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Curriculum Vitae // Resume of Aaron Levin

Abstract

This document summarizes the personal and working history of Aaron Michael Benjamin Levin, MSc., born 1981-12-03T12:53:00-07:00 in Calgary, Alberta (geo:51.065389,-114.133306).

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1. Introduction

Hello. I am Aaron Levin, a mathematician-turned software engineer. I am excited by data-driven opportunities in environments that foster creativity, diversity, and innovation. I value openness, honesty, empathy, and egolessness.

The engine behind my enthusiasm resides at the intersection of my analytical background (MSc. Mathematics) and my creative energies

(writing, design, and development). Digital media presents a unique opportunity to combine deep, analytics processes with, highly-creative, user-oriented goals.

2. Education

2.1. MSc. Mathematics (University of Alberta)

- o Thesis work in Positivity on Banach Lattices
- o 2006 - 2007
- o Supervisors: Vladimir Troitsky [1] and Nicole Tomczak-Jaegermann [2]
- o GPA: 3.8

I accomplished original work in extending the Perron-Frobenius theorem on matrices to semigroups of positive operators on infinite-dimensional Banach lattices.

The Perron-Frobenius theorem is used extensively in machine learning, specifically in Google's PageRank algorithm. My work empowered researches and scientists to use Perron-Frobenius in a broader class of Banach spaces.

2.2. BSc. Engineering Physics (University of Alberta)

- o Specialized in Computational Physics
- o Honours thesis: analyzing time-resolved optical properties of continuum-generated probe pulses.
- o 1999 - 2004
- o Thesis supervisor: Frank Hegmann [3]
- o GPA: 3.8

During my undergraduate degree I focused on obtaining a strong foundation in programming (C, C++, MC6800 Assembly) to compliment my studies in theoretical physics.

3. Online Identities

- o Personal website: <http://aaronlevin.ca>
- o GitHub: <https://github.com/aaronlevin>
- o Twitter: @aaronmblevin (<https://twitter.com/aaronmblevin>)
- o Keybase: <https://keybase.io/aaronlevin>
- o Stack Overflow: <http://stackoverflow.com/users/1308975/aaronlevin>
- o Haskellers: <http://www.haskellers.com/user/aaronlevin>
- o Facebook: <https://www.facebook.com/aaronmblevin>
- o Google Plus: <https://plus.google.com/110471816183726748520>

4. Work Experience

4.1. Sr. Software Engineer @ Aterica Health

- o September 2014 - present
- o Designing and building scalable systems for network-aware, embedded devices (IoT) built to improve health and save lives.
- o url: <https://www.aterica.com/>

At Aterica I am responsible for the implementation and design of a system to improve vigilance for people who suffer anaphylaxis and require an EpiPen(R).

Relevant technology:

- o Haskell
- o Google Compute Engine
- o Google Container Engine
- o Docker
- o Security and binary protocols for embedded devices (IoT)
- o EDSLs
- o REST
- o OAuth 2.0
- o JWT
- o PostgreSQL

4.2. Data Scientist @ Demeure

- o January 2014 - September 2014
- o Search and Data infrastructure powered by Apache Storm, Elasticsearch, and DynamoDB.
- o url: <https://www.metamarketplace.com/>

At Demeure/Metamarketplace I was hired to design and build their data infrastructure. As a B2B marketplace, we were challenged with consuming a significant volume of events. I chose Apache Storm for its distributed foundation and multi-language interop. Events were consumed and processed by Apache Storm, indexed in Elasticsearch, and stored in DynamoDB.

Relevant technology:

- o Apache Storm [14]
- o elasticsearch [15]
- o DynamoDB [16]
- o Ruby [17]
- o Clojure [18]
- o Java [19]

4.3. Software Engineer @ Sortable

- o August 2012 - January 2014
- o Full-stack engineer building a product comparison platform empowering consumers to make decisions easier and data-driven.
- o url: <http://sortable.com/>

As a full-stack I helped design, build, and support our product comparison platform at every layer: data storage, search, web servers, caching, front-end, deployment, and job processing. Our platform crawled the web, indexing tens of thousands of product data, which we made available to our users.

