Justin Furlotte

Data Scientist - MSc Mathematics

Improving bottom lines in the food & beverage industry. Expertise in time series forecasting, machine learning, and scientific computing. Formerly researched mathematical physics in the Institute of Applied Mathematics at the University of British Columbia.

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RECENT WORK EXPERIENCE

Data Scientist
Fiddlehead Technology

07/2022 - Present — *Moncton, NB, Canada*

Achievements/Tasks

- Project lead on point of sale (POS) time series forecasting for hundreds of SKUs across Australia & New Zealand for a major client.
- Spearheaded an NLP project to analyze sentiment and time series data for food label claims in media. Summarized technical results in a large report for the Canadian Food Innovation Network.
- Owner of internal time series forecasting python package.

R&D Scientist
C-Therm Technologies

06/2017 - 08/2020 — *Fredericton, NB, Canada*

Achievements/Tasks

- Designed and implemented machine learning/regression algorithms in Python to extract thermal material properties from experimental curves.
- Project lead for the creation of the “Flex TPS” regression algorithm, now one of C-Therm's core products, which retails for $9,100.
- Performed computational physics research on cutting-edge "thin film" thermal technologies, resulting in a publication.

Head Teaching Assistant
University of British Columbia - Mathematics Dept.

09/2020 - 04/2022 — *Vancouver, BC, Canada*

MATH 110 (Introduction to Differential Calculus); MATH 307 (Applied Linear Algebra)

Achievements/Tasks

- Leader of all TAs for UBC’s Differential Calculus course.
- Created teaching plans, problem sets, and solutions for all other TAs.
- High reviews from student evaluation surveys for ability to explain complex mathematical concepts in simple language.

EDUCATION

MSc - Mathematics
University of British Columbia

09/2020 - 09/2022 — *GPA: 88%*

Awards

- NSERC Canada Graduate Scholarship - Master's (CGS-M).
- Faculty of Graduate Studies Award (x2).

BSc (Honours) - Mathematics-Physics
University of New Brunswick

09/2015 - 12/2019 — *GPA: 4.0*

Awards (others available upon request)

- The Arthur and Sandra Irving Primrose Scholarship (2015-2019).
- NSERC Experience Award (2018).

SKILLS

Machine Learning | Azure ML | Python | PyTorch | Scikit-Learn | Pandas | Julia | MATLAB | SQL | LaTeX | APIs | Git | Leadership

PROJECTS & PUBLICATIONS

Geophysical Inversion with Deep Neural Networks
- Variational autoencoder in PyTorch, combined with UBC geophysics lab’s inversion software, to model subsurface density.

Variational Autoencoder Lecture
- Sample lecture & assignment created for UBC’s CPSC 540 (Advanced Machine Learning) course.

Ensemble ML xG Model
- Created an expected goals (xG) model to detect outlier goal scoring seasons of NHL players.
- Significant preprocessing of data from moneypuck.com.
- Created Plotly/Dash dashboard app, deployed with Heroku.

Master's Thesis - The Quantum Hall Effect
- Proving bulk-edge correspondence in interacting lattice systems.
- Uses mathematical tools such as functional analysis, spectral theory, and operator algebras.

Vector-Quantized Naïve Bayes
- Full from-scratch implementation in Julia.
- Modification of ordinary naïve Bayes which adds a latent variable using unsupervised classification.

Publication with C-Therm Technologies
- M. Emanuel, M. Bhouri, J. Furlotte, D. Groulx, J. Maassen: Temperature Fields Generated by a Circular Heat Source (CHS) in an Infinite Isotropic Medium: Treatment of Contact Resistances with Application to Thin Films, International Journal of Heat and Mass Transfer 137:677-689 (April 2019).

Other Projects & Where to View
- These projects and more can be browsed in greater detail on my personal website, https://justin-furlotte.github.io (linked above).