Jason Ranoa · Curriculum Vitae

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EDUCATION

March 2024.   **Master of Science in Mathematics.**
                Oregon State University (OSU). Corvallis, OR 97331.
                GPA 3.89. Focus: Topological Data Science and Algebraic Topology.

May 2021.   **Bachelor of Science in Mathematics** with a minor in Computer Science.
                University of Wisconsin-Parkside. Kenosha, WI 53144.
                GPA 3.877. Graduated Magna Cum Laude (GPA 3.700 - 3.899). Dean's List for 4 semesters.

PROJECTS

Feb. 2024.   ***An Exposition on the Algebra and Computation of Persistent Homology.***
                An expository paper written for my MS degree in Mathematics talking about the algebra and
                calculation of the persistent homology of $\mathbb{N}_0$-indexed filtrations of simplicial complexes with
                coefficients in a field $\mathbb{F}$, in the lens of the more modern characterization of persistence
                modules as functors. Submitted February 2024 and with corrections submitted August 2024.
                [ScholarsArchive@OSU link][arXiv link]

WORK EXPERIENCE

Sept. 2021 - Mar. 2024.   **Graduate Teaching Assistant (GTA).**
                          Oregon State University. Corvallis, OR 97331.

                          Coordinated with instructional staff and employed active and equitable pedagogical
                          methods to achieve course goals. Tasked with leading recitation sections, with each
                          section consisting of a maximum of 35 students and meeting once a week.

                          Assignments by quarter:
                          - Fall 2021   MTH 241 Calculus for the Social Sciences
                          - Winter 2022   MTH 252 Integral Calculus
                          - Spring 2022   MTH 251 Differential Calculus
                          - Fall 2022   MTH 241 Calculus for the Social Sciences
                          - Winter 2023   MTH 227 Calculus and Probability for the Life Sciences I
                          - Spring 2023   MTH 228 Calculus and Probability for the Life Sciences II
                          - Fall 2023   MTH 252 Integral Calculus
                          - Winter 2024   MTH 252 Integral Calculus

                          Tutored at the Mathematics and Statistics Learning Center (MSLC) both in-person
                          and virtual via Teams. Topics include: College Algebra and Trigonometry, Calculus
                          (Single Variable and Multivariable), Introductory Probability, Discrete Mathematics,
                          Introductory Proof-writing, Matrix Algebra, Sequences and Series, Linear Algebra.

June 2023 - Aug. 2023.   **Instructor, Mathematics.**
                          Oregon State University. Corvallis, OR 97331.

                          Taught the following courses:
                          - Summer 2023 (4-week)   MTH 264 Introduction to Matrix Algebra
                          - Summer 2023 (4-week)   MTH 265 Introduction to Series

Jan. 2022 - May 2022.   **Virtual Math Tutor.**
                          Linn-Benton Community College. Albany, OR 97321.

Sept. 2020 - May 2021.   **Grader, Undergraduate Computer Science (CS)**

University of Wisconsin-Parkside. Kenosha, WI 53144.

Assignments by semester:

- **CSCI 340 Data Structures and Algorithms.** Spring 2021.
  Graded projects written in Java and provided feedback to students.
- **CSCI 245 Assembly Language Programming.** Fall 2020.
  Graded worksheets and programming assignments written in MIPS. Provided feedback to students while managing re-submissions and corrections for credit.

Aug. 2019 - Aug. 2021.	**Tutor III, Mathematics and Chemistry.** **College of Lake County.** Grayslake, IL 60030.
Jan. 2019 - Aug. 2019.	**Customer Service Representative.** **Walgreens.** Island Lake, Illinois 60042.
Jan. 2018 - May 2019.	**Peer Tutor, Mathematics and Chemistry.** **McHenry County College.** Crystal Lake, IL 60012.
Jan. 2017 - Dec. 2017.	**Research Assistant.** **McHenry County College.** Crystal Lake, IL 60012.

PROFESSIONAL DEVELOPMENT

Sept. 2021 - May 2023. **Fellow.** ELITE PD Program.

Engaged Learning, Inclusive Teaching, and Equity: Professional Development (ELITE PD) is an NSF-funded study led by Dr. Mary Beisiegel with the goal of providing multi-year professional development programs for math graduate teaching assistants (MGTAs) involving evidence-based teaching practices.

Jan. 2023 - May 2023. **Funded Participant.** OMSI Science Communication Fellowship.

Attended OMSI's Science Communication "Short Course" and developed a hands-on activity involving the characterization of 2-dimensional holes using simplicial homology, with a discussion about how the theory generalizes to higher dimensions.

SEMINARS AND CONFERENCES

Sept. 2022 - Mar. 2023. **Graduate Geometry and Topology Seminar.** Once Weekly. Oregon State University.

Feb. 24 - 25, 2023. **Math for All Conference 2023.** Oregon State University.

Nov. 5 - 6, 2022. **Pacific Northwest Geometry Seminar.** Seattle University.

RELEVANT COURSEWORK

1. **Point-Set and Algebraic Topology.**
   e.g. topological spaces, simplicial homology, the fundamental group, basic homological algebra and category theory, topological data analysis.

2. **Abstract Algebra.**
   e.g. vector spaces, groups, rings, modules, graded modules, matrices over PIDs.

3. **Mathematics Education.**
   e.g. theories about the teaching and learning of mathematics, review of pedagogical practices.

4. **Real Analysis and Differential Geometry.**
   e.g. metric spaces, measure theory, Riemann and Lebesgue integration, complex analysis, differential geometry in $\mathbb{R}^2$ and $\mathbb{R}^3$.

5. **Numerical Linear Algebra.**
   e.g. vector spaces over $\mathbb{R}$ and $\mathbb{C}$, eigenvalues and eigenvectors, instability of matrix algorithms, coding in MATLAB, matrix normal forms.

6. **Computer Science (undergraduate).**
   e.g. introduction to data science, data structures and algorithm design, theory of computation, computer architecture, programming languages.