

Gaby Baasch – Computational Scientist, Geospatial Consulting Co.



Education

B.Sc. Cognitive Systems: Computational Intelligence and Design, University of British Columbia, Vancouver, BC, 2015

MASc., Civil Engineering, University of Victoria, Victoria, BC, 2020

Employment History

LICKER GEOSPATIAL CONSULTING CO. Vancouver, BC – Computational Scientist (Feb. 2021 to Present)

NEURIO

Vancouver, BC – Developer/Data Science Co-op (Jun. 2018 to Jan. 2019)

KUDOZ

Vancouver, BC – Front End Developer (Jul. 2017 to May 2018)

RENTMOOLA

Vancouver, BC – Full Stack Developer

(Jan. 2015 to Feb. 2017)
BROADCOM

Richmond, BC – Quality Assurance Engineer (Jan. to Sept. 2013)

Expertise

-R, Python, SQL, Git
-Data Wrangling and Analysis
-Modelling and Optimization
-JavaScript, HTML, CSS
-Machine Learning
-Database Management

Biography

Gaby Baasch is a Computational Scientist who is passionate about the application of big data to sustainable policy and decision making. After 5 years developing strong technical proficiency as a programmer at various award-winning companies, and as a research assistant exploring different disciplines, she decided to focus all her efforts on Climate Change and returned to school to complete an MASc in Civil Engineering. In this degree, she conducted cutting-edge research using machine learning and statistical methods to target buildings for retrofit. She is now ecstatic to be joining LGeo where she can continue to apply her aptitude for problem solving and her strong work ethic to high-impact climate and equity-based projects.

Select Project Experience

Spatial Optimization

- Tow Truck Routing Optimization Under Constraints – IAA – Lead Python Developer: Workflow automation and algorithm development, so far resulting in a projected reduction of 3.7 million two miles and over \$4.5 million of savings.

Greenhouse Gas Emissions Inventorying and Modelling

- Provincial GHG Policy Attribution – Climate Action Secretariat, Province of British Columbia – Lead Python Developer and Policy Modeler: Designing reusable methodologies to attribute emissions reductions to Provincial policies. Work includes extensive modelling, data clean and analysis, as well as detailed, rigorous and exhaustive review of all Provincial and Federal climate policy.
- Provincial On-Road Vehicle Emissions Inventory (1990-2021) – Climate Action Secretariat, Province of British Columbia – Lead Python Developer and Data Analyst: Processed and cleaned over 70 million vehicle records, extensive modelling of missing data.
- Provincial Off-Road Vehicle Emissions Inventory (1990-2021) – Climate Action Secretariat, Province of British Columbia – Lead Researcher and Data Analyst: Conducted extensive research and analysis for successful emissions accounting in a sector that is notoriously difficult to model.
- Building Inventory and GHG Modelling – City of Surrey – Lead Python Developer and Data Analyst: Wrangled and associated disparate data sources to build a bottom-up inventory of all residential and commercial buildings in Surrey, including forecasting to 2050.
- Energy and Emissions Modelling – City of Abbotsford and Surrey – Python Developer: Built bottom-up stock models to forecast future energy and emissions.

Community + Urban Planning

- Land-use Modelling – City of Nanaimo – Python Developer: Improved code efficiency to reduce runtime from several hours to several seconds.
- Electric Vehicle Infrastructure Investment Analysis – City of Surrey – Python Developer: Scenario modelling, forecasting.
- Victoria Retail Assessment Urban Analytics – Social Planning and Housing Division, City of Victoria – Python Developer: Improved code efficiency by over 30% so that the workflow could feasibly be over on many scenarios.



Licker
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GIS Application Development and Design

- Land Management System GIS Integration – Tsawwassen First Nation – Front-End Application Developer: Widget development.
- Building Inventory and GHG Modelling – City of Surrey – Lead Python Developer and Data Analyst: Created a user-facing tool integrated into ArcGIS Pro

Publications

- Baasch G., Rousseau G., Evins R. Neighbourhood-GAN: A Weather-Aware Generative Adversarial Network for Small, Archetypical Building Datasets. *Undergoing Revisions for the Energy and AI Journal*
- Zhang T., Baasch G., Ardakanian O. Multi-Agent Reinforcement Learning for Building Subsystem Control. *Submitted to the Twelfth ACM International Conference on Future Energy Systems (ACM e-Energy '21)*
- Baasch G., Westermann P., Evins R. Identifying Whole-Building Heat Loss Coefficient from Heterogeneous Sensor Data: An Empirical Survey of Gray and Black Box Approaches, *Energy and Buildings*, Volume 241, 2021
- Baasch G., Evins R. Targeting Buildings for Energy Retrofit Using Recurrent Neural Networks with Multivariate Time Series. *Climate Change AI workshop at the 33rd Conference on Neural Information Processing Systems (NeurIPS '20)*. Vancouver, BC, CA
- Baasch G., Wicikowski A., Faure G., Evins R. Comparing Gray Box Methods to Derive Building Properties from Smart Thermostat Data. *6th ACM International Conference on Systems for Energy-Efficient Buildings, Cities, and Transportation (BuildSys '19)*. ACM, New York, NY, USA

Other Research Experience

- Building Retrofit Analysis at the University of Victoria – Invited presentations, posters and demonstrations at: the International Conference of Learning Representations (online) and the Conference on Neural Information Systems (Vancouver) Climate Change AI workshops; the International Conference on Systems for Energy Efficient Built Environments (New York); the Matrix Data Science Research Symposium (Victoria).
- School of Interactive Arts and Technology at Simon Fraser University – worked as a research assistant investigating the effect of visual feedback on learning motivation.
- Brain Research Centre at the University of British Columbia – Assisted the lead Data Scientist by modelling dendritic trees in Matlab.

Web Application Development and Design

- Kudoz – Was one of two developers who built a complicated React-Redux web application from scratch. The application supports people with disabilities to find learning experiences and connections in their communities.
- Multimedia and Graphics Interdisciplinary Centre at the University of British Columbia – Designed a WordPress site for the Digital Humanities communities at local universities.
- Additional development experience gained throughout employment history.