

# Alan Williams

<https://alanswilliams.io>

I'm a full-stack software engineer, data scientist, and team leader. I've created and written software with millions of dollars in revenue impact in the energy and healthcare sectors.

## Experience

### Isogonal

**Co-founder**

**2017–present**

I co-founded a company to develop automation software for the energy and healthcare sectors. Over 7 years we have sold software products in use today by organizations like New Zealand's national grid operator and public hospitals. Some projects include:

- Software for prioritizing and scheduling asset maintenance to Transpower, the national grid operator. This system was directly responsible for a \$6M annual cost reduction in its first year. The research behind this was published in the Proceedings of the Electricity Engineers' Association. This work involved processing terabytes of natural language and time-series data for modeling asset degradation
- Algorithm development for automating voltage stability management/reactive power compensation in the national grid
- A fraud detection system for TicketNetwork, a US-based event ticket platform, which was directly responsible for a \$1.2M annual cost reduction
- A SaaS data management platform for geological exploration and mining data, which we sold to mining firms in New Zealand and Canada
- An information management system and client portal for a hospital toxicology lab
- A mobile app for outpatient appointment management and symptom tracking for the Canterbury District Health Board
- Multiple mathematical modeling and algorithm development projects

## Contact Work through Isogonal

### ProvisionAI

**Principal Software Engineer**

**2019–present**

- I was the first technical hire at ProvisionAI and now lead a team of 6 developers building an enterprise SaaS product with Fortune 500 customers, delivering millions in savings per year.
- I personally wrote and delivered the entire MVP. The system uses Python for the backend and data pipelines, C++ for performance-critical libraries, Keycloak for auth and SSO, and React/Next.JS for internal and client-facing web applications.
- I developed a linear programming-based optimization algorithm for shipping volume averaging using CPLEX, and a 3D bin packing algorithm using python and C++. I spent a year researching whether RL and MCTS could improve on these heuristics.

### RetailMeNot

**Staff Data Scientist**

**2018–2020**

- Increased the data science team's impact by moving the team's output from Jupyter Notebooks to production data pipelines and versioned data products deployed via CI/CD
- Wrote code for training and monitoring thousands of search ranking and user personalization models, processing billions of events.
- Designed and built an A/B testing framework enabling quantification of data product impact
- Micro-optimization in Spark and Scala to reduce cost by 30% in 100+ node EMR clusters

## [Translucent.io](#)

### Senior Data Scientist

2022–2023

- I was a founding team member and developed the DS team roadmap for the first six months
- I designed and deployed the company's original client-facing backend cloud infrastructure.
- I created a transaction network graph from standardizing messy accounting data and models operating on this graph to infer attributes, match entities and predict variables of interest

## [SLI Systems](#)

### Research Engineer

2014–2017

- Designed a query pre-processing system and a learning-to-rank document ranking system and integrated it into a Lucene-based search engine processing 1B+ searches per month with <100ms 99% latency.
- Design and developed a green-field product recommendation product for the company, processing billions of events

## [Ströer Labs](#)

### Research Engineer

2013–2014

- Designed and developed systems for predicting CTR and optimizing second-price auction bids for a European online advertising demand-side platform

## [Aurecon](#)

### Structural Engineer

2011–2013

- Achieved PE (Professional/Chartered) engineering certification.
- Thermal-structural finite element modeling and nonlinear time-history analysis for earthquake design

## Skillset

I'm comfortable with Python, Scala, Java, C++, R, Typescript, and React, particularly on the back end. I've worked with Azure, AWS, and GCP, many of the common frameworks, and personally delivered the entire stack for SaaS products serving enterprise clients. I've had work pass commercial penetration test assessment. I particularly enjoy data science, algorithm development, and fast-moving projects.

## Publications

*Nb-doped rutile titanium dioxide nanorods for lithium-ion batteries* Solid State Sciences (2018)

*Prioritizing Predictive Maintenance Work Using Machine Learning.* Electricity Engineers' Association (EEA) Proceedings (2018)

*Effective Resource Management using Machine Learning in Medicine: An Applied Example,* BMJ Simulation and Technology Enhanced Learning (2018)

## Education

MSc, Mathematics, Distinction, Canterbury

B.E, Hons, First Class, Canterbury University

*Winning team, Boston Consulting Group Business Strategy Competition (New Zealand)*