Nat Lund

Curriculum Vitae

Nathaniel J. Lund
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Web | **Github Account:** https://github.com/natlund
Webpage: http://natlund.github.io

Education

2014 | **PhD in Theoretical Physics**, *Victoria University of Wellington*, New Zealand.
Fluid Mechanics (Microfluidics)

2006 | **BSc Honours in Physics**, *Victoria University of Wellington*, New Zealand.
First Class Honours

2004 | **BSc in Mathematics and Physics**, *Victoria University of Wellington*, New Zealand.

Doctoral Thesis

Title | *Effective Slip Lengths for Stokes Flow over Rough, Mixed-Slip Surfaces*

Supervisor | Professor Shaun Hendy

Description | The motivation was the recent development of surfaces patterned on the nano scale that offer reduced drag to liquids flowing over them. The physics was modelled as incompressible Stokes flow with a rough, periodic boundary condition. Analytic solutions were obtained by the perturbation and homogenization methods, yielding a prediction of the improved flow of liquids over nano-patterned surfaces.

Examiner's Remark | "[This] chapter describes ... fluid mechanics concepts with a **depth and clarity which is very rarely found even in classical fluid mechanics textbooks**. It is an absolute pleasure to read... The candidate does a very good job of explaining complex concepts with clear and concise arguments."

Off-Topic Project | To gain some insight into the global financial crisis, I studied **fractional-reserve banking** and reviewed Nassim Taleb's **'Black Swan'**.

Other Work | I volunteered my services on a complex systems project. I learnt Python, taught it to other students, and wrote scripts to **extract data** from a million-line text file and create **network graphs** from the data.

Computer Skills

Intermediate | Python, LaTeX

Basic | SQL; Python scientific libraries such as Matplotlib, Pandas, Numpy, Scipy; SQL; Linux, Git, Agile development

Experience

Vocational

September 2016 – March 2017

Data Scientist, Metail, Cambridge, www.metail.co.uk.
Worked in the Data Science team of a startup that builds virtual fitting-room 3-D modelling technology for use on fashion retail websites. The technology stack was based around using Python and SQL to access an Amazon Redshift database, and using the Pandas Python library for data processing.

- Wrote Python code for various analyses of user behaviour. Eg. created a flowchart of user behaviour with transition probabilities.
- Did in-depth code reviews as part of a Scrum-like agile system.
- Maintained and extended Looker, a graphical business intelligence tool.
- Taught non-technical users to use Looker.

June – August 2016

Data Analyst, Booking.com, Cambridge, www.booking.com.
Worked in the Pay-Per-Click Webmarketing department of a large internet travel retailer, writing Python code to do data analysis and automate various business processes.

- Text-processing to automatically shorten hotel names to fit into advertisement formats.
- Wrote code to extract data and plot graphs of various business metrics.
- Developed scoring system to rate relevance of advertising copy to search query terms. Wrote code to score advertisements, generate a table of actionable items, and email the table to automatically assigned Account Managers.
- Wrote Python code to connect to a Hive/Hadoop cluster, run SQL queries, etc.

2014 – 2015

Data Scientist, Publons, Wellington, www.publons.com.
Worked in a rapidly-growing internet startup using the Python web framework Django. Main projects included data cleanup, name disambiguation, text matching, search, and statistics. Additional work included basic web programming, user interface design. I also did planning and strategizing, and relating with various stakeholders.

- Wrote heuristic code to flag suspicious data, thus enabling data cleanup.
- Researched string matching algorithms, and implemented a modified version that gave best results for matching names.
- Built a prototype search engine from basic Python language processing and linear algebra components.
- Generated summary statistics of key company data, with careful attention to graphical presentations that gave the easiest comprehension.
- Developed a rating system designed to allow meaningful comparison of published articles.

Tutoring

Early 2016 Tutored A-level Physics.

2005 - 2006 One-on-one mathematics tutoring of a student with Asperger's syndrome.

2004 Small-group tutoring of first-year mathematics.

Former Legal Blindness

1995 - 2007 I was legally blind for approximately 12 years. At the beginning of my PhD, I began the process of corneal transplant surgeries and rehabilitation, which took several years. The process was a great success – I can now legally drive.

Interests

- Economics
- Philosophy of Science
- Data Science
- Guitar
- Music from Bluegrass to Heavy Metal
- Food Science