

Adrian Ng MSc.

Seeking Junior-Level Data Engineering Opportunities

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SUMMARY

I am a Computer Science graduate passionate about Data Engineering. I seek opportunities that further my growing experience in *Java* – which I have used in numerous academic projects ranging from the implementation of financial models to large-scale data processing with *Apache Hadoop MapReduce*.

Prior to postgraduate study, my expertise was in *SQL development* focusing on the implementation of CRM segmentation processes for a number of clients including: *Virgin Media*, *TUI*, *UPC*, *MSD*, *Volkswagen*, *KwikFit*. In my role as a Data Analyst at *Manchester City FC*, I implemented end-to-end data pipelines (ingress, ETL, data cubes) for use in reporting dashboards. My strengths in this role were more technical than analytical – which leads me now to pursue a career in programming.

EDUCATION

- **Master of Science in Data Science and Analytics** with Distinction
Department of Computer Science, Royal Holloway, University of London Sept. 2016 – Dec. 2017
- **Bachelor of Engineering in Mechanical Engineering** Upper Second Class with Honours
School of Engineering, King's College London, University of London Sept. 2007 – July 2010

JAVA PROJECTS

- **Implementation of Value at Risk (VaR) measures in Java** (<https://adrian.ng/java/var/>) (<https://github.com/Adrian-Ng/VaR>)
This dissertation project implemented various approaches to estimating *VaR*, a measure of risk. These are: *Model Building*, *Historical Simulation*, and *Monte Carlo Simulation*. In addition, the following approaches to estimating market variance/volatility were implemented: *Equal Weighted*, *Exponentially Weighted Moving Average*, and *GARCH(1,1)*.
 - **Object Oriented Design**
As we have a number of approaches to estimating both *VaR*, *variance* and *volatility*, object oriented techniques and patterns were implemented.
 - **Concurrency**
The *Monte Carlo* approach generates a large number of random walks, which can take a long time to fully execute in series. I used Java's concurrency API's to write a highly efficient solution.
 - **Data Ingress**
To test a hypothetical investment portfolio (stocks, options, deltas), real-world market data was sourced using the *Yahoo Finance API*. A distribution of historical daily price changes was computed and used to estimate model parameters.
- **Option Pricing** (<https://adrian.ng/java/options/>) (<https://github.com/Adrian-Ng/OptionPricer>)
This project implements three approaches to estimating option prices in Java: *Monte Carlo simulation*, *Black-Scholes equations*, and *Binomial Trees*.
Apache Commons Math API was used to deal with some probabilistic assumptions.
- **Data Mining with Hadoop MapReduce** (<https://github.com/Adrian-Ng/HadoopEnron>)
A number of *MapReduce* applications were written in Java with a variety of purposes including extracting the communications network from the *Enron Corpus*, a large dataset of emails, or aggregation of Twitter data. Applications were exported and executed on *Hadoop* clusters (both single node and distributed). Input/Output datasets were stored in HDFS and accessed via `hadoop fs` commands.
A subsequent exercise was undertaken to minimise the verbosity of these *Hadoop MapReduce* applications by translating them to *Scala* for use in a *Spark REPL*.
- **Java 8 Streams with financial data** (<https://adrian.ng/java/yahoofinance/#stream>)
A small exercise involving the use of *Java 8 Streams*. Processing real-world financial data to return *mean* and *equal-weighted variance* of some market asset.
- **Google PageRank**
This is the implementation of Google's *PageRank* algorithm. I simulate the behaviour of someone browsing a series of webpages by computing a transition matrix from an input graph and mixing a Markov Chain.

PROFESSIONAL EXPERIENCE

- **Manchester City Football Club** Euston, London
Data Analyst – Fan Relationship Management *Jan. - July 2018*
 - **New York City FC Project**

I took ownership of this project to integrate *NYCFC's* transactional and demographic data with *City Football Group's* data-warehouse. This six-month project involved many phases including: discovery, engineering, and analysis. Data came from multiple external sources each with unique schema: *NYCFC*, *Ticketmaster* *Salesforce*, *Major League Soccer*.

 - * **Data Pipeline**

I implemented a data pipeline to ingress data from a number of distributed *SQL* databases. This process was encapsulated in *stored procedures* which used appropriate DML & DDL (*OPENQUERY*, *MERGE*) for efficient ETL. This pipeline replaced the slower and more complex *Informatica* solution.
 - * **Data QA**

For QA I built an aggregated view to compare the distribution of *NULL* values. To store these analyses, I made use of *Data Cubes* which minimised bandwidth across *CFG's* distributed databases and improved user experience when exploring these datasets in a *Tableau* front-end as all possible aggregation had been performed up-stream.
 - * **Mentoring**

As part of this project, I was dedicated to mentoring a junior colleague remotely in New York. I organised weekly workshops to teach basic DML and more advanced DDL involving process encapsulation and automation. Additional material on my website helped supplement these workshops.
 - **GDPR Preferences Integration**

In preparation for GDPR, this project involved the refactoring of several critical production processes to integrate a *customer preference*. I worked with developers to test and produce an automated process to merge customer preferences seamlessly into the analytical and CRM databases.
 - **Customer Lifetime Value**

I provided data preparation (data extraction, feature selection) for modelling customer purchasing and drop-out behaviour. Model selection, *logistic regression*, *Beta-Geometric/Beta-Bernoulli*.
- **ITG Creator (Digital Marketing Agency)** Westminster, London
Senior CRM Campaign Executive – SQL Development *Dec. 2013 - Sept. 2016*
 - **Virgin Media Segmentation Process**

Built an end-to-end segmentation process (data ingress + config file = segmentation data). Close coordination with account executives Innovative use of *XML* + dynamic *SQL* + *OPENQUERY* resulted in efficient data fetching from remote server.
 - **Volkswagen New Client Onboarding**

Work assessment group Testing Mobile and Email CRM Efficient approach using recursive query for regex
 - **TUI Content Redesign**

Three-month project. Close liaising with client. Integration of new *HTML* from client into existing system. Ensuring design is reactive. Integrating *SQL* table with *HTML* content dynamically using robust *TCL* scripts to handle multiple design configurations.
Efforts on this project were recognised by client.
 - **Soft Skills**
 - Attended inter-departmental work assessment groups and advised on work specifications.
 - As senior team member, served as point of contact for clients and colleagues looking to resource our team.
 - On occasion I held responsibility for resourcing and managing the team's workload using *Jira*.
- **Seatwave (now Ticketmaster)** Moorgate, London
Marketing Analyst Intern – Commercial Team *May 2013 - Dec. 2013*
 - **Basic SQL**

In this position I gained my first experience writing database queries in *SQL Server Management Studio*. With basic understanding of *DML* and *DDL*, I was able to query the ticketing and customer databases to extract data for warehousing, analysis, and CRM segmentation.

TECHNOLOGIES

- **Languages:** Java 8, T-SQL
- **Software:** IntelliJ IDEA, SQL Server Management Studio, Git, Jira, Maven