**Jichen (Becks) Wu**

70 Greene St, Apt 1909, Jersey City, NJ, 07302 | becks05077@gmail.com | (217)418-8819.

# PERSONAL INFO

# Permanent Resident of the United States

# Programming: C/C++, Python, C#, Linux, Bash, Javascript, SQL, VBA, R, Matblab, Java, PHP, HTML, css, Git, SVN

# Coursera Certificate: Machine Learning, Neural Networks and Deep Learning Specialization (5 courses)

# Quantitative: Machine Learning, Regression, Simulation, Optimization, Time Series Analysis, Derivative Pricing, Risk Management, Linear Algebra, Probability/Statistics, Option Trading

# EXPERIENCE

## S&P Global New York, NY

***Quantitative Developer*** May 2019-Present

* Implement production code for machine learning probability default model and credit model served as Capital IQ platform back-end program on both Windows and Linux platform used by worldwide S&P clients
  + Process and standardize model parameters from quant researchers, and generate configuration files for production using Python/Matlab
  + Develop production interfaces and implementations in C++ using OOP techniques for machine learning (regularized logistic regression, k-means algorithms) credit quantitative models covering public and private companies across 220 countries worldwide
  + Create build scripts on Linux platform using bash script and Windows platform using batch script
  + Build Java driver to read configuration files using S&P Java library, call credit quantitative model C++ dll build, and obtain model outputs from C++
  + Organize meetings with quant researchers to get the most recent research results and updates for potential quantitative model implementation, and read white papers, technique documents, model specifications provided by researchers
  + Document production code input and output structure using LaTeX
* Maintained S&P team C++ quant library including modified existing model classes in C++ code and changing build configuration in CMake
* Successfully lead several financial quality assurance projects with quant researchers and IT developers for unit testing machine learning credit model production code before Capital IQ releases
  + Automate code update processes from SVN repositories for quant researchers using bash/batch script, improving team efficiency and accuracy
  + Create test driver in Matlab/Python by calling research codes, generating random test data from S&P Xpressfeed Database, calling C++ production code, obtaining and comparing quantitative model outputs, ensuring production version output being consistent with research version
  + Organize meetings with quant researchers to display the usage of test driver and track the entire testing process within the whole team
  + Assist IT developers to integrate production quantitative model C++ dll into Capital IQ back-end service on different platforms
  + Launch model releases and represent the team to present model development process, model input and output structure, differences between new model and existing model to product management team and senior management
* Worked with multiple geographically distributed teams (London UK, Singapore, Hyderabad India, Shanghai China) including research teams, product management team and IT teams on development, testing and support teams on day to day basis

## Equiti Capital West Palm Beach, FL

***Financial Engineer/Developer*** Mar 2017-May 2019

* Designed and built FOREX market orderbook based on FIX protocol from liquidity providers including Bank Dealers and Hedge Fund using Python, integrating data via SQL query and orderbook visualization
* Implemented connectivity to Exchange FIX API using in C++/C# using OOP and concurrent programming techniques
  + Built FIX engine for Pricing and Dropcopy to receive live tick price and trading information for the whole team and store data on local and Mysql database
  + Launched new application via FIX for trading operations team to send price as provider and to improve expiration procedures to expire future positions on different trading platforms
* Lead the team to develop both Front-end tool (javascript, jquery, html, css) and back-end programs(Python, C++, C#) for trading teams and trade support teams by connecting MetaTrader API and provider RabbitMQ API.
  + Got raw data from providers API (Soup, Restful), clean, and process data, then displayed key parameters/exposure on web dashboard and built alert system if some parameters/data go wrong
  + Built a stable markup modification system to allow trading team to dynamically change markup, schedule markup before news event, and apply maxspread to prevent tick prices spike
  + Created tools for trade support team to easily update product session times, bulk edit margin, accounts, groups and symbol settings, making the team more effective and reduce operational risk
  + Constructed the Back-up Feeds Failover scheme for the whole teams to automate the detection if any providers have streaming issues and switch back-up feeds when needed, reducing the response time considerably
  + Developed swap program to apply swap rates for all client’s positions on daily basis
* Responsible for reconciling positions between different liquidity providers using Python including trade-by-trade reconciliation, open trade reconciliation and give-up reconciliation
* Developed in Python to generate daily P&L report for groups of accounts under different providers
* Collaborated with quantitative analysts, research market microstructure and orderflow then compiled multiple trading reports including key attributes by using python
* Set up the framework for the team using C++/C# to synchronize data between different trading platforms
  + Mapped logins between different platforms based on customized rule set by providers
  + Automated to synchronize balance, free margin, position, account settings, provider settings
* Trained machine learning and deep learning model to predict forex tick price in Python and tuned hyperparameters to boost performance using Python
* Coached different teams on worldwide offices to the use of tools, maintains programs, add new features when needed.
* Worked with multiple geographically distributed teams (London UK, Dubai UAE, Amman Jordan) on development, testing and represent the team to discuss project progress and requirement with company management and project communities

