such as events, commodities, equity indices and fixed income as well as sourcing external data from brokers and government institutions to help produce diverse signals
- Developed and continue to maintain a company specific Python library hosted on an internal Pypi server to give Python users an API to connect to databases, run statistical calculations, utilise automated email facilities, send orders, etc.
- Created a web based application in the cloud (AWS) using Python, MSSQL, MongoDB, q/KDB+ for transaction cost analysis utilising large data sets with interactive visualisation to help improve our trading decisions

**Systematica Investments** - *Quantitative Researcher* September 2016 - September 2017

- Researched and generated systematic trading strategies for futures and forwards using Matlab. Working with asset classes such as FX, commodities, equity indices and fixed income
- Procured macro data from a variety of sources to explore a diverse range of trading signals
- Built, implemented and maintained a market neutral portfolio using multiple trading signals for a collection of assets
- Maintained and expanded the code base to ensure the current trading systems are functional and efficient
- Presented relevant academic research and collaborating with colleagues on current models
- Conducted teaching sessions on Excel and VBA for colleagues. Contributing to the graduate recruitment by presenting at university events

**Royal Bank of Scotland** - *Rates Quantitative Analyst* September 2015 - August 2016

- Developed and maintained the C++ library for the Balance Guaranteed Swaps trading team
- Lead the development for an innovative and flexible trading platform to obtain fixed interest rates for many types of loans
- Worked in the corporate risk advisory team and conducted bespoke analysis to optimize corporate foreign exchange and interest rate risk exposures
- Developed and backtested signalling models for foreign exchange risk exposure hedging within Matlab
- Built an optimization tool within Matlab for client swap portfolios to optimize their CVA, FVA and capital charges
- Created a correlation tool using VBA and Matlab with multiple parameters to allow full flexibility for the user which analyses historical correlation over time

## EDUCATION

**Certificate in Quantitative Finance** - *CQF* January 2016 - August 2016

- Overall Mark: **98%**, Exam Mark: **97%**
- Received **Wilmott Award for Excellence** for best mark in final exam.
- Part time financial engineering program that covers a range of topics such as stochastic analysis, portfolio optimization, option pricing, Monte-Carlo methods, finite differences method
- Learning about modelling within different asset classes such as equities, currencies, fixed income, commodities and credit

**University of Warwick** - *First Class MMath in Mathematics* October 2011 - June 2015

- First Year: **78%**, Second Year: **84%**, Third Year: **81%**, Fourth Year: **90%**