Adrian Ng MSc.

Seeking Junior-Level Data Engineering Opportunities

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Profile

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 accomplishments in this role were actually 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: *Model Building*, *Historical Simulation*, and *Monte Carlo Simulation*. Approaches for variance/volatility estimates were also 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.

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 differing schema: *NYCFC*, *Ticketmaster Salesforce*, *Major League Soccer*.

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

* **Data Cubes**
  I used an aggregated dataset to compare the distribution of `NULL` values. These analyses were transformed to *Data Cubes* to pre-compute every possible roll-up/drill-down. As such, bandwidth was minimised across our distributed servers and need for real-time computation in *Tableau* front-end was eliminated, resulting in improved user-experience.

* **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 with a goal toward self-sufficiency in writing database queries and working with stored procedures. Additional material on my website helped supplement these workshops.

- **GDPR Preferences Integration**
  I worked on the integration of a GDPR preference stream into our *SQL* and *Salesforce* databases. This required the creation of a new pipeline and the refactoring of numerous processes downstream.
  Working with the development team, I provided specification and UAT testing. Using primary key constraints, clustered indexes, triggers and `MERGE`, I was able to build an efficient, automated process with relational schema.
- **Customer Churn Model**
  I contributed datasets and assisted Data Scientists on feature and model selection. In particular, looking at *logistic regression* and *Beta-Geometric/Beta-Bernoulli* model in R Studio.

- **ITG Creator (Digital Marketing Agency)** Westminster, London
  Senior CRM Campaign Executive – SQL Development *Dec. 2013 - Sept. 2016*

  - **Virgin Media Segmentation Process** (https://adrian.ng/SQL/cte/Recursion/ (https://adrian.ng/SQL/misc/openquery-xml)
    I built an end-to-end segmentation process in *SQL Server Management Studio*. This involved implementing a highly flexible and fast bespoke import tool around `BULK INSERT`. Remote server queries (`OPENQUERY`) made use of `XML` to effectively `INNER JOIN` local and remote tables resulting in speed and minimial resource use on a busy live server. Recursive queries were used to implement a solution (similar to `flatMap()` in *Java 8*) for efficient *regex*.

  - **Volkswagen Client Onboarding**
    I worked with `.NET` developers and project managers to bring Volkswagen on-board as a new client. This required implementing a new segmentation process for broadcasting email *and* SMS. In addition, I provided schema specification to developers so that the output data could be ingested by their data warehouse.

  - **TUI Content Redesign**
    I collaborated closely with the TUI client during a three-month project to integrate and QA new `HTML` content, replacing the existing solution for *Thomson* and *First Choice* mailings. `TCL` scripts were used to query `SQL` data and merge `HTML` dynamically. 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