

# VUSAL BABASHOV

📞 (613) 716 69 49 📍 Ottawa, ON ✉️ vusalbabashov@gmail.com 🔗 [linkedin.com/in/vusalbabashov](https://www.linkedin.com/in/vusalbabashov)

Data Scientist with PhD in Advanced Analytics and solid experience in the retail sector. Proven expertise in programming, machine learning, operations research, simulation, time series forecasting, and sequential decision analytics. Demonstrated success in developing innovative solutions that positively impacted business outcomes. Committed to leveraging data-driven insights to drive business performance and customer satisfaction.

## EDUCATION

### PhD. | Advanced Analytics

University of Ottawa

Jan 2021

### M.S. | Biostatistics

Western University Canada

Aug 2012

### M.S. | Industrial Engineering

University Of Pittsburgh

May 2010

### B.S. | Industrial Engineering

Qafqaz University

May 2007

## SKILLS

**Programming:** Python, PySpark, SQL, R, SAS, Java

**Machine Learning:** Databricks, MLflow, Spark, scikit-learn, xgboost, lightgbm, MLlib, LangChain, Hugging Face, Open AI

**Operations Research:** Gurobi, Cplex

**Cloud:** Microsoft Azure

**Version Control:** Git, GitHub, Bitbucket, Azure Dev Ops (ADO)

### Industry Knowledge:

Linear/Mixed Integer Programming, Sequential Decision Analytics, Time Series Forecasting, A/B Testing, Machine Learning, Large Language Models (LLMs), GenAI, Retrieval Augmented Generation (RAG), Chatbots

## EXPERIENCE

### Data Scientist

Canadian Tire Corporation | Toronto, ON

Feb 2022-Present

#### Real Zero (On-Shelf Availability):

- Introduced a pioneering machine learning model using **boosting algorithms** for the enterprise, designed to identify out-of-stock SKUs appearing as in stock accurately.
- Performed extensive field testing across a network to evaluate the model performance and successfully scaled to multiple product segments totalling 75,000 SKUs.
- The implementation is projected to boost annual revenue by **\$13 million** and significantly **enhance customer satisfaction**.

#### Dealer/Store Changeover:

- Developed a minimum viable product using a multi-objective **mixed integer programming** model to help **efficiently allocate resources** to stores undergoing changeover subject to business and operational constraints.
- The tool helps **streamline** resource allocation decisions while resulting in annual savings of **\$1 million** associated with more efficient assignment decisions, reduced travel, decreased reliance on third-party resources required, and time saved on spending for scheduling by resource managers.

#### Digital Data Steward Assistant:

- Engineered a proof-of-concept tool using the **large language models (LLMs)** to streamline the domain classification of data assets based on metadata by finetuning **Hugging Face** open-source foundation models.
- Once operational, the tool is projected to save significant time for approximately **500 data stewards** by reducing meetings needed for cataloging and benefits all **data users** by freeing up their time and enhancing their understanding of the data sources.

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## Other:

Teamwork, Agile,  
Mentorship/Coaching, Problem-  
Solving, Project Management,

## CERTIFICATIONS

### Generative AI Fundamentals

Databricks Academy  
August 2023

### OpenAI Hackathon

Microsoft Azure  
December 2023

## EXPERIENCE

### Research Assistant | Instructor

Telfer School of Management, Univ. of Ottawa | Ottawa, ON  
Sep 2015 - Jan 2021

- Devised a solution using simulation, deep learning, and linear programming to set optimal wait time targets for a rheumatology health clinic, leading to a **60% reduction in the total cost** of wait and overtime. This work was published in the Financial Times **FT50 journal**.
- Proposed dynamic programming-based solution that optimizes patient scheduling and resource allocation for the endocrinology clinic. This tool is projected to **reduce average daily costs by a factor of five**.
- Instructed **Business Analytics** (2018 and 2019) and **Business Forecasting Analytics** (2020) courses to Bachelor of Commerce undergraduate students.

### Data Scientist

Bank of Canada | Ottawa, ON  
Sep 2019-June 2020

- Formulated a time series model using supervised machine learning to forecast intermittent demand for banknotes by denomination and region. This model ensures better banknote distribution, placing the **right amount in the right location at the right time**.
- The proposed prototype model demonstrated a significant improvement in accuracy, showing an approximate **10-15% increase** compared to the seasonal naïve approach.

### Quantitative Analyst

Pivina Consulting Inc. | Health Quality Ontario | Toronto, ON  
Sep 2012-June 2014

- Provided consultation to pharmaceutical companies and the Ministry of Health, developing multiple **Markov decision analytic** and **survival analysis** models.
- These models support economic analysis for the **reimbursement approval decisions** of new medical technologies, facilitating the integration of innovative healthcare solutions.