Benjamin Joseph Rapone

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Education

- **Washington State University** Pullman, WA
  Ph.D. Mathematics *2013 - Present*
  - Department of Mathematics RA, TA, TA-Mentor and Search Committee Member
  - Data Science, Data Mining, Optimization and Algebraic Topology: Cum-GPA 4.0
- **San Diego State University** San Diego, CA
  M.A. Mathematics *2009 - 2012*
  - Department of Mathematics TA
  - Modern Algebra and Cryptography: Cum-GPA 3.61
- **California State University San Marcos** San Marcos, CA
  B.S. Mathematics *2006 - 2009*
  - Department of Mathematics TA: Cum-GPA 3.2

Developmental Skills

- **Programming in Research:** Julia, Python, Cplex, Maple, Bash, Matlab/Octave, R, SAS, Ampl
  - Currently developing and testing optimization based modeling programs in Julia that implement modern and newly developed theory concerned with Optimal Power Flow problems for Pacific Northwest National Lab.
  - Formatting, processing, and statistical/predictive analysis of large data sets in collaboration with MODAL/Freie University through the GRIPS program at IPAM/UCLA, and OHSU using personally developed script with R, SAS, Python, Bash and Octave.
  - Implementing smooth transitions between data set generation, meshing (Tetgen/Triangle), and mixed integer optimization model development and analysis with visual interactive output using Python and Cplex (optimization software) in current research with Dr. Krisnamoorthy and collaborative research with Oak Ridge National Lab.
- **Leadership and Reporting:** LaTeX, MSOffice
  - Generated presentation and reporting materials as instructional training conference team leader for in-service teachers using LaTeX, and Microsoft Office programs.
  - Developed lab content, instruction protocols, materials, and the mentor leadership program for the Calculus series using LaTeX.

Research and Work Experience

- **PNNL Labs** Richland, WA
  Research Intern *Jan. 2017 - Current*
  - Nonlinear programming research concerning Optimal Power Flow
- **ORNL Labs** Oak Ridge, TN
  Research collaborator *Feb. 2016 - Current*
  - MIP research concerning 3D printing

- **MODAL/ Freie University** Berlin, DE
  Research Intern under Dr. Tim Conrad via the GRIPS program through IPAM/UCLA Summer 2016
  - Big-data modeling with predictive analysis, and manuscript drafting.

- **Washington State University** Pullman, WA
  RA, TA, Mentor, Committee Member *May 2013 - current*

  Research Assistant
  - **Mathematics:** Currently an RA for the College of Arts and Science. Working on theoretical and computation problems at the interface of Optimization, Algebraic Topology and Ecology.
  - **Math Education:** RA for large multi-million dollar NSF grant Making Math Reasoning Explicit (MMRE). Responsibilities included classroom observation, data collection, conference management, and theoretical research.
  - **Math Education:** Internal WSU grant RA for conducting research concerning course content, and instruction of the Calculus series.

  Teaching Assistant & Mentor
  - **Calculus 2 & Trigonometry:** Lab and course instructor for five courses over three semesters.

  Committee Member
  - **Search Committee:** Tenure track mathematics faculty position at WSU Pullman campus.

- **Oregon Health & Science University** Portland, OR
  Research Affiliate under Dr. Jung Yoo *Summer 2015*
  - Statistical analysis, big-data modelling with predictive analysis, and manuscript drafting.

- **Summa Education** San Diego, CA
  Developer *August 2012 - May 2013*
  - SAT-Prep curriculum development for mathematics.

- **Southwestern College** Chula Vista, CA
  Instructor *Fall Semester 2012*
  - Course Instructor for Pre-calculus and Intermediate algebra. Responsible for developing all course materials and assessing/assigning grades.

Publications and Presentations

- **American Mathematical Society: AMS Sectional Meeting** WSU, Pullman, WA
  Presented "Minimal Homotopy Area" *April, 2017*
- **Psychology Mathematics Education: PME 38 \ PME-NA 36** UBC, Vancouver, Canada
  Published and Presented "A Model for Systemic Change in Rural Schools" *July, 2014*
- **Northwestern Association of Teacher Education (NWATE)** Pullman, WA
  Presented "Supporting Systemic Changes" *June, 2014*
- **San Diego State University Publications: Masters Thesis** San Diego, CA
  Published and Defended "Taking Square Roots over Finite Fields" *December, 2012*

Honors and Awards

- **College of Arts and Science (CAS) Research Assistantship Award 2015-2016**
- **Sidney G. and Evelyn Hacker Graduate Teaching Fellowship, 2015-2016**
- **Graduate Department PhD Summer Research Fellowship, Summer 2013**