

Troy Retter

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SUMMARY

Ph.D. graduate in discrete mathematics, current machine learning engineer at Liff Mobile working on large throughput, low latency modeling. Seeking to leverage my experience in math, programming, and machine learning to build impactful software solutions.

HIGHLIGHTS

Improved two results of Paul Erdős

- Significant because [Paul Erdős](#) is a figurehead of discrete mathematics and his papers have been of paramount influence to the field.

Three Kaggle Gold Medals

- 9/518 in [TSA Challenge Problem](#) with 1.5 million dollar prize pool
- 9/3330 in [Statoli/C-CORE Iceberg Challenge](#)
- 10/428 in [Santa Gift Matching Challenge](#)
- Highest [Kaggle rank](#) 153/157,0154

WORK EXPERIENCE

ML Engineer (Team Lead since Dec 2021), [Liff Mobile](#)

Redwood City, Dec 2019 - Current

- Improved ML models that predict conversion rates for our clients' advertisements, the driver of core company performance in the [real time bidding](#) marketplace.
- Helped maintain production infrastructure that serves over a billion in app advertisements a day, makes millions of predictions a second, and returns low latency responses to auction requests.
- Designed and currently leading the execution of a plan to improve initial performance for new customers.

Data Scientist, [Trusted Insight](#)

San Francisco, Feb 2018 - Feb 2019

- Developed models to drive automated venture capital investment decision making.
- Helped architect the broader software team's data ingestion pipeline, cloud infrastructure, and web based product.
- Evaluated the technology of companies looking for seed and series-A funding.
- Constructed data visualization tools to assist venture investment team analysis.
- Hired and managed two interns.

EDUCATION

Emory University

Atlanta GA, 2011-2016

Ph.D., Mathematics; advisor Vojtěch Rödl

Budapest Semesters in Mathematics

Hungary, 2010

Visiting student; Kitüntetessel (outstanding achievement)

Barrett Honor College at Arizona State University

Tempe AZ, 2006-2011

B.Sc., Mathematics; summa cum laude; honors thesis advisor Andrzej Czygrinow

PUBLICATIONS

Published 8 papers with [114 citations](#):

Ramsey-type numbers involving graphs and hypergraphs with large girth

2021

Combinatorics, Probability and Computing
with H. Hiep, V. Rödl, M Schacht

The size Ramsey number of short subdivisions of bounded degree graphs

2018

Random Structures and Algorithms
with Y. Kohayakawa and V. Rödl

An upper bound for the size of a k-uniform intersecting family with covering number k

2017

Journal of Combinatorial Theory, Series A
with A. Arman

The game chromatic number of trees and forests <i>Discrete Mathematics & Theoretical Computer Science</i> with C. Dunn, V. Larsen, K. Lindke, D. Toci	2015
Increasing Paths in Edge-Ordered Graphs: The Hypercube and Random Graph <i>The Electronic Journal of Combinatorics</i> with J. De Silva, T. Molla, F. Pfender, M. Tait	2015
How to Make the Perfect Fireworks Display: Two Strategies for Hanabi <i>Mathematics Magazine</i> with C. Cox, J. DeSilva, F. Kenter, P. DeOrsey, J. Tobin	2015
Ramsey-type numbers involving graphs and hypergraphs with large girth <i>LAGOS-2015</i> with H. Hiep, V. Rödl, and M Schacht	2015
On generalized Ramsey numbers of Erdős and Rogers <i>Journal of Combinatorial Theory Series B</i> with A. Dudek and V. Rödl	2014

AWARDS

- National Science Foundation grant recipient (with advisor)
- Dicséret (outstanding achievement) Budapest Semesters in Mathematics Spring 1010 Mathematics Competition
- J P Morgan Chase Scholar (\$1,000 award to top ASU Economics students)
- ASU President's Scholar (covered undergraduate tuition + living expenses)
- Arizona Byrd Scholar (additional undergraduate scholarship stipend)
- Captain of Arizona State Tennis Club Team that qualified for nationals
- Member of Emory Water Polo Team that qualified for nationals

TEACHING EXPERIENCE

NAIS International Schools <i>Visiting professor</i>	Xi'an China, 2017
• Linear Algebra: Summer 2017 • Probability and Statistics: Summer 2017	
Emory University <i>Primary instructor of record</i>	Atlanta GA, 2012-2016
• Calculus I: Fall 2012, Fall 2013, Spring 2014, Fall 2015 • Calculus II: Spring 2015, Spring 2016 • Probability and Statistics: Spring 2013, Fall 2014	

SERVICE

Liftoff Diversity Equity and Inclusion Committee <i>The committee is focused on initiating and executing initiatives to improve DEI.</i>	2021-Current
Atlanta Math Circles Lecturer <i>Selected and presented topics to entertain and educate middle school students.</i>	2014-2016
Emory Visiting Student Guide <i>Helped coordinate prospective graduate student visits.</i>	2014-2016
Emory Graduate Math and CS Organization <i>As elected president, worked to increase graduate student stipend, reduce teaching load, and launch career development lecture series.</i>	2015-2016
Middleschool Flag Football Coach <i>Positive role model for lower income area children. After losing the first two games, we finished the season undefeated.</i>	2009

SOFTWARE TOOLBOX

- **Core Languages:** Python, Clojure, Golang
- **ML Libraries:** TensorFlow, XGBoost, Vowpalwabbit
- **Databases:** Presto, PostgreSQL
- **Deployment:** AWS, Google Cloud, Flask, Unicorn, NGINX
- **Also completed projects with:** Dart, Flutter, Firebase, C++, Java, R, SAS, HTML, PHP, Node.js, Teraform, Docker, Kafka