

# Alejandro Erickson

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*My extended web résumé.*

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## Professional Profile

- **Researcher and Developer for enterprise Decision Analytics software.**
- 10 years math and theoretical computer science research and 17 publications.
- 7 years software development for experimental research.
- Founded and operated not-for-profit.
- Educator, communicator, and team leader.
- Nominated for national PhD grant.
- Received over \$40,000 in student funding.
- 7 years data analysis.
- Fluent in English, Spanish, French.

### High proficiency

C, C#, Python, Bash, SageMath,  $\LaTeX$ , HTML.

### Working Knowledge

.NET, NHibernate, SQL (MySQL, Oracle, Postgres), C++, Java, Javascript, Angularjs, Kendo, Node.js, PHP, SVG, CSS, Google Test.

### Software / OS

Oracle SQL, Visual Studio, Team Foundation Server, npm, Bash, Zsh, (Spac)Emacs, Git, Subversion, Vim, OS X, Jekyll, (Arch) Linux.

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## Education

- 2013 **PhD, Computer Science**, *University of Victoria*, Canada.
- 2008 **MMath, Combinatorics and Optimization**, *University of Waterloo*, Canada.
- 2007 **BSc (hons), Mathematics**, *Simon Fraser University*, Canada.  
Fall 2005: Exchange program at *Pontificia Universidad Católica*, Chile.

### Relevant Coursework

Statistics, Embedded Systems, Computer Supported Cooperative Work (CSCW), Cryptography, Combinatorial Optimization, Computational Geometry, Algorithms and Data Structures.

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## Relevant Skills

### Software development

- Developed widely used UI and server features for Copperleaf Technologies' core product.
- Changed Oracle SQL database schema and related business logic and unit tests (C#, Linq, NHibernate), and UI (aspx, Kendo, Angularjs).
- Developed extensible flow-level datacenter network simulator, INRFlow, in C.
- Built datacenter network simulator in Python.
- Designed and implemented highly efficient combinatorial generation algorithms in C.
- Contributed patches to open source packages for Emacs.
- Implemented graph algorithms for Maple math software.

- Web development**
- Created UI elements with Kendo, Angularjs, aspx and style sheets.
  - Designed algorithm to generate randomized digital art, implemented with JavaScript.
  - Blogged with PHP, MySQL, CSS, and HTML, and currently use Jekyll (YAML, Liquid, HTML, Sass, CSS, Javascript).
  - Developed MySQL-backed browser game, based on PhD work.

- Leadership, interpersonal skills, and creativity**
- Presented research at over 20 seminars and international conferences.
  - Worked remotely for 5 years and with over 20 co-authors distributed internationally.
  - Led, co-led, and seeded ideas for the majority of nearly a dozen research projects and publications over 3 years.
  - Founded and operated math and computer science outreach organization.
  - Developed activities delivered live to over 5000 young people and many more online.
  - Raised over \$20,000 and secured top tier speakers for national student conference.
  - Represented math students in departmental external review and obtained student space as president of student union.
  - Organized Annual General Meeting of graduate computer science students.
  - Invited seminar speakers and chaired over 20 seminars.
  - Self-published print-on-demand card game ZeroSumZ and puzzle book Tomoku!
  - Exhibited paintings, photographs, and large-scale mathematical sculptures.
  - Taught Logic, SAT-solvers, Theoretical Computer Science, Applied Complex Analysis, Linear Algebra, Linear Programming, Calculus, Math Software.
  - Received very positive feedback in teaching evaluations from students and classroom observers who noted my creative use of technology.

- Data analysis and visualization**
- Developed fast Monte Carlo simulations for quantifying expected probabilities.
  - Created tool to visualize author-publication relationships from bibliographic database.
  - Wrangled simulator data and facilitated research analysis and publication pipeline.
  - Automated parallel remote execution of INRFLOW (simulator) instances and data wrangling with Bash scripts and GNU Parallel.
  - Created and published data visualizations with  $\LaTeX$  PGFPlots, PSTricks, R, Maple, SVG, Python, and SageMath.
  - Executed software on HPC cluster with SLURM workload manager.
  - Created and analyzed data visualization to discover main result of PhD thesis.

- Computer Software**
- Managed research and software projects with version control.
  - Increased productivity by integrating email, word processing, data management, typesetting, and programming tasks into Emacs.

- Research**
- Developed Decision Analytics algorithms for Asset Investment Planning and Management Software.
  - Expertise in combinatorial algorithms, combinatorics, computational geometry, datacenter networks, data generation and visualization, graph theory, tilings and coverings, Venn diagrams.
  - Published in top tier journals: Computer Networks, IEEE Trans. Parallel and Distributed Systems, Algorithmica, and the Electronic Journal of Combinatorics.

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## Experience

### Vocational

- Jan 2017–Present **Software Developer**, *Copperleaf Technologies*, Vancouver, Canada.  
Research and software development on Decision Analytics software for Asset Investment Planning and Management.
- Nov 2016–Jan 2017 **Postdoctoral Research Associate**, *Computer Science, University of Victoria*, Canada.
- Sept 2013–Sept 2016 **Postdoctoral Research Associate**, *Engineering and Computing Sciences, Durham University*, United Kingdom.
- Aug 2015–Dec 2015 **Visiting Scholar**, *Computer Science, University of Victoria*, Canada.

### Leadership

- Sept 2014–Aug 2015 **Seminar organizer**, *Durham University*, United Kingdom.
- Sept 2010–Aug 2011 **Computer Science Graduate Representative**, *University of Victoria*, Canada.
- Jan 2006–Aug 2007 **President of the Canadian Undergraduate Mathematics Conference and Math Student Union**, *Simon Fraser University*, Canada.

### Teaching

- 2006–2015 **Sessional Lecturer and Teaching Assistant**, *Universities: Durham, Victoria, Waterloo, Simon Fraser*, Canada and United Kingdom.

### Outreach

- Jul 2014–Jul 2015 **My PhD thesis for Grade 10s**, *The Brilliant Club*, United Kingdom.
- Feb 2014–May 2015 **Exhibitor of math-themed art**, *Durham University and Bridges Math-Art Conference*, United Kingdom and South Korea.
- Dec 2011–Aug 2013 **Math Outreach Activity Coordinator**, *Math Catcher, Simon Fraser University*, Canada.  
and Oct 2015

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## Languages

English (first), Spanish (native), French (ILR level 4: full professional proficiency).

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## Interests

- 3D Printing Designed and printed a mechanical realization of my PhD thesis for a conference paper.
- Sailing Owned 17' Hobie Catamaran. Now a landlocked sailor and an aspiring old salt.
- Specialty Coffee 8 years of international coffee tourism and manual lever espresso. Ask me Anything!

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## References

Available upon request.