WILL WRIGHT

PERSONAL INFORMATION

email willwright@math.ucdavis.edu

website https://www.math.ucdavis.edu/∼willwright/

phone (530) 760 9363

home 1160 Auburn Dr.

Davis, CA 95616

EDUCATION

2013–Present **The University of California, Davis**

PhD, Mathematics

GPA: 3.53 · Emphases: *eigenvalue optimization, nonlinear optimization*
Advisor: *Zhaojun Bai*
Expected Graduation: *June, 2018*

2010–2013 **California State University, East Bay**

MS, Applied Math

GPA: 3.94 · Emphases: *topology, numerical analysis*

2008–2009 **Concordia University, Portland**

MA, Teaching

Earned teaching endorsements in secondary school math and sciences.

2001–2006 **Pennsylvania State University**

BA, Political Science and Philosophy

Received Merit-Based Scholarships 3 Years.
Dean's List 6 Semesters.

RESEARCH

2016–Present **Smoothing techniques for semidefinite programs**

Eigenvalue Optimization

I am currently studying Rayleigh quotient-type (RQ-type) optimization problems, which are dual to parameterized eigenvalue optimization problems. This equivalence gives a new interpretation of parameterized eigenvalue problems as RQ-type problems. One open topic is determining the necessary and sufficient conditions for solvability of RQ-type problems (i.e., boundedness of the infimum and attainment of a finite eigenvector). Additionally, I am studing what other ways duality may be shown between RQ-type problems and parameterized eigenvalue problems. And more generally, can this duality be folded into conic duality theory?
Advising Professor: Zhaojun Bai

2015–2016 **Generalizing and extending a smooth exact penalty function for constrained least squares**

Convex Optimization

A smooth exact penalty function was recently introduced for inequality constraints which yields an efficient quasi-Newton method. I have shown this function is equal to an augmented Lagrangian with a specific substitution on the dual variable.
Advising Professor: Michael Friedlander

2014–2015 **Reading Course: von Neumann algebras**

Operator Theory

I studied the elementary properties of von Neumann algebras, which are *-algebras of bounded operators over Hilbert spaces. Von Neumann algebras are found in many fields and provide a foundation for operator theory.
Advising Professor: Eric Babson

2015 **Extrapolating and modeling chromatin packings**

DNA Topology

I modeled chromatin packing based on recent genome contact probability results for interphase human chromatin. My group simulated and analyzed DNA conformations using Markov Chain Monte Carlo perturbations on knotted initial states. DNA is often assumed unknotted in current results; yet our preliminary results indicated that minimally knotted conformations may be as likely supported as unknotted conformations.
Advising Professor: Mariel Vazquez

INTERNSHIPS

2016 **Apple, Inc.**

Software Engineer

I prototyped optimization methods and submitted a comprehensive report of these results. I also contributed low-level, performance-critical code to my department's code base.

SOFTWARE SKILLS

Intermediate C++, Julia, MATLAB, LaTeX, MS Office

Basic python

TEACHING EXPERIENCE

2013–Present **UC Davis**

Teaching Assistant

Taught differential equations; conducted discussions for calculus II, III, IV.
Reference: Sarah Driver · (530) 752 8131 sbdriver@math.ucdavis.edu

2011–2013 **CSU East Bay**

Assistant Instructor

Taught elementary algebra. Managed all aspects of instruction; utilized online homework assignments.
Reference: Kevin Callahan · (510) 885 3950 kevin.callahan@csueastbay.edu

DEPARTMENT SERVICE

Officer 2015-2016 · SIAM Student Chapter: President
Developing graduate speaker exchange program with UC Merced
Hosting NSA, Sandia and Lawrence Livermore Labs speakers

Researcher 2015-2016 · Bio-Calculus Sequence: Discussion Section Redevelopment

MISCELLANEOUS

Workshops 2015 · Brown-ICERM-Kobe Simulation Summer School

2015 · CAMBAM-MBI-NIMBioS Summer School on Nonlinear Dynamics in Biological Systems, McGill University

Awards 2015 · SMART Fellowship Finalist, Department of Defense

2012 · Tracewell Scholarship, CSU East Bay

2011 · Sabharwal Scholarship, CSU East Bay

Interests Running · Playing guitar & piano · Social/Scientific Podcasts · Cooking

April 5, 2017