Evan Hubinger

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Education

Harvey Mudd College, Claremont, CA — Expected Graduation: May 2019
B.S. in Mathematics and Computer Science — GPA: 3.906 (Dean's List)

The College Preparatory School, Oakland, CA — Graduated: May 2015

Programming Languages

Expert	Proficient	Knowledgeable
`Python, Coconut`	`Go, JavaScript, C++, Haskell, Lean`	`R, Java, MATLAB, Mathematica`

Summary

Machine learning research experience working for HRL Laboratories and the Music Information Retrieval Lab at Harvey Mudd College as well as personal projects. AI safety research experience at MIRI. Professional software engineering experience at Google, Yelp, and Ripple. Author of the Coconut programming language, which has over 2,300 stars on GitHub and over $1,500 in yearly support from individuals and companies including TripleByte and Kea. Presented at PyCon 2017. Dean's list student majoring in mathematics and computer science at Harvey Mudd College.

Research Experience

Team Member — Fall 2018 – Spring 2019
HRL Laboratories Clinic Team, Harvey Mudd College
• Completed the entire design, implementation, and training of a deep reinforcement learning agent to tune quantum dots by controlling voltage gates embedded in a silicon heterostructure.

Lab Member — Spring 2018 – Spring 2019
Music Information Retrieval Lab, Harvey Mudd College
• Team lead on the Sheet ID team using machine learning image retrieval techniques to identify cell phone images of sheet music.
• Worked on using machine learning to identify beats in song recordings for the Live Song ID team.

Work Experience

Internship — May – August 2017
Machine Intelligence Research Institute, Berkeley, CA
• Came up with the idea, organized a research group, and began work on the paper "Inner Optimization."
• Worked on a confidential agent foundations project in type theory project using the Lean theorem prover.

Site Reliability Engineering Intern — May – August 2017
Google, Sunnyvale, CA
• Worked as a Launch Coordination Engineer (LCE) developing the software Google uses to perform production readiness reviews of new product launches.
• Revamped the custom domain-specific language built by the LCE team to automate launch reviews.

Software Engineering Intern — June – August 2016
Yelp, San Francisco, CA
• Primary author of Undebt, an open-source automated code refactoring tool with over 1,500 stars on GitHub.
• Wrote a blog post on Undebt (link below), which proved to be Yelp's most popular blog post to date and was featured on the front page of Hacker News.
`https://engineeringblog.yelp.com/2016/08/undebt-how-we-refactored-3-million-lines-of-code.html`
• Fixed errors in Yelp's configuration management that had previously taken down yelp.com.
• Rewrote Yelp's system for running large data processing operations in Elastic Map Reduce.

Software Engineering Intern — June – August 2014; June – August 2015
Ripple, San Francisco, CA
• Worked on designing Interledger, a trustless system for cross-currency transactions between arbitrary agents.
• Wrote a tool to do cryptographically secure generation of wallets for financial institutions.

Personal Projects

The Coconut Programming Language October 2014 – Present
http://coconut-lang.org
• Created the Coconut programming language, a functional programming language that supports pattern-matching, algebraic data types, TRE/TCO, and compiles to any Python version.
• Coconut has over 2,300 stars on GitHub; over $1,500 in yearly support from individuals and companies including TripleByte and Kea on Open Collective; and has made the front page of r/Python, r/Programming, and twice on Hacker News.
• Presented on Coconut at PyCon 2017 (see https://us.pycon.org/2017/schedule/presentation/56).
• Was interviewed on Coconut for TalkPython, Podcast.__init__, and Functional Geekery.

Minecraft Deep Learning November 2017 – February 2018
https://github.com/evhub/minecraft-deep-learning
Used Deep Q Learning to solve the task of navigating to a house in Minecraft during a snowstorm starting from a random location. Used imitation learning, Dueling Double DQN, and Boltzmann-Gumbel exploration.

BBopt September 2017 – Present
https://github.com/evhub/bbopt
Developed a universal black box optimization framework for tuning hyperparameters.

cPyparsing July 2017
https://github.com/evhub/cpyparsing
Reimplemented PyParsing in Cython to achieve ≈ 30% better performance for Coconut and Undebt.

PyProver March 2017
https://github.com/evhub/pyprover
Developed a library for resolution theorem proving in first-order predicate logic.

The Rabbit Programming Language April – December 2014
https://github.com/evhub/rabbit
Created the Rabbit programming language, a purely functional, interpreted, dynamically-typed scripting language built on top of Python. Wrote a technical paper describing the language.

Open Source Contributions

Keras-RL Added support for Boltzmann-Gumbel exploration based on the paper "Boltzmann Exploration Done Right" and fixed an issue with the Normalized Advantage Functions implementation. November 2018, November 2017
Keras Fixed an issue involving invalid serialization of Keras models. November 2017
Conda Added support for advanced PEP 496 packaging features. May 2017
Typeshed Added type annotations for the `future_builtins` module. October 2016
Jupyter Added support for custom syntax highlighting. July 2016

Relevant Courses

Machine Learning Fall 2017
Neural Networks Fall 2017
Bayesian Statistics Spring 2018
Algorithms Spring 2018
Mathematical Analysis II Fall 2018
Representation Theory Fall 2018
Abstract Algebra Fall 2017
Image Processing and Object Recognition Fall 2016
Advanced Differential Equations and Linear Algebra Summer 2016
Multivariable Calculus Summer 2016
Discrete Mathematics Spring 2016

Other Activities and Awards

Harvey Mudd Physics Department Rojansky Writing Award Winner May 2017
http://evhub.github.io/papers/everett.pdf
Awarded for the technical writing in my paper *Multiple Worlds, One Universal Wave Function* (see link).

Harvey Mudd Effective Altruism Club Leader (2017 – 2019) — AI Summer Fellows Program Attendee (2018) — Effective Altruism Global Attendee (2017) — World Wide Web Consortium Interledger Payments Community Group Member (2016) — National Forensics League Honor Society Outstanding Distinction (2015) — National Policy Debate Tournament of Champions Participant (2014, 2015) — East Bay Debate League Assistant Tournament Director (2013 – 2015)