

Website: <https://home.cs.colorado.edu/~hbennett/>

Theoretical computer science, with an emphasis on lattices and geometric algorithms.

University of Colorado – Boulder, CO
Assistant Professor of Computer Science

Oregon State University – Corvallis, OR
Assistant Professor of EECS
 Courtesy Appointment

Fall 2021 – Fall 2023
 Spring 2024 – Present

University of Michigan – Ann Arbor, MI Fall 2019 – Summer 2021
Adjunct/Visiting Assistant Research Scientist (Postdoc)
Mentor: Chris Peikert.

Northwestern University – Evanston, IL Fall 2017 – Summer 2019
Postdoctoral Fellow
 Research mentors: Anindya De and Aravindan Vijayaraghavan.

Courant Institute of Mathematical Sciences,
New York University

- Ph.D. in Computer Science.
- Advisors: Daniel Dadush (CWI, Amsterdam) and Chee Yap (NYU).

University of Colorado – Boulder Fall 2010 – Spring 2012

- M.S. in Computer Science.
- Advisor: Sriram Sankaranarayanan.

University of Wisconsin – Madison Fall 2006 – Spring 2010
• B.S. in Mathematics, certificate (minor) in Computer Science.

Peer-Reviewed Conference Papers:

- [C1] Huck Bennett, Karthik Gajulapalli, Alexander Golovnev, and Evelyn Warton. *Matrix Multiplication Verification Using Coding Theory*. International Conference on Randomization and Computation (RANDOM) 2024.
- [C2] Willow Barkan, Huck Bennett, and Amir Nayyeri. *Topological k -metrics*. International Symposium on Computational Geometry (SOCG) 2024. **Invited to the special issue of Discrete and Computational Geometry.**
- [C3] Huck Bennett and Chris Peikert. *Hardness of the (Approximate) Shortest Vector Problem: A Simple Proof via Reed-Solomon Codes*. International Conference on Randomization and Computation (RANDOM) 2023.
- [C4] Huck Bennett, Mahdi Cheraghchi, Venkat Guruswami, and João Ribeiro. *Parameterized Inapproximability of the Minimum Distance Problem over all Fields*.

- and the Shortest Vector Problem in all ℓ_p Norms. Symposium on Theory of Computing (STOC) 2023. Preliminary version of [J1].
- [C5] Divesh Aggarwal, Huck Bennett, Zvika Brakerski, Alexander Golovnev, Rajendra Kumar, Zeyong Li, Spencer Peters, Noah Stephens-Davidowitz, and Vinod Vaikuntanathan. *Lattice Problems Beyond Polynomial Time*. Symposium on Theory of Computing (STOC) 2023.
 - [C6] Huck Bennett, Atul Ganju, Pura Peetathawatchai, and Noah Stephens-Davidowitz. *Just how hard are rotations of \mathbb{Z}^n ? Algorithms and cryptography with the simplest lattice*. International Conference on the Theory and Applications of Cryptographic Techniques (EUROCRYPT) 2023.
 - [C7] Huck Bennett, Chris Peikert, and Yi Tang. *Improved Hardness of BDD and SVP Under Gap-(S)ETH*. Innovations in Theoretical Computer Science (ITCS) 2022.
 - [C8] Huck Bennett, Anindya De, Rocco Servedio, and Emmanouil V. Vlatakis-Gkaragkounis. *Reconstructing Weighted Voting Schemes from Partial Information about their Power Indices*. Conference on Learning Theory (COLT) 2021.
 - [C9] Divesh Aggarwal, Huck Bennett, Alexander Golovnev, and Noah Stephens-Davidowitz. *Fine-grained hardness of CVP(P)— Everything that we can prove (and nothing else)*. Symposium on Discrete Algorithms (SODA) 2021.
 - [C10] Huck Bennett and Chris Peikert. *Hardness of Bounded Distance Decoding on Lattices in ℓ_p Norms*. Computational Complexity Conference (CCC) 2020.
 - [C11] Huck Bennett, Alexander Golovnev, and Noah Stephens-Davidowitz. *On the Quantitative Hardness of CVP*. Foundations of Computer Science (FOCS) 2017.
 - [C12] Huck Bennett, Daniel Dadush, and Noah Stephens-Davidowitz. *On the Lattice Distortion Problem*. European Symposium on Algorithms (ESA) 2016, Track A.
 - [C13] Huck Bennett, Evanthia Papadopoulou, and Chee Yap. *Planar Minimization Diagrams via Subdivision with Applications to Anisotropic Voronoi Diagrams*. Eurographics Symposium on Geometry Processing (SGP) 2016.
 - [C14] Huck Bennett, Daniel Reichman, and Igor Shinkar. *On Percolation and NP-hardness*. International Colloquium on Automata, Languages, and Programming (ICALP) 2016, Track A. Preliminary version of [J3].
 - [C15] Huck Bennett and Chee Yap. *Amortized Analysis of Smooth Quadrees in All Dimensions*. Scandinavian Symposium and Workshops on Algorithm Theory (SWAT) 2014. Preliminary version of [J4].

Peer-Reviewed Journal Papers and Surveys:

- [J1] Huck Bennett, Mahdi Cheraghchi, Venkat Guruswami, and João Ribeiro. *Parameterized Inapproximability of the Minimum Distance Problem over all Fields and the Shortest Vector Problem in all ℓ_p Norms*. To appear, SIAM Journal of Computing (SICOMP), 2024.
- [J2] Huck Bennett. *The Complexity of the Shortest Vector Problem*. ACM SIGACT News 54 (1), pp. 37-61, 2023.
- [J3] Huck Bennett, Daniel Reichman, and Igor Shinkar. *On Percolation and NP-hardness*. Random Structures & Algorithms 54 (2), pp. 228-257, 2019.
- [J4] Huck Bennett and Chee Yap. *Amortized Analysis of Smooth Quadrees in All Dimensions*. Computational Geometry: Theory and Applications 63, pp. 20-39, 2017.