## PricewaterhouseCoopers Beijing, China

***Financial Intern*** Jul 2016–Aug 2016

* Worked with risk team to identify and assess the potential market risk, liquidity risk and credit risk that client faced by analyzing its portfolio’s attribution and risk profile, such as key factor exposure, security bid ask spread, counterparty risk, etc.
* Created tools to standardize and analyze data by using R, MySQL and VBA programing to assure the types and amounts of currency, and accounts of companies from banks being consistent with companies’ accounts

## CME Group Chicago, IL

***Machine Learning Practicum & Project Manager*** Jan 2016-Jun 2016

* Led the team to perform algorithm model training and risk factor analysis on limit order books and trade records of high frequency crude oil futures and Emini futures
* Merged data in Python to generate 76 attributes including average bid and ask price, volume imbalance, weighed book price, time lag trade volume, etc. to prepare model training
* Modeled high frequency market via various machine learning models (logistic regression, Neural Network, SVM, Decision tree) in C++, Python & R to understand market pattern and make predictions market trends
* Backtested all training models in the test set with real high frequency data and achieving 86% accuracy
* Reimplemented and improved iceberg order detection algorithms to identify iceberg orders
* Summarized the weekly progress of the team and wrote weekly technical reports to CME supervisors

# EDUCATION

## University of Illinois at Urbana Champaign Dec 2016

***Master of Science, Financial Engineering*** GPA 3.72/4.00

Coursework: Financial Computing; Stochastic Calculus; Risk Management; Option Trading; Financial Derivatives

**University of Colorado, Denver** May 2015

**China Agricultural University** GPA 3.78/4.00 (Top 5%)

***Bachelor of Arts in Economics* / *Minor in Mathematics***

**HONORS & Leadership**

**Honors**: China Agriculture University First Class Honors Scholarship and Dean Honors Scholarship (Top 5%)Nov 2014 University of Colorado Denver of Dean First Class Honors Scholarship Nov 2014

## Algorithm Option Trading Strategy showcase Chicago, IL

***Team Leader & University Representative*** Dec 2015-Jan 2016

* Selected as part of the university to design trading strategies and presented to top fund and prop trading managers
* Invented and backtested option trading strategy based on real and theoretical volatility
  + Calculated real time implied volatility by Black-Scholes model via Newton-Raphson Method in C++ and VBA
  + Modelled the Emini S&P 500 futures volatility to perform prediction by GARCH & Neural Network Model

# PROJECTS

**Trading Strategy Risk Analysis** May 2016

* Utilized Python/Matlab to calculate portfolio expected shortfall & VaR using Monte Carlo and Delta Normal method
* Analyzed the potential market impact of Brexit and stress tested a portfolio with fixed income and equity produc ts
* Designed and developed risk factor models by using principal component analysis

**Option Pricing in C++** Mar 2016

* Priced American, European, Asian in C++ using Binomial and Trinomial model via recursion, Monte Carlo Method
* Employed Numerical Scheme to discretize Black Scholes PDE to price vanilla European call and put via Explicit Finite Difference Method, Implicit Finite Difference Method, Crank-Nicolson Method