Relevant technology:

- o Scala
- o AWS
- o Elasticsearch
- o PostgreSQL
- o Redis
- o memcached
- o Python

4.4. Content Analyst @ Kobo

- o May 2012 - August 2012
- o Developing unique algorithms to monitor content performance and pricing strategies for Kobo's eBooks.
- o url: <https://store.kobobooks.com/en-ca/>

As a Content Analyst at Kobo I was charged with monitoring and analyzing the pricing of eBooks across Kobo's global catalogue. I liaised with Kobo's Big Data team and online merchandisers to ensure books in the right country and category had the best price.

Relevant technology:

- o R
- o Python
- o SQLServer

5. Relevant Technological Experience

5.1. Programming Languages

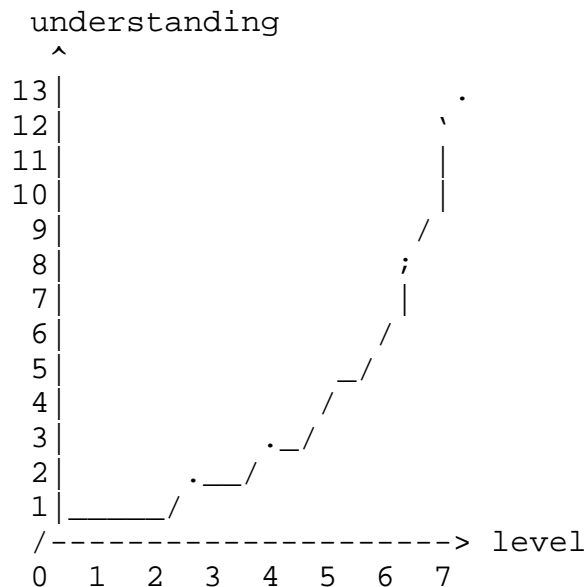
5.1.1. Quantifying Programming Language Knowledge

Below is a list of Programming Languages I have used in production.

Communicating expertise in a programming language is nuanced. The usual metric (number of years of experience) is flawed; it does not accurately capture foundational understanding in a language. Someone with three years of experience in a language as a compiler designer is going to have a much deeper and foundational understanding than someone who has used said language in their career.

To overcome this limitation, I've created a number of levels and a curve to represent an individual's understanding at each level. The scale is Fibonacci, which I chose arbitrarily.

PL Understanding as a Fibonacci Sequence



As one increases level, understanding increases dramatically.

- Level 1: Have read about this language and potentially written a Hello World program.
- Level 2: Have written trivial programs and am familiar with the language's paradigms.
- Level 3: Can write a trivial program and am familiar with the build tools. Alternatively, this level may include languages I may have been proficient in many years ago, but time has waned my expertise.

- Level 4: Can write non-trivial programs and reason about performance. Am aware of some of the major libraries and frameworks, though not an expert in their design.
- Level 5: Can write and maintain large projects in this language. Have obtained deeper understanding of runtime and compiler nuances.
- Level 6: Have written and maintained very large projects in this language, using a multitude of tools to reason and improve performance.
- Level 7: You are Edward Kmett [22].

5.1.2. Programming Language Knowledge

- o Haskell: 5
- o Scala: 5
- o Bash: 5
- o Python: 4
- o Java: 4
- o Clojure: 3
- o Ruby: 3
- o JavaScript: 3
- o C++: 3
- o C: 3
- o R: 2
- o MC68800 Assembly: 2
- o Idris: 2
- o Intuitionistic Logic: 2
- o Agda: 1

5.2. Paradigms and Protocols

Paradigms:

- o Pure, Functional Programming
- o Object Oriented Programming (OOP)
- o Continuation-Passing Style (CPS)
- o REST
- o Symmetric and Asymmetric Encryption
- o (E)DSLs

Protocols:

- o HTTP/1.1
- o TCP/IP
- o UDP
- o OAuth 2.0
- o JWT
- o AES Encryption (Counter mode with CBC-MAC (CCM))

- o ECC Encryption

Protocols I have used but don't feel confident saying I understand them:

- o Bluetooth Smart (Bluetooth Low Energy)
- o GATT
- o Memcached

5.3. Data Stores

SQL:

- o PostgreSQL [23]
- o MySQL [24]
- o SQLServer [25]

Non-SQL

- o DynamoDB [26]
- o Redis [27]
- o elasticsearch [28]
- o memcached [29]
- o etcd [30]
- o MongoDB [31]
- o Datomic [32]

5.4. Message Queues

- o RabbitMQ [33]

5.5. Infrastructure

- o Amazon Web Services (AWS) [34]
- o Google Compute Engine (GCE) [35]
- o Google Container Engine (GKE) [36]
- o Apache Storm [37]

