Nat Lund
Curriculum Vitae

Nathaniel J. Lund
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Web	**Github Account:** https://github.com/natlund
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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	Django web framework, Python scientific libraries such as Numpy, Scipy, Matplotlib, Linux, SQL, Git, Agile development

Communication Skills

Written	**Technical Writing:** PhD thesis (35,000 words with 2,000 equations) noted for outstanding depth and clarity.
Oral	**Presentations:** Over a dozen 10 - 15 minute talks given during graduate study.

Experience

Vocational

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.

Details:

- 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

2007 - 2012   During my PhD, I provided assistance to various fellow PhD students, often with Python, and in particular to a Polynesian maths graduate who was not familiar with the physics component of his topic.

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