Clifford Blakestad

PERSONAL

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GitHub | LinkedIn

SUMMARY

Algorithm engineer with experience devoloping algorithms for optimization software to solve large linear and mixed-integer programming problems. Passion for mathematics and technical exposition.

EXPERIENCE

Senior algorithm engineer SimpleRose 2024-2025

- Researched components for a state-of-the-art mixed integer programming solver.
- Contributed code to a state-of-the-art linear programming solver.
- Wrote interactive internal documentation for the mathematics underlying optimization software.
- Presented advances in mathematical modeling techniques at industry conference.

Postdoctoral researcher Pohang University of Science and Technology 2019-2022

- Used mathematical analysis to study complex and p-adic properties of modular forms resulting in publications.
- Communicated research findings at conferences.

Graduate researcher University of Colorado Boulder 2011-2018

- Used mathematical analysis and scientific computing to study p-adic properties of algebraic curves and abelian varieties resulting in publications and invited talks.

Mathematics instructor and TA University of Colorado Boulder 2011-2018

- Served as instructor for courses in Calculus I-III.
- Taught classes of 30 college students, explaining complex mathematical concepts to a range of people.

EDUCATION

Ph.D. in Mathematics University of Colorado Boulder 2018

Dissertation: *On Generalizations of p-Adic Weierstrass Sigma and Zeta Functions*
Advisor: David Grant

B.S. in Mathematics California Institute of Technology 2011

SKILLS

Mathematics, and Scientific Computing

Optimization, especially linear and mixed integer programing
Number theory, arithmetic geometry, abstract algebra
Calculus (all levels), differential equations, linear algebra, optimization (- tutoring)
probability, statistics. Many other undergraduate and graduate topics. (- tutoring)

Programming and Scripting

C++, javascript
Python (pandas, scikit-learn, numpy, Flask, matplotlib), SQL, Git
Mathematica, LaTeX, Beamer

Visualization

Blender 3d, manim, matplotlib

Professional skills

Experienced at communicating technical concepts, both in project collaborations and in explaining results to broad audiences.
Lesson planning. Tutoring mathematics in group and one-on-one settings, especially to high school and college students.

Projects

arXiv paper recommender

A recommendation system which takes in the title and abstract of a mathematics paper and suggests ten similar papers from the arXiv. Served via a Flask app to my website, containerized in Docker and hosted via Google Cloud Platform. Try it here. The code is on GitHub.

Mathematical paper subject classifier

A classifier service that intakes a title and an abstract of a mathematics paper and predicts the appropriate mathematical subjects for the paper. Also hosted on GCP and served in real time via Flask to my website. Try it here. The code is on GitHub.

Research Interests

Optimization—especially linear and mixed-integer programming. Number theory and algebraic geometry—especially p-adic geometry of curves and abelian varieties and the interactions between theta functions and modular forms.

Publications

C. Blakestad, Y. Choie, *Twisted Kronecker series and periods of modular forms on* $\Gamma_0(N)$*,* Advances in Mathematics 446 (2024)

C. Blakestad and D. Grant, *Universal p-adic sigma and Weierstrass zeta functions,* Journal of Number Theory 249, 348-376 (2023)

C. Blakestad, D. Gvirtz, B. Heuer, D. Shchedrina, K. Shimizu, P. Wear, Z. Yao, *Perfectoid covers of abelian varieties,* Math. Res. Lett. 29, No. 3, 631-662 (2022)

R. Bell, C. Blakestad, A.C. Cojocaru, A. Cowan, N. Jones, V. Matei, G. Smith, I. Vogt, *Constants in Titchmarsh divisor problems for elliptic curves,* Res. number theory 6, 1 (2020)

Conference Talks

A primal interpretation of the bound flipping ratio test,
INFORMS Annual Meeting (October 2025)

On p-adic Weierstrass functions,
Korean Mathematical Society Annual Meeting (July 2020)

On the relationship between division polynomials and p-adic sigma functions on abelian varieties, Annual number theory workshop 2020
(January 2020)

From complex to p-adic theta functions, IBS-CGP Pohang Mathematics Meeting (December 2019)

On generalizations of p-adic sigma functions to Jacobians of curves of genus two,
Korean Mathematical Society Annual Meeting (October 2019)

Universal p-adic sigma and Weierstrass zeta functions, Joint Mathematics Meetings

(January 2018)

Other Talks

On p-adic Weiestrass functions, Algebra Seminar, University of Groningen (October 2020)

On p-adic Weierstrass functions, Algebra Seminar, University of Tennessee Knoxville (March 2020)

p-Adic theta functions, Geometry Seminar, Korea Institute for Advanced Study (November 2019)

Mathematics from the p-adic perspective, Korea Institute for Advanced Study (September 2019)

Uniformization theory of curves, Colorado State University (April 2015)