## Jordan Bell

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## Business Intelligence Developer

Experienced Business Intelligence Developer with a Master of Science in Mathematics, specializing in data pipeline development and geospatial and time series data analysis. Exceptional at bringing order to disorganized data assets, producing top-quality business intelligence dashboards, creating/evaluating/deploying machine learning models, and with technical communication and documentation.

### Key Skills

- Data cleaning and engineering
- SQL data pipeline development
- Database design and administration, data documentation and stewardship
- ETL
- Business intelligence dashboards
- Machine learning
- Classical time series analysis (ARIMA, etc.)
- Geospatial analysis
- Linux systems administration
- Computer networking
- IT support
- Technical training (developing and delivering)

### Professional Experience

**Donor Compass, Toronto, Ontario, Canada (Remote)**
Business Intelligence Developer, November 2023 - February 2024

- Facilitated secure data transfers with clients, focusing on optimizing data fields and filters for enhanced processing efficiency.
- Pioneered the transformation of raw data into actionable insights using advanced data manipulation and engineering techniques.
- Innovated and maintained PowerBI dashboards, integrating client data with scoring algorithms to illustrate donor propensity.
- Led the modernization of data sharing infrastructure from traditional VPN and Samba sharing to Citrix ShareFile, significantly improving security and accessibility.
- Transitioned the legacy scoring engine to a virtual machine environment, managing configurations for PHP, Redis, MySQL, and Liquibase.
- Overhauled client data management systems, establishing systematic databases and assuming the role of database administrator.
- Employed Python and pandas for efficient data cleaning, complementing and enhancing SQL-based data processes.
- Utilized PostgreSQL for robust database management, handling large-scale datasets with a focus on accuracy and speed.
- Proactively addressed and resolved VPN and network-related issues, ensuring smooth and uninterrupted operations.
- Left a strong impact in a short tenure before the company's insolvency; received commendation from manager, available for reference.

**Canadian Tire, Toronto.**
Data Science Associate, June 2022 - August 2023

- Orchestrated the integration of geospatial census data with Environics data, linking regional characteristics to surrounding Canadian Tire stores by postal code to inform strategic business decisions.

- Developed a sophisticated SQL data pipeline to produce a normalized dashboard for monitoring dealer participation in promotional deals. This involved complex windowing functions and time span standardization using step functions for variable deal lengths, facilitating real-time and historical analysis.
- Implemented a dynamic OLAP database view that enabled stakeholders to interactively explore dealer behaviors through a step function graph, revealing patterns in dealer participation and purchasing thresholds throughout the duration of deals.
- Created pivot table functionalities for the dashboard, allowing for customizable data extraction and direct querying for user-specific insights, with an option to export data to Excel for further manipulation.
- Developed store similarity metrics.
- Collaborated with visual merchanidizing team converting store aisle planograms to new "Tetris" system.

**Consilium Crypto, Toronto.**
Data Science Intern, January 2019 - April 2019

- Innovated feature engineering methods for time series data by transforming traditional models to facilitate classification and regression analysis, pioneering the use of logistic regression for predicting day-to-day movements in Ethereum prices and volumes. -Conducted in-depth analysis of Ethereum data across multiple exchanges and blockchain metrics, focusing on domain-relevant temporal patterns to inform model features.

**Jordan Bell Tutoring, Toronto.**
Mathematics Tutor, January 2021 - June 2022

**University of Toronto, Toronto.**
Mathematics Course Instructor, April 2013 - April 2017

- Mentored students and developed course materials.
- Organized teaching assistant duties, time allocation, and preparation of materials for use in tutorials.
- Instructor for multivariable calculus, ordinary differential equations, and linear algebra courses, as single instructor and as part of multiple section courses (first and second year courses with versions for different programs).