6. Talks and Public Speaking

6.1. Tech Talks

- o Dependent Haskell (Intersections KW, April 2015)
- o Commutativity and Quantum Mechanics (Intersections KW, February 2015)
- o The Algebra of Algebraic Data Types and the Calculus of Mutations (Intersections KW, August 2014)
- o What is Monad? (Scala MeetUp, April 2014)

6.2. Art and Culture Talks

- o On Building Community (with Marie Flanagan) (CHUO Volunteer Appreciation, February 2015)
- o NCRC 2014 Keynote (with Marie Flangan) (National Campus/Community Radio Conference, June 2014)
- o Open Business: Fear, Vulnerability, and Profit\$ in the Open World (with Marie Flanagan) (Halifax Pop Explosion, October 2013)
- o Accessibility (with Marie Flanagan) (Halifax Pop Explosion, October 2013)

7. Awards and Acclamations

- o National Hero (Exclaim! Magazine, 2011)
- o Next 10 (Venture Magazine, 2011)
- o Best Indie Music Website (CBC Radio 3, 2011)
- o Biggest Innovator (nomination) (CMJ, 2009)
- o Graduate Student Scholarship (University of Alberta, 2006)
- o Graduate Student Scholarship (University of Waterloo, 2005)
- o NSERC Undergraduate Student Research Assistantship (Government of Canada, 2003)

8. Hobbies and Self Development

8.1. Weird Canada / Wyrd Arts Initiatives

I founded Weird Canada [38] in 2009 to create a space for people to enthuse about emerging and experimental Canadian music. Despite Weird Canada's focus on physically-released (often cassette), fringe music, the site grew to national acclaim, eventually winning CBC Radio 3's "Best Indie Music Website in Canada" award. After the hard work of Executive Director Marie Flanagan [39], the site has over 500 volunteers, is fully bilingual, ad-free, and has representation in every province and territory in Canada.

I am currently Weird Canada's Creative Director and my main duties involve ensuring the site's curatorial vision [40] is maintained across the site and our online store Wyrd Distro [41].

8.2. Intersections KW

Steven Taschuk [42] and I founded Intersections KW to create a space of enthusiasm for pure mathematics, programming languages, computer science, and data science. We've had over eight meetups and hosted talks from Christopher Olah and Russell O'Connor on diverse topics such as Constructive Logic, Deep Neural Networks, and inventing Bezier splines in the age of Archimedes.

8.3. Vipassana Meditation

I am a Vipassana [43] meditator as taught by S. N. Goenka. Each year I take a 10-day course where we practice silent meditation for 11hrs. each day.

8.4. Record Collecting

For over fifteen years I have been collecting (and sometimes selling) used records. I have focused on independent and privately-released Canadian music from the 60s, 70s, and 80s, especially experimental or fringe music.

In 2007, a friend and I found a record by an artist named Lewis [44]. After many years of champion the strange, unassuming LP within underground communities of record collectors, Lewis' album found international notoriety for reasons I still don't properly understand. I was even interviewed on CBC's As It Happens [45].

9. References

9.1. URIs

- [1] <http://www.math.ualberta.ca/~vtroitsky/>
- [2] http://www.math.ualberta.ca/Tomczak-Jaegermann_N.html
- [3] <https://uofa.ualberta.ca/physics/people/people-collection/frank-hegmann>
- [14] <https://storm.apache.org/>
- [15] <https://www.elastic.co/>
- [16] <http://aws.amazon.com/dynamodb/>
- [17] <http://clojure.org/>
- [18] <http://clojure.org/>
- [19] <https://www.java.com/en/>
- [22] <https://github.com/ekmett>
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- [29] <http://memcached.org/>
- [30] <https://github.com/coreos/etcd>
- [31] <https://www.mongodb.org/>
- [32] <http://www.datomic.com/>
- [33] <https://www.rabbitmq.com/>
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- [42] <http://www.amotlpaa.org/>
- [43] <https://www.dhamma.org/en-US/index>
- [44] http://en.wikipedia.org/wiki/Lewis_%28musician%29
- [45] <http://www.cbc.ca/radio/asithappens/friday-1-m-dollar-chief-salary-seattle-pot-busts-new-grasshopper-and-more-1.2903230/the-mystery-of-canadian-musician-lewis-1.2903235>

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