
Education

- 2020 **Professional Capstone Certificate, Computer Science**, *University of Wisconsin*, Madison, WI, USA
Courses in database theory and design; artificial intelligence and machine learning; networking; operating systems; programming languages and compilers.
- 2006 **PhD, Mathematics**, *University of Minnesota*, Minneapolis, MN, USA
thesis: *Towards a combinatorial theory of multiple orthogonal polynomials*
advisor: Dennis Stanton
- 2000 **Bachelor of Science, Mathematics**, *University of Wisconsin*, Madison, WI, USA
honors: Distinction in the Major; Phi Beta Kappa Society; Golden Key National Honor Society; National Merit Distinguished Scholar

Work experience

- 2025-present **Visiting assistant professor**, *Macalester College*, Saint Paul, Minnesota
Taught and developed curriculum and course materials for first- and second-semester programming and introductory data science courses.
- 2015–2025 **Software developer**, *Epic*, Madison, Wisconsin
Software developer for Epic's application for scheduling and documenting surgeries. User research, design, implementation of client-server and database software. I also was a main developer for a module for analyzing and optimizing surgical supply and implant costs.
- 2014–2015 **Lecturer**, *University of Wisconsin–Madison*
Taught linear algebra courses.
- 2013–2014 **WisCEL math director**, *University of Wisconsin–Madison*
Coordinated and developed the developmental math courses taught under the auspices of WisCEL—the Wisconsin Collaboratory for Enhanced Learning (wiscel.wisc.edu).
- 2012–2013 **Visiting assistant professor**, *University of Puget Sound*, Tacoma, Washington
Taught introductory statistics, linear algebra, and computer science lab courses.
- 2008–2012 **Visiting Professor**, *Korea Advanced Institute of Science and Technology (KAIST)*, Daejeon, Korea
In addition to usual teaching and research duties, designed and taught a course on writing and presenting mathematics in English to graduate students and advanced undergraduates.
- 2007–2008 **BK21 Postdoctoral Fellow**, *KAIST*, Daejeon, Korea
Continued my research, did development for Sage, and taught lower-division undergraduate courses.
- 2006–2007 **Postdoctoral Fellow**, *ITCEP, University of Minnesota*
Taught honors calculus and linear algebra courses for UMTYMP, a program for advanced high school students, as well as linear algebra and differential equations for engineering students. Co-taught summer sessions on mathematics for elementary school teachers. See www.mathcep.umn.edu
- 2000–2006 **Teaching Assistant**, *University of Minnesota*
Conducted recitation sections in a wide variety of undergraduate math courses, from college algebra to honors multivariable calculus. Developed and wrote new Mathematica labs for a multivariable calculus course for engineering students.

Publications

Dan Drake, *The combinatorics of associated Hermite polynomials*, *European J. of Combinatorics* **30** (2009), no. 4, 1005–1021, doi:10.1016/j.ejc.2008.05.009, MR 2504659.

———, *Bijections from weighted Dyck paths to Schröder paths*, *J. of Integer Sequences* **13** (2010), no. 9, Article 10.9.2, 20 pp, MR 2746251.

———, *Higher order matching polynomials and d-orthogonality*, *Advances in Applied Mathematics* **46**

(2011), no. 1-4, 226–246, doi:10.1016/j.aam.2009.12.008, MR 2794023.

Dan Drake and Ryan Gantner, *Generating functions for plateaus in Motzkin paths*, Journal of the Chungcheong Mathematical Society **25** (2012), no. 3, 475–489, available from http://www.ccms.or.kr/data/cont_25_3.html.

Dan Drake and Jang Soo Kim, *k-distant crossings and nestings of matchings and partitions*, FPSAC 2009, Discrete Mathematics & Theoretical Computer Science Proceedings, vol. AK, 2009, pp. 349–360, MR 2721525.

Selected talks

- Oct 2025 *When Bad Predictions are Better*, Math/Stats/CS Colloquium, Macalester College. A further update and reprisal.
- Jan 2022 *Meltdown: Why Our Systems Fail and What We Can Do About It*. Internal presentation, open to all at Epic, on the book by Clearfield and Tilcsik
- Oct 2021 *When Bad Predictions are Better*, Bi-state Math Colloquium, UW-Platteville. An update and reprisal of the World Usability Day talk, to a very different audience of math and CS faculty and students.
- Nov 2020 *When Bad Predictions are Better*, World Usability Day. Presentation given to over 1000 Epic designers, developers, project managers, and technical support engineers on the value of bad predictions.
- Nov 2012 *Higher-order matching polynomials and d-orthogonality*, Combinatorial Potlatch 2012, Simon Fraser University, Vancouver, Canada
- Oct 2012 *The complex cosine revealed*, Pacific Lutheran University, Parkland, Washington
- Jun 2011 *SageTeX: put some Sage into your TeX*, Sage Education Days 3, Seattle, Washington
- Oct 2010 *A bijection from weighted Dyck paths to Schröder paths, little and big*, Global KMS International Conference, Pohang, Korea
- Apr 2009 *Sage: free software for mathematics education and research*, Sungkyunkwan University math department colloquium, Suwon, Korea
- Aug 2008 *Tools for getting graphics into L^AT_EX*, Sage Days 9 (Sage and Graphics), Simon Fraser University, Vancouver, Canada
- Nov 2007 *Matchings, maps, and tableaux: moments of associated Hermite polynomials*, Chonnam National University, Gwangju, Korea
- Jul 2007 *The combinatorics of associated Hermite polynomials*, Formal Power Series and Algebraic Combinatorics, Tianjin, China

Honors and awards

- 2010 Selected as one of the best instructors by the KAIST College of Natural Sciences
- 2001–2002 University of Minnesota School of Mathematics Citation for Excellence in Teaching

Other activities

- 2025-present “AI for the Confused”: outreach to Twin Cities-area senior citizens, educating them on AI chatbots related services. Presentations at Saint Paul public library and local senior centers.
- 2015–2024 Many presentations at internal meetings with Epic software developers on software design and best practices for writing code, on topics from “making invalid states irrepresentable” to working effectively with legacy code, and many others.
- 2015–2024 Organized and led several book clubs/seminars for Epic developers on programming; for example, *Seven Languages in Seven Weeks*; *Clean Code*
- summer 2012 **Organizer, MAA PREP workshop on Sage**. Co-organized an MAA PREP workshop on using Sage for undergraduate teaching. See www.maa.org/prep/2012/sage.html
- Apr 2012 **Organizer, Sage Days 37**. Co-organized the first “Sage Days” meeting in Korea, held at the spring meeting of the Korean Mathematical Society. See <http://wiki.sagemath.org/days37>

- 2009–2015 **AMS MathSciNet reviewer.** See www.ams.org/mathscinet/search/author.html?mrauthid=868025
- 2008–2013 **Author of SageTeX.** SageTeX is a L^AT_EX package and Python module that allows you to embed Sage computations, examples, plots into a L^AT_EX document. See www.sagemath.org/doc/tutorial/sagetex.html
- 2007–2013 **Sage developer.** Contributed to the development of Sage, a free software/open source computer mathematics system which aims to be a viable alternative to Maple, Mathematica, Magma, and Matlab. Sage uses the Python programming language and combines a large number of open source mathematics software packages. Focused on improving Sage’s support for combinatorics and its notebook interface. See www.sagemath.org

References

Shilad Sen, ssen@macalester.edu, 651-696-6273

Paul Cantrell, pcantrel@macalester.edu

Rob Beezer, beezer@pugetsound.edu, 253-879-3564

Jonathan Rogness, rogness@umn.edu, 612-625-2861