Quantitative Research Specialist II Quantitative Research Specialist II Quantitative Research Specialist II - JP Morgan Chase London Market Risk QR US Work Experience Quantitative Research Specialist II JP Morgan Chase London Market Risk QR October 2018 to Present Quantitative specialist responsible for re-implementation of North American Merger Arbitrage portfolio equity specific risk VaR model, backtesting and model validation. ? Model comprised a double-clock stopping time implementation for deal break/completion for available time series with a fallback systemic market model proxy methodology. Calibration was via a simple statistical loss estimation parameter. ? Specific work involved re-implementing the existing spreadsheet model in python/c# and integrating trade portfolio and market data time series into the existing market risk system ? Impacted existing system to provide an extended specific stock time series universe mitigating the need for proxy calculations. ? Technical work in c# comprised full model implementation including model-specific simulation, payoff, instrument risk sensitivities, portfolio aggregation and regulatory svar/hvar calculations, as well as economic measure development of the VaR surface over different liquidity horizons and confidence intervals. Some further experimental work was done on extreme value estimates and tail risk measures to support internal quant research purposes. This included unit test, assembly test, framework integration and delivery for deployment. ? Technical work in python included integration of the model and underlying time series into the backtesting framework, revision of backtesting results to current, and presentation of these results in a combination of python and R. ? Documentation included model documentation and model validation python Quant Technical Lead HSBC March 2017 to 2018 Architectural/Technical Lead/Quant Developer role on large equity derivatives and hybrids valuation and risk trading system. ? Complete implementation of FRTB simple method analytics in c#/c++ sophis risque for the exotic equities desk. ? Specific work on convertible bond implementation details in c# for new trade representation and valuation workflow. ? Impacted existing system to provide heuristic basis for trade calculation data flow optimization in large portfolio swaps. ? Technical work in c# comprised a full FRTB simple model set of sensitivity and risk aggregation measures to regulatory requirements implemented as a post-processing layer against the daily sophis risque batch risk

results. ? Work involved hybrid c#/c++ development and risk regulatory quant skillsets and knowledge bases. c++ quant developer NYC Credit Counterparty Risk Morgan Stanley Senior November 2016 to February 2017 C++ implementation of CVA pricing simulation and collateral/aggregation/netting engine for all asset classes ? Specific work on trade-level attribution of previously aggregated/netted metrics ? Exposure to CCAR scenario modelling GARP Financial Risk Manager Certification Study Sabbatical May 2016 to November 2016 Completed levels I and II of the Financial Risk Manager certification with GARP. (Acquired FRM recognition) not slang and other prop GS tech Goldman Sachs NYC Equities Trading Technology September 2015 to April 2016 9/2015- 4/2016 ? C++ implementation of pluggable protocol models for rash/ouch/soup exchange simulator and client application module. ? Python implementation of database-backed exchange simulator and remote host allowing unit, functional and integration testing of low level protocols outside full institutional host arrangement. ? C++ Implementation of tibco rv based pluggable protocol for exchange simulation and client ? C++ re-implementation of various legacy trading application interfaces to latest gen pluggable protocol modules. ? Comprehensive unit, integration and functional testing per above pre-release. ? Miscellaneous code activity on legacy trading application stack GS core code in c++ (not slang and other prop GS tech) (OMA, CEPCore) ? Big Data experience in Java/Scala Hadoop related to strategic initiative towards centralized middle tier interfaces. Study Sabbatical - CFA Program June 2014 to June 2015 C++/C# Architect/Quant Developer Barclays Capital London Prime Brokerage January 2011 to April 2014 responsible for integration of existing prime brokerage application stack with an extensive tangasol coherence data grid supporting datasynapse HPC grid pricing/risking engines. ? Key deliverable comprised an adopted architectural design proposal for necessary re-factoring of existing horizontal applications to achieve a vertical application set levered onto HPC/tangasol grid-based paradigms whilst promoting existing code-reuse. Business goal - enable an integrated intraday portfolio view of price, risk, margin requirements and price of liquidity for the prime brokerage customer base. Specialist C++ (Linux) Nomura London Counterparty Credit Risk June 2009 to December 2010 role leading 4 quant devs toward re-architecture and re-implementation of cross-asset grid-based counterparty-credit risk

