Ryan Slechta

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Research Interests

Computational Topology; Combinatorial Dynamical Systems

Education

2016   Bachelor of Arts, *summa cum laude*, Mathematics, Computer Science
University of St. Thomas, St. Paul, Minnesota, USA

Appointments

2017-Present   Graduate Research Associate, The Ohio State University
2016-2017   University Fellow, The Ohio State University
2015-2016   Research Assistant, Los Alamos National Laboratory
2014-2015   Research Assistant, University of Minnesota
2013-2014   Research Assistant, University of St. Thomas

Grants, Honors, & Awards

2016-2017   University Fellowship, The Ohio State University
2012-2016   Deans List (each semester), University of St. Thomas
2012-2016   Aquinas Scholars Honors Program, University of St. Thomas
2015   Barry M. Goldwater Scholarship, Honorable Mention, Goldwater Foundation
2014   Collaborative Inquiry Grant, University of St. Thomas
2014   MAA Outstanding Presentation Award, MAA at MathFest
2012   Collaborative Inquiry Grant, University of St. Thomas

Publications

CONFERENCE PROCEEDINGS

2020 T. K. Dey, M. Mrozek, and R. Slechta. "Persistence of the Conley Index in Combinatorial Dynamical Systems." To appear at the 36th International Symposium on Computational Geometry (SoCG).

2019 T. K. Dey and R. Slechta. "Filtration Simplification for Persistent Homology via Edge Contraction." Presented at the 21st International Conference on Discrete Geometry for Computer Imagery (DGCI).

2018 T. K. Dey and R. Slechta. "Edge Contraction in Persistence-Generated Discrete Morse Vector Fields." Presented at Shape Modeling International 2018 (SMI).

2017 R. Slechta, L. Monroe, N. DeBardeleben, Q. Guan, J. Wendelberger, and S. Michalak. "Resilience Analysis of Top K Selection Algorithms." Presented at the 13th European Dependable Computing Conference (EDCC).

2014 R. Slechta, J. Sawin, B. McCamish, D. Chiu, and G. Canahuate. "Optimizing Query Execution for Variable-Aligned Length Compression of Bitmap Indices." Presented at the 18th International Database Engineering and Applications Symposium (IDEAS).

JOURNAL ARTICLES

NB: Papers in conference proceedings that are published in journals are excluded from this section. Extended versions of conference papers are included.

2020 T. K. Dey and R. Slechta. "Filtration Simplification for Persistent Homology via Edge Contraction." To appear in the Journal of Mathematical Imaging and Vision.

2020 G. Damiand, E. Paluzo-Hidalgo, R. Slechta, and R. Gonzalez-Diaz. "Approximating Lower-Star Persistence via 2D Combinatorial Map Simplification." In Pattern Recognition Letters, Volume 131.

2016 A. Grim, T. O'Connor, P. J. Olver, C. Shakiban, R. Slechta, and R. Thompson. "Automatic Reassembly of Three-Dimensional Jigsaw Puzzles." In International Journal of Image and Graphics, Volume 16, Issue 2.

Selected Talks

2019 "Filtration Simplification for Persistent Homology via Edge Contraction." Ohio TDA Day, Dayton, Ohio. July 29.

2018 "Filtration Simplification for Persistent Homology via Edge Contraction." Topology, Geometry, and Data Analysis Seminar, The Ohio State University. October 30.

2016 "Resilience of a Top K Selection Algorithm." USRC Research Symposium, Los Alamos National Laboratory. August 4.

2015 "Reassembling Humpty Dumpty: 3D Puzzles and Invariant Signature Curves." Joint Mathematics Meeting, San Antonio, Texas. January 10.

2014 "Reassembling Humpty Dumpty: 3D Puzzles and Invariant Signature Curves." Math Physics Seminar, University of Minnesota. November 19.

2014 "Reassembling Humpty Dumpty: 3D Puzzles and Invariant Signature Curves." MathFest, Portland, Oregon. August 7.

Service

2019-2020	Senator, University Senate, The Ohio State University
2019-2020	Member, Council on Academic Affairs, The Ohio State University
2019-2020	Member, CAA — Graduate Council Joint Subcommittee, The Ohio State University
2016-2020	Delegate, Council of Graduate Students, The Ohio State University
2017-2018	Member, Core Curriculum Committee, College of Engineering, The Ohio State University