**University of Toronto, Toronto.**
Mathematics Teaching Assistant, September 2009 - April 2013

- 1st year courses: calculus for engineers, computer science, biology, and math specialists (separate courses), and linear algebra for engineers and computer science
- 2nd year courses: mathematical writing (essay marking), linear programming, ordinary differential equations for computer science and for math specialists (separate courses)
- 3rd year courses: Complex analysis, functional analysis, group theory, partial differential equations, dynamical systems
- 4th year courses: Nonlinear optimization

## Education

**Graduate Certificate**, Analytics for Business Decision Making (SAS based program), George Brown College, Toronto

**Master of Science**, Department of Mathematics, University of Toronto, Toronto

**Bachelor of Mathematics**, Mathematics, Carleton University, Ottawa. University Medal in Mathematics

## Languages

- SQL (MySQL, PostgreSQL, Hive, Spark, BigQuery, Oracle, Teradata)
- NoSQL (Redis, MongoDB)
- Python
- Bash scripting and CLI tools (awk and sed for text processing with regex, gnuplot for data plotting, ImageMagick for image manipulation, ffmpeg for video editing, GDAL for GIS transformation)
- R, SAS, Excel, PowerBI DAX and Power Query M
- Automata theory and regular expressions, relational algebra.

### Software and Platforms

| Software | Platforms |
|---|---|
| Hitachi Pentaho | Amazon S3 |
| Dataiku | Microsoft Azure |
| Talend | Google Cloud Platform |
| KNIME | Databricks |
| PowerBI | Cloudera |
| Tableau | Teradata |
| MicroStrategy | Oracle |
| ArcGIS, Mapbox, CARTO | Elasticsearch |
| Excel, Google Sheets | Datadog |
| git, SSH, PGP | Redis |
| Docker | Google Analytics |
| VMware, Virtualbox | Atlassian Bitbucket, Confluence, Jira |
| Microsoft Teams | Citrix ShareFile |
| OpenVPN, pfSense | |

### Python Libraries Working Experience

- **Data manipulation**: NumPy, pandas, PySpark, Dask, imageio, librosa
- **Data modeling**: SQLAlchemy, Pydantic, erdantic
- **Visualization**: Matplotlib, Seaborn, Graphviz
- **Regression, classification and clustering**: sklearn, scipy.spatial
- **Deep learning**: Keras, TensorFlow, PyTorch
- **Time series analysis**: statsmodels.tsa, sktime, pmdarima, tsfresh, scipy.signal, scipy.fft
- **Text processing**: re, sklearn.preprocessing, sklearn.feature_extraction, automata-lib, spaCy, NLTK, Gensim
- **Geospatial data**: GeoPandas, Rasterio, xarray, h3, Cartopy
- **Bayesian estimation**: ArviZ, PyMC3,
- **Numerical mathematics**: scipy.integrate, scipy.optimize, Theano
- **Symbolic mathematics**: SymPy

### Selected Personal Projects

#### USCG NAIS Data Project

- Analyzed AIS data to estimate shipping activity.
- Created visualizations for maritime traffic data.
- 1-minute frequency AIS message data for 2022 for all vessels in US coastal and inland waters (2.9 billion entries)
- Feature engineering for sessionizing vessel activity

#### Canada 2021 Census by Forward Sortation Areas

- Conducted clustering and regression analyses on census data.

### Selected Online Courses

- Teradata - Intro to Advanced SQL Engine 17.10
- Datadog Fundamentals I
- Talend Data Fabric Explorer
- Containers & Kubernetes Essentials by IBM
- Modern Big Data Analysis with SQL by Cloudera
- Microsoft Azure Data Fundamentals DP-900 Exam Prep by Microsoft
- AWS Fundamentals by Amazon Web Services
- Google Data Analytics Certificate
- Open Source Software Development, Linux and Git Specialization by The Linux Foundation

**Selected Publications**

Bell, Jordan, and Viktor Blåsjö. "Pietro Mengoli's 1650 Proof that the Harmonic Series Diverges." Mathematics Magazine 91, no. 5 (2018): 341–47. https://doi.org/10.1080/0025570X.2018.1506656. 2019 recipient of Carl B. Allendoerfer Award, MAA

Andrews, George E., and Bell, Jordan. "Euler's Pentagonal Number Theorem and the Rogers-Fine Identity." Annals of Combinatorics 16 (2012): 411–420. https://doi.org/10.1007/s00026-012-0139-4

Bell, Jordan. "A Summary of Euler's Work on the Pentagonal Number Theorem." Archive for History of Exact Sciences 64, no. 3 (2010): 301–73. https://doi.org/10.1007/s00407-010-0057-y

Bell, Jordan, and Brett Stevens. "A Survey of Known Results and Research Areas for $n$-Queens." Discrete Mathematics 309, no. 1 (2009): 1–31. https://doi.org/10.1016/j.disc.2007.12.043 (Cited by 250+ publications.)