

Ben Holmes

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Skills

Programming	Strong Python and Java developer. Experience with SQL, C/C++, JavaScript, MATLAB, and R.
Deep Learning	Experience implementing LSTMs, CNNs, GANs, and reinforcement learning models in PyTorch, TensorFlow, Keras, and MXNet. Strong understanding of the underlying math.
Data Science	Data exploration and cleaning, feature engineering, large datasets, written and verbal communication. Regressions and machine learning models. Skilled in Pandas, Dask, and Sklearn.

Experience

Quantitative Analyst Co-op Castleton Commodities	May - Aug 2019 Calgary, AB
<ul style="list-style-type: none">• Used Python and Dask to perform data exploration on a large (over 100GB) dataset to verify industry priors about freeze-offs — a poorly understood but crucial factor in the price of natural gas markets.• Developed, trained, and validated machine learning models using Python and Scikit Learn to predict natural gas production as a function of multiple variables.• Documented research process and results, and presented my findings to the data science and trading teams.• Wrote Python script to process trade tick data into daily indexes that were more accurate than the ones given by the exchanges.	
Software Developer Co-op Blue Willow Systems	Jan - May 2018 Vancouver, BC
<ul style="list-style-type: none">• Researched emerging localization technologies and wrote Python algorithms for a proof of concept that integrated the new technology with our existing system.• Tested and iterated on filtering algorithms to reduce location error from 4 meters to less than 1 meter.• Implemented front-end, back-end, and SQL database changes to production web and mobile applications which added new features including an incident report system and a company-wide announcements board for customers.• Wrote a custom Android application that used bluetooth to showcase company technology during sales meetings when the full, cloud-based system could not be installed.	

Projects

NN from Scratch	Implemented a fully connected neural network from scratch in Python using Numpy, to better understand the math behind the frameworks.
WikiBot	Used Java to parse a Wikipedia data dump and create a directed graph as a SQL table to represent links between pages. Wrote a bot in Java that uses Selenium to play an online game where players race between two random Wikipedia pages by following links in the articles. Regularly scores 5-10x higher than its human opponents.
Autonomous Robot	Built an autonomous robot capable of navigating a complex course and retrieving stuffed animals along the way. Deployed an object localization algorithm on a Raspberry Pi to detect the stuffed animals and navigate the robot towards them.

More info on the projects above, as well as all my other projects and experiences, can be found at my website: bholmes.ca

Education

B.ASc Engineering Physics University of British Columbia	Sep 2016 - Apr 2021 (Expected) Vancouver, BC
Course work includes: Object-oriented programming; linear algebra; complex analysis; experimental design; data acquisition and analysis; analog circuits; signals and systems; electricity and magnetism; mechanical design; technical communication; sustainable design. Cumulative average: 80.2%	
Exchange Semester Technical University of Denmark	Sep 2019 - Dec 2019 Copenhagen, DK
Courses taken: Deep Learning; Computationally Hard Problems; Robotics; Computational Multibody Dynamics.	