stack for eventual deployment on data-parallel gpu technology, with additional batch workflow data dependency-analysis optimization. ? Business goal - to reduce hardware scale by an order of magnitude, requiring massively improved workflow throughput. Specialist C++ HypoVereinsBank / Unicredit Munich Exotic Equity/IR Derivatives June 2008 to June 2009 Linux/windows) algorithmic monte-carlo project extending a distributed graph-based optimized framework to support significant graph fragment re-use semantics enabling implementation of new time-dependent stochastic volatility/Jumps/CDS models across all equity derivative instruments, with Sophis Risque integration. ? Integration with existing model calibration and market data interfaces. (Sophis Risque extension dll) ? Other projects - optimized complex monte carlo and related mathematical modeling techniques, inc test features related to preservation of stochastic and numeric stability, convergence testing, numerical regression/progression, cross-testing against closed form solutions, etc. ? Business goal - leverage existing monte-carlo system to a broader range of analytic models and instrument payoffs. Direct liaison Standard Chartered London FX/Commodities April 2007 to June 2008 4/2007 - 6/2008 ? C++/c# development role re-implementing commodities/FX monte carlo derivatives pricing and risking components and to utilize new cross-asset pricing framework. (Implementation lead role focusing on WPF/WCF and interaction with C++ library layer) ? Implementation responsibility for inference machine, marshalling and type presentation layers for C++ and C#/C++.cli interfaces. Design and implementation of new WPF/WCF service orientated pricing/risk architecture. ? Direct liaison with commercial desk management, desk quants and traders for product specification and requirements gathering/ scheduling/ satisfaction testing. ? Business goal - achieve a cross-asset pricing framework which integrated modularly into a STP system. Grid Architect/ Developer Barclays Capital London HPC Quant Analytics April 2006 to April 2007 migrating existing quantitative analytics internal products to the DataSynapse GridServer virtualized grid platform. Deep technical knowledge was required of the issues/risks/paradigm shift required to move to virtualized grid architectures whilst minimizing re-development effort. ? Quant Analytics workstream projects which were architected and delivered to the grid included:- (1) Eagle (Credit Risk) - A multi-feed processor providing valuation and exposure for the credit risk business.

The migration project involved re-developing a monolithic scheduler-based component architecture to facilitate adoption of distributed calculations at a far greater scale. (2) Sahara (Credit Deriv) - An end-of-day/intraday valuation engine based on IBM message queuing technology. Business goal - provide a proof of usability sufficient to support a partnership/purchase agreement with DataSynapse. Rabobank London May 2004 to April 2006 C++/c# development for cross-asset trade/deal capture and pricing analytics. ? Improved contentive design (parallel data/code) to provide minimal latency throughput including low level components in C++/managed C++ for framework reuse (e.g. bulk data loaders, policy-class designed thread-pools) ? Core development activity on the framework for low-latency feed processing of bond, bond futures and IR Futures products. ? The business goal was to migrate re-architected distribution and execution layer components onto DataSynapse grid. Specialist back London Stock Exchange London LMIL Market Price Messaging System April 2001 to April 2004 middle-tier data architectural design/development (inc dba function) for a low-latency c# distributed broad area network price messaging broadcast system. ? Emphasized low-latency, highly transactional market data/order book requirements for price messaging and order taking, and improvements to algorithmic design. (Agent/broker paradigm with extremely contentive data design) ? Design and implementation of data-access service layer (including implementation of selected O-R features within the middleware.) and component-database interaction for performance, integrity and serviceability. ? Complex features included Code-generated typesafe wrappers and custom partitioning with build tools for code-generated query rewrite implementations of partition pruning. ? Business goal was to integrate udp middleware with monolithic RDBMS technology under tight latency constraints. Various Investment Banking Technology Roles 11/1997 - 4/2001 (Details available upon request) Various Professional Project Finance/Engineering Roles 11/1993 - 11/1997 (Details available upon request) Education MSc in Finance University of York - York Bachelor of Commerce in 3 years University of Queensland The University of Queensland Skills Python, R, C

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