Preprints:

- [P1] Huck Bennett and Kaung Myat Htay Win. *Relating Code Equivalence to Other Isomorphism Problems*. Preprint, 2024.
- [P2] Huck Bennett, Surendra Ghentiyala, and Noah Stephens-Davidowitz. *The more the merrier! On the complexity of finding multicollisions, with connections to codes and lattices*. Preprint, 2024.
- [P3] Huck Bennett. *An Enumeration Technique for Lattice Basis Reduction*. Preprint, 2019.

Other:

- [O1] Huck Bennett. *AlphaGo and Artificial Intelligence*. Blog post, March 2016. <https://hdbennett.wordpress.com/2016/03/18/alphago-and-artificial-intelligence/>.
- [O2] Huck Bennett, Evanthia Papadopoulou, and Chee Yap. *A Subdivision Approach to Weighted Voronoi Diagrams*. Fall Workshop on Computational Geometry (FWCG) 2014. Preliminary version of [C13].
- [O3] Huck Bennett and Chee Yap. *Amortized Analysis of Balanced Quadrees*. Fall Workshop on Computational Geometry (FWCG) 2013. Preliminary version of [C15].
- [O4] Huxley Bennett and Sriram Sankaranarayanan. *Model Counting Using the Inclusion-Exclusion Principle*. Short paper and poster. Theory and Applications of Satisfiability Testing (SAT) 2011.

TEACHING

As Lead Instructor:

- Honors Analysis of Algorithms. Oregon State University, Winter 2023.
- Analysis of Algorithms. Oregon State University, Fall 2021, Winter 2023, Fall 2023.
- Foundations of Computer Science. University of Michigan, Fall 2019 (joint with Chris Peikert and Ilya Volkovich).
- Lattices in Computer Science. Northwestern University, Spring 2019; Oregon State University, Spring 2022; University of Colorado, Spring 2024.
- Mathematical Foundations of Computer Science. Northwestern University, Winter 2018, Spring 2018, Fall 2018.
- Computational Geometry. Northwestern University, Fall 2017, Winter 2019.

As Teaching Assistant:

- Programming Languages (master's level), New York University, Summer 2015.
- Programming Languages (junior level), University of Colorado, Spring 2012.

MENTORSHIP

Ph.D. Students:

Evelyn Warton (co-advised with Amir Nayyeri) 2022 – Present

M.S. Students:

Kaung (John) Myat Htay Win 2023 – 2024
Willow Barkan (co-advised with Amir Nayyeri) 2022 – 2023

Undergraduate Students:

Ian Tassin (senior honors thesis) 2021 – 2023

- Ian wrote the paper “Wang Tilings in Arbitrary Dimensions,” which was published in the Rose-Hulman Undergraduate Mathematics Journal, based on his thesis.

Ryan Little	2021 – 2022
Andrew Hwi Gue Cho	2018

FUNDING NSF Award No. 2312297. Collaborative Research: AF: SaTC: Medium: Theoretical Foundations of Lattice-Based Cryptography. Joint PI with Noah Stephens-Davidowitz. Total: \$1.2 million, my share: \$600,000.

SERVICE **Reviewing:** APPROX, CRYPTO, FOCS, ICALP, IMACC, ITCS, MFCS, SOCG, SODA, STACS, STOC, WADS, Algorithmica, Information and Computation, Journal of Combinatorial Optimization, SIDMA.

Organization: Workshop on Fine-Grained Cryptography at FSTTCS 2022 (jointly organized with Divesh Aggarwal, Alexander Golovnev, Rajendra Kumar, and Noah Stephens-Davidowitz).

WORK EXPERIENCE	Centrum Wiskunde & Informatica – Amsterdam, Netherlands	Fall 2016
	Google – Mountain View, CA; Kirkland, WA	Summer 2013, Summer 2014
	Private Tutoring – New York, NY	Various
	Fusion-io – Superior, CO	Summer 2012
	Epic Systems – Verona, WI	Summer 2010, Summer 2011

SKILLS **Programming Languages/Software:**

Mostly imperative:	C, C++, Java, Python, Visual Basic
Mostly functional:	OCaml, Scala, Scheme, Standard ML
Mathematical:	Lua, Mathematica, NumPy, R, Sage
Constraint solving:	MiniSat, Prolog, Z3
Assembly:	MIPS, x86
Web:	CSS, HTML, JavaScript
Other:	L ^A T _E X, Lex/Yacc variants, Linux, OpenGL

AWARDS	Warren Postdoctoral Fellowship	2018 – 2019
	MacCracken Fellowship	2012 – 2017
	University Fellowship	2010 – 2011
	William F. Vilas Scholarship	2006 – 2010
	National Merit Finalist	2006

OTHER

1st Place, U.S. Open (Go) 3-dan division	2009
1st Place, U.S. Open (Go) 1-dan division	2008

Mountain Climbing – Including 31 of 54 of Colorado’s 14,000+ foot peaks.

Erdős Number – 3 (Huck Bennett → {Daniel Reichman, Igor Shinkar} → Noga Alon → Paul Erdős).

PERSONAL INFORMATION

Legal Name: Huxley David Bennett

Citizenship: United States of America