COLTON GRAINGER

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Career Status

I am carefully and permanently pivoting away from a Ph.D. in mathematics to become a software engineer.

Professional Area

To support people's ability to make empirically informed decisions, I model complex systems, build scalable workflows for the associated data, and find just-in-time solutions for requirements discovered along the way.

Experience

2019–2020 **Visitor (V1), Data Engineering and Curation Section, NCAR** — Boulder, CO
Implemented the `rda-image-archive`. Mentored by Thomas Cram, Matt Mayernick. [Python, SQLAlchemy, AWS]

Summer 2019 **Software Engineering Intern, NCAR** — Boulder, CO
Designed the `rda-image-archive` as a repository for historical weather data to support climate research. Funded by SIParCS. Mentored by Thomas Cram, Matt Mayernick. [Python, Perl, PHP, MySQL]

2017–2018 **Web Development Intern, United Way of Thurston County** — Olympia, WA
Developed scheduling system and internal documentation for volunteers, interns, and work-studies at an overnight shelter. Funded by CNCS. Mentored by Lindsay Fujimoto, Abbigail Shirk. [HTML, CSS, JavaScript]

2016–2017 **Data Management Intern, YMCA of Greater Houston** — Houston, TX
Managed health records for a refugee medical assistance program serving the Texas Medical Center. Funded by TX-ESC. Mentored by Shaoli Bhadra, Danielle Bolks. [SQL, Excel]

Projects

May 2020 **`rda-image-archive`**
Python package for cataloging a ~60TB collection of images of meteorological logbooks; establishes a common description framework for image metadata and provides bulk, programmatic access to image subsets. [code]

Jul 2019 **Categorical Metadata for Unreduced Climate Observations**
Documentation for a metadata schema and a mathematical framework for reducing the uncertainty associated to historical weather data. [code]

Nov 2018 **Testing Neural Networks**
Jupyter notebook presenting Guss and Salakhutdinov's application of topological data analysis for the University of Colorado's Statistics, Optimization, and Machine Learning seminar. [code]

Education

2018–2019 **Ph.D. Student in Mathematics, University of Colorado** — Boulder, CO
Unfinished. Left topology group to pursue software engineering.
GPA: 3.6

2012–2016 **B.S. in Mathematics-Physics, The College of Idaho** — Caldwell, ID
Senior Study: Galois Theory for Differential Equations.
GPA: 3.5

Coursework

2020 Extracurricular
Software Engineering [stg-tud.github.io/eise]
JavaScript [seas.upenn.edu/~cis197]
Go Programming [seas.upenn.edu/~cis193]

2018–2019 Graduate — University of Colorado
Stats, Opt, and ML Seminar [Stephen Becker, APPM 8500]
Real Analysis [Judith Packer, Sergei Kuznetsov, MATH 6310]
Point-Set Topology [Carla Farsi, MATH 6210]
Algebraic Topology [Agnès Beaudry, MATH 6220]
Differential Geometry [Jeanne Clelland, MATH 6230]
Group and Ring Theory [Nat Thiem, MATH 6130]
Module and Field Theory [Richard M. Green, MATH 6140]

2017–2018 Postbaccalaureate — University of Idaho
Probability Theory [Chris Remien, MATH 451]
Numerical Analysis [Lyudmyla Barannyk, MATH 428]

Teaching

Spring 2020 Scientific Computing Mentor [code] — Boulder Valley School District
Peer mentor in git, pandas, and numpy for Suchit Sharma.

Fall 2019 Introduction to Statistics [MATH 2510] — University of Colorado
Instructor for 1 section, 20 students.

Awards

2012–2016 Heritage Scholarship — The College of Idaho
Full-tuition merit scholarship for undergraduate studies. [Awarded to 11 of 287 first-year students in 2012.]