Python Developer Python Developer Quantitative Developer - Financial Engineering Services GE Brooklyn, NY Work Experience Python Developer Bank Of America - New York, NY June 2015 to Present Maintain and modify financial programs for proprietary applications libraries. Code, test and troubleshoot financial programs, mostly in UNIX, Windows and Linux, Oracle database and object oriented programming with design patterns and agile. Designed and wrote Python and C++ code to create Monte Carlo (XVA), Trees and Partial Differential Equations models. Model validation of equity derivatives: vanilla options, variance swaps and stochastic volatility derivatives. Applied and developed techniques of Model Validation to ensure that the hedging and derivative pricing models do what they are intended to do. Some of techniques used to model verification are deterministic models, seed independency, continuity testing, dependency testing, consistency testing and tracing. Wrote C++ code to compute the counterparty credit exposure for swaps and fixed income derivatives. Wrote C++ code to compute the price and risk management of fixed income derivatives. Designed and wrote object oriented application to sample data, to implement maximum likelihood and logistic regression models (LPDs, PD, LGD and EAD) credit models using python and C++. Developed financial applications to compute cash flows of securities such as bonds, swaps, repos, swaptions, caps and floors, total return swaps for trading. Designed and wrote code to build the unit interface of searching trades, cash flows and collateral using directed-acyclic.-graph (DAG) in Python. Agile methodologies were applied. Developed SQL queries and designed table schema. Unit testing in C++ and Boost test. Quantitative Developer Financial Engineering Services GE - Stamford, CT April 2014 to May 2015 Stress testing project. Conduct econometric regressions models on Matlab in order to define load, price and capacity factor for different regions in USA. Estimate of oil and gas volatilities, and the extent to which they have changed, and also compare implications of the random walk and mean reversion processes price information. C++/ Python developer Bank of America - New York, NY March 2013 to April 2014 Code, test and troubleshoot financial programs utilizing the appropriate hardware, Oracle database and object oriented programming with design patterns. Hands on boost and Python libraries (Quartz). Designed and wrote an object oriented application to data manipulation and statistical

estimation using Monte Carlo simulation and Python. Developed financial applications like securities trading, order management systems, Risk Management and Portfolio Management. C++ developer NYU - New York, NY June 2011 to December 2012 Developed a tool to evaluate each of the components of a credit default swap (Visual C++ environment). Conduct Value at Risk analysis for futures trading strategies. Computed fixed-income securities cash flows using Monte Carlo Simulations. Focused on new regulation such as the Dodd-Frank Act for more precise valuation methods to central clearing of standardized OTC derivatives Senior Quantitative Analyst - Dynamic Hedging Department AXA Equitable - New York, NY August 2005 to May 2011 Developed hedging strategies to mitigate the risks embedded in variable annuity guarantees using futures, FX options, and structured products. Priced FX options and structured products such as swaps, variance and volatility swaps, total return swaps, swaptions, barrier, binary, and Asian options. Valued market-to-market OTC products: swaps, total return swaps and swaptions. Developed independent models for comparison with those under validation. Completed model reviews using MATLAB, VBA, Python, Visual C and C++. Applied back-testing alternative models to evaluate and compare the performance with historical simulations using Visual C++ API and XLLs with VBA. Communicated key findings with trading, front office model developers, product controllers and risk managers. Developed calibration models of interest rates using different methodologies of optimization in Visual C++ API and XLLs with VBA. Build the implied volatility price surface as well as build the risk-free curve for discounting and forecasting. Trading and Operations Managed an account of 10 billion dollars and trade between 300MM and 800MM per week. Develop proprietary hedging and trading strategies using Excel/VBA, Visual C++ and Bloomberg API. Hedged the long term put option value using domestic and foreign futures contracts, options, swaps, total return swaps, variance swaps and swaptions. Calculated P&L attribution, return analysis and portfolio summary statistics. Python Developer Pemex Gas & Petroquimica Basica - Ciudad de M xico, D. F. July 1995 to May 2002 Risk Research Modeler Measured, monitored and hedged the risk in natural gas prices using different position risk profiles. Simulated geometric Brownian motion, the mean reversion process with jumps using VBA - risk neutral and the real probabilities. Created risk neutral simulations for derivatives

pricing and real simulations in order to compute Value at Risk and to hedge the risk using VBA Education Columbia University - New York, NY 2012 Master of Science in Statistics Oregon Health & Science University - Beaverton, OR May 2006 Master of Science in Computational Finance OGI School of Science and Engineering September 2003 Master of Science in Economics Mexico Autonomous Institute of Technology - Ciudad de M xico, CDMX January 1994 Bachelor in Actuary Science National University of Mexico - Ciudad de M xico, CDMX August 1991 Additional Information TECHNICAL SKILLS VBA, C/C++, Java, Python, MATLAB, S+, SAS, R, XAML, UNIX, Windows and Pro* C Intex and Bloomberg

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