Blair **Drummond**

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If people do not believe that mathematics is simple, it is only because they do not realize how complicated life is.
— *John von Neumann*

By the time that any problem has been given a mathematical interpretation, much of the complexity inherent in the original problem is lost. This is a "feature", not a "bug"; the actual problem, in all of its hairy nuance, is usually impossible to work with, while the right model provides something tractable and useful. However, there are obvious dangers in mistaking the models with the actual problem. I think my talent is in being able to spot these dangers. I am trained as a mathematician, but my education and interests have also led me to study language and computation, cognitive science and design, rhetoric and statistics. I think the combination of these equips me with an unusual arsenal of heuristics and metaphors, as well as concrete skills, which I can bring to the task of modeling, problem-identification, and data-science.

Education

M.Sc. in Mathematics *University of Ottawa, 2017-2019*
Thesis on the Benjamini-Schramm limit(s) of Rauzy graphs of low-complexity words. Supervised by Dr. Vadim Kaimanovich. *Successfully defended August 7, 2019. Slides available here.*

Honours B.Sc. in Mathematics *University of Ottawa, 2013-2017*
Honours project on ergodic theory and fractal geometry. Before switching into mathematics I also studied computer science and linguistics. Graduated magna cum laude.

Experience

R Programmer in Biochemistry Department *University of Ottawa, 2017-2019*
Authored an R library for analysis of single ion-channel experiments for the daCosta lab. I am the principal author of a published paper on the library. The package is available on CRAN under the name `scbursts`.

Teaching Assistant (Math & Computer Science) *University of Ottawa, 2016-2019*
Led labs, tutored, and ran tutorials for Data-Structures & Algorithms, Discrete Math, Calculus I & II, and Linear Algebra.

Junior Developer *Sonus Networks, Summer 2015*
Developed automation tools for testing the deployment of OS upgrades and rollbacks to servers over a network, working in linux environment with python. Worked extensively on parallel processing of tasks.

Student Researcher *University of Ottawa, Fall 2014*
Did natural language processing (NLP) work in python with NLTK, extracting statistics from a corpus of poems as a computational linguistics project. Presented a research poster on the project.

Technical Skills

Mathematics

- Specialization in analysis; focused on ergodic theory of discrete dynamical systems and symbolic dynamics — frameworks for discrete time stochastic processes. Special interest and focus on graphical dynamics and Markov chains.
- Advanced knowledge of functional analysis, probability theory, and commutative algebra.
- Experience with theoretical and applied statistics, machine learning, manifolds, data-structures and algorithm analysis.

Computing

- 10 years of experience developing in Linux.
- Experience with Docker, Git, virtual machines, build environments, etc.
- Experience with PostgreSQL.
- Author and maintainer of an R library on CRAN.
- Experience with machine learning in SciKit-Learn on MNIST data.
- Experience with NLTK in python for NLP.
- Experience with Python, R, Shell, C, GoLang, Java, Prolog, Lisp and Haskell.
- Worked with Bioinformatics data (Coursera course).

Reading List

A few of the things I have read, am reading, or plan to read,
mostly in the area of rationality, irrationality, and meta-rationality.

The Design of Everyday Things	—	*Donald Norman*
The Black Swan	—	*Nassim Nicholas Taleb*
Thinking, Fast and Slow	—	*Daniel Kahneman*
The Logic of Failure	—	*Dietrich Dörner*
Everything Studies [blog]	—	*John Nerst*
Meaningness [blog]	—	*David Chapman*
Understanding Computers and Cognition	—	*Terry Winograd & Fernando Flores*
The Reflective Practitioner	—	*Donald Schön*
How the Mind Works	—	*Steven Pinker*
The Logic of Scientific Discovery	—	*Karl Popper*
Switch	—	*Chip & Dan Heath*

Works & Publications

— The R library that I wrote can be found at	CRAN.R-project.org/package=scbursts
— The github link	github.com/dacostalab/scbursts
— My website	bdrummond.com
— Script/slides for my thesis defence	bdrummond.com/files/thesis-slides-long.pdf
— My talk on the normal number theorem	bdrummond.com/files/normal-numbers.pdf
— My patch for `slock` on `suckless.org`	tools.suckless.org/slock/patches/message/
— Github profile	github.com/blairdrummond/
— Research poster for an NLP project	ruor.uottawa.ca/handle/10393/32644

[1] Blair R. Drummond, Christian J.G. Tessier, Mathieu F. Dextraze, and Corrie J.B. daCosta. scbursts: An r package for analysis and sorting of single-channel bursts. *SoftwareX*, 10:100285, 2019.

[2*] *Submitted*: co-author of "Finiteness spaces, étale groupoids and their convolution algebras."

[3*] *In progress*: a paper with my supervisor on my thesis work.

Transcripts attached.