JOY TOLIA

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SKILLS

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

WORK EXPERIENCE

Norges Bank Investment Management - *FX Trader* October 2017 - Present

- Researching, generating and maintaining systematic trading strategies for spot FX using Python and Matlab. Focusing on strategies with a holding period between hourly and monthly
- Creating long term discretionary positions using portfolio optimisation to reduce exposure to certain risk factors
- Systematising the FX execution of the fund by building intra-day models balancing between alpha, risk and transaction costs. Analysing internal order alpha profiles to help with trading decisions
- Created a web based application in the cloud (AWS) using Python, MSSQL, MongoDB with high availability for transaction cost analysis and visualisation to help improve our trading decision
- Created and maintaining company specific Python package to give Python users an API to connect to databases, run timeseries calculations, utilise automated email facilities, send orders, etc.
- Built the code for backtesting infrastructure over all asset classes, from the ground up. The run time is optimised using object orientated code, parallelisation and dependency networks. Produces structured summaries to compare numerous parameters efficiently
- Writing 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 a project analysing and visualising tick data working with 100s of millions of price data points
- Working with cross asset data such as commodities, equity indices and fixed income to help produce diverse signals to trade FX
- Trading 20 free floating currencies in spot FX for execution purposes for the whole fund

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* April 2016 - 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

Royal Bank of Scotland - *Structuring Analyst* September 2015 - March 2016

- 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
- Passed CISI level 3 certificates which include Regulations, Securities and Derivatives for Customer Controlled Function or Certified Person

University of Warwick - *Undergraduate Researcher* June 2015 - August 2015

- Researching stochastic integral estimators and adapting ideas from multi-level Monte Carlo methods
- Analysing academic papers with the aim of implementing both mathematical and simulation techniques
- Communicating technical concepts effectively, both when discussing ideas with colleagues and documenting progress. Working independently, organising a schedule and meeting self set targets

University of Warwick - *Mathematics Supervisor* September 2014 - June 2015

- Provided academic support by acting as the main point of contact for a group of undergraduate students
- Led weekly discussions, taught challenging content from key modules and guided students to develop strong mathematical reasoning
- Marked students' assignments, delivered prompt feedback and gave constructive criticism

Royal Bank of Scotland - *Sales & Trading Summer Intern* July 2014 - September 2014

- Rotated between the Rates Research and Custom Indices Structuring divisions
- Researched European bank bailouts to help predict future government borrowing
- Used swap rates of different maturities to forecast the short term bank policy rate
- Gained knowledge about Volatility Control products and backtested different portfolios using Excel
- Improved this analysis by building a Matlab script which was capable of data extraction and backtesting

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%**
- Relevant modules: Stochastic Analysis, Brownian Motion, Uncertainty Quantification, Data Assimilation, Matrix Analysis & Algorithms and High Performance Computing
- Fourth year project entitled Asynchronous Parallel Numerical Optimization. Utilised parallel computing in Matlab. Designed and implemented an algorithm for function optimization based on genetic algorithms
- Warwick Mathematics Society - contributed by composing revision guides for over 800 students, running LaTeX workshops and revision lectures for over 300 students. Warwick Poker Society - developed a new website and taught members about analytical strategies