

# COLTON GRAINGER

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I am a “mathematician-in-training”, carefully and permanently pivoting to become a software engineer.

To support people’s ability to make socially and environmentally just decisions, I model the inputs and outputs of complex systems, build workflows for their associated data, and prototype technical solutions for ambiguous requirements discovered along the way.

## Experience

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| 2019–2020   | <b>Visitor (V1), Data Engineering and Curation Section, NCAR</b><br>Implemented the <code>rda-image-archive</code> . Mentored by Thomas Cram, Matt Mayernick. [Python, SQLAlchemy]  | Boulder, CO |
| Summer 2019 | <b>Software Engineering Intern, NCAR</b><br>Designed the <code>rda-image-archive</code> as a repository for historical weather data to support climate research. Funded by SIParCS. Mentored by Thomas Cram, Matt Mayernick. [Python, Perl, PHP, MySQL]   | Boulder, CO |
| 2017–2018   | <b>Web Development Intern, United Way of Thurston County</b><br>Developed scheduling system and internal documentation for volunteers, interns, and work-studies at a 24-hour shelter for families experiencing homelessness. Funded by CNCS. Mentored by Lindsay Fujimoto, Abigail Shirk. [Pandoc, Markdown, HTML, JavaScript] | Olympia, WA |
| 2016–2017   | <b>Data Management Intern, YMCA of Greater Houston</b><br>Managed health records for a refugee medical assistance program serving the Texas Medical Center. Funded by TX-ESC. Mentored by Shaoli Bhadra, Danielle Bolks. [Excel, SQL]   | Houston, TX |

## Projects

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| May 2020 | <b>RDA Image Archive</b><br>Python package for cataloging a ~60TB collection of images of scanned meteorological logbooks; establishes a common description framework for image metadata and provides bulk, programmatic access to image subsets. [code] |
| Jul 2019 | <b>Categorical Metadata for Unreduced Climate Observations</b><br>Documentation for a metadata schema and a mathematical framework for reducing the uncertainty associated to historical weather data. [code]  |
| Nov 2018 | <b>Testing Neural Networks</b><br>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

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| 2018–2019 | <b>Ph.D. Student in Mathematics, University of Colorado</b><br>Unfinished. Left topology group to pursue software engineering.<br>GPA: 3.6 | Boulder, CO  |
| 2012–2016 | <b>B.S. in Mathematics-Physics, The College of Idaho</b><br>Senior Study: Galois Theory for Differential Equations.<br>GPA: 3.5            | Caldwell, ID |



## Coursework

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2020	Interim Software Engineering (Java) [self-study, <a href="https://stg-tud.github.io/eise">stg-tud.github.io/eise</a> ]	
2018–2019	Graduate Stats, Opt, and ML Seminar [Stephen Becker, APPM 8500] Differential Geometry [Jeanne Clelland, MATH 6230] Real Analysis [Judith Packer, Sergei Kuznetsov, MATH 6310] Point-set Topology [Carla Farsi, MATH 6210] Algebraic Topology [Agnès Beaudry, MATH 6220] Group and Ring Theory [Nat Thiem, MATH 6130] Module and Field Theory [Richard M. Green, MATH 6140]	University of Colorado
2017–2018	Interim Probability Theory (Python) [Chris Remien, MATH 451] Numerical Analysis (Python) [Lyudmyla Barannyk, MATH 428]	University of Idaho

## Teaching

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	 Scientific Computing Mentor [ <a href="#">code</a> ]	Boulder Valley School District
Spring 2020	Peer mentor in git, pandas, and numpy for Suchit Sharma.	
	 Introduction to Statistics [MATH 2510]	University of Colorado
Fall 2019	Instructor for 1 section, 20 students. Led by Al Bronstein.	

## Awards

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