David L. Millman

CONTACT INFORMATION

BLOCKY, Inc.
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BIO

Dr. David L. Millman is the CTO and co-founder of BLOCKY, Inc (a data and computation integrity platform that helps uses trust data). Prior to BLOCKY, Dave was an Assistant Professor in the School of Computing at Montana State University. He helped to start ProductionPro (an entertainment technology company focusing on improving creative collaboration) and Nowsta (a logistics company focusing on improving and automating workforce management). He received a BA in Computer Science from Colgate university in 2003, an MS in Computer Science from New York University in 2007, and a Ph.D. in Computer Science from UNC Chapel Hill in 2012. Dr. Millman's research is in Computational Geometry, Distributed Systems, Scientific Computing, and some of their unusual applications.

EDUCATION

Ph.D., Computer Science, 2012
University of North Carolina, Chapel Hill

Thesis Title: *Degree-Driven Design of Geometric Algorithm for Point Location, Proximity and Volume Calculation*
Adviser: Dr. Jack Snoeyink

M.S., Computer Science, 2007
Courant Institute, New York University, NY

Thesis Title: *Degeneracy Proof Predicates for the Additively Weighted Voronoi Diagram*
Adviser: Dr. Chee Yap

B.A., Computer Science, 2003
Colgate University, New York, NY

Honors in Computer Science
Dean's Award for Academic Excellence

RESEARCH AND PROFESSIONAL EXPERIENCE

Chief Technology Officer, January 2018-Present
BLOCKY, Inc., Bozeman, MT
Blocky is a data and computation integrity platform that helps uses trust data. Some technical projects include: co-designing all protocols & intellectual property and architecting & leading the development of all systems.

Affiliate Faculty, Aug 2022-Present
Assistant Professor, Gianforte Faculty Fellow, January 2017-Aug 2022
Adjunct Assistant Professor, August 2016-December 2016
School of Computing, Montana State University, Bozeman, MT

Technical Advisor, January 2017-August 2018
Engineering Team Lead, November 2015-January 2017
Nowsta, Inc., New York, NY
Nowsta is a payments and logistics platform that provides next day payment processing. Some technical projects include: leading the development of the payments platform and the worker recommendation engine, redesigning the messaging system, and architecting the CI/CD system. Non-technical projects included presentations to investors, writing job descriptions, and interviewing candidates for technical positions

Technical Advisor, November 2015-Present

Director of Engineering, April 2015-November 2015
Engineering Team Lead, February 2015-April 2015
Lead Cloud Developer, February 2014-February 2015
ProductionPro Technologies, Inc. New York, NY
ProductionPro is a collaboration system used for film, theatre, and television. First technical hire; grew the technical team to six engineers (and still growing). Led the design and implementation of ProductionPro from paper prototype to its initial release. Some technical projects include the: architecture of the backend systems using AWS and Firebase, internal and external server APIs and data models using Django; authentication and security systems using Django and Node.js; the real-time collaboration systems; and script-interpreter, our natural language processing systems. Non-technical projects included presentations to investors, writing job descriptions, and interviewing candidates for technical positions.

Senior Engineer, February 2013-February 2014
Bechtel Marine Propulsion Corporation, West Mifflin, PA
MC21 is a continuous energy Monte Carlo particle transport simulation code. As a member of the MC21 core team, I led the development of the geometric kernel. Designed and implemented algorithms; reviewed and approved contributed code; planned future development (features, timelines, etc.); reported to funding sources; participated in subcontracts.

Research Assistant, September 2007-December 2012
University of North Carolina-Chapel Hill, Chapel Hill, NC
Advisor: Dr. Jack Snoeyink Developed and implemented practical and exact geometric algorithms that are robust to numerical inaccuracies by treating precision as a limited resource. Some applications include physical simulation, constructive solid geometry (CSG), image processing, post office queries, k-nearest neighbor queries for crystallographic symmetry groups, surface simplification of irregular terrain data and data structures for streaming input. Member of the Computational Geometry Group.

Internship at Bettis Atomic Power Labratory, June 2010-August 2010
Bechtel Marine Propulsion Corporation, West Mifflin, PA
Designed and implemented an algorithm for computing the volume of arbitrarily complex objects directly from their constructive solid geometry (CSG) representation. Considered multiple approaches such as sampling, octree decomposition, meshing and Collins decomposition; however, on their own each approach was either too slow, required too much precision or created too much structure for applications involving a large number of 3d quadratic surfaces. The newly developed algorithm overcame these limitations. The algorithm directly processed the input surfaces, thereby avoiding the slow convergence of Monte Carlo and octree decomposition. In addition, the algorithm only resolves the topological features that significantly affect the volume; therefore, it does not require the height precision of meshing approaches. Finally, the algorithm is output sensitive, avoiding the exponential structure created by Collins decomposition.

Internship at Bettis Atomic Power Labratory, May 2009-July 2009
Bechtel Marine Propulsion Coporation, West Mifflin, PA
Derived and implemented a compact representation for objects defined by Boolean operations of implicit surfaces. This representation provides a reduced memory footprint and supports algorithms for rapidly evaluating the point inside/outside predicates. Applied advanced techniques from computational topology and numeric computational geometry to create a new, topologically consistent algorithm that ensures robust particle tracking in physical simulations without the need for exact arithmetic. The improved tracking algorithm was applied to a Monte Carlo radiation transport simulation and resulted in shorter simulation times with fewer lost particles, even for extremely complex model geometries.

Internship at Bettis Atomic Power Laboratory, June 2008-August 2008

Bechtel Bettis Inc, West Mifflin, PA
Investigated convergence criteria, numerical stability and parameter optimization for an Arnoldi model reduction method for second order dynamical systems; Developed and tested a large scale, parallel implementation of this method using MATLAB's Distributed Computing Toolbox.

Internship Sponsored by the NSF-IRES REUSSI Program, June 2007-August 2007
National de Recherche en Informatique et Automatique, INRIA, Sophia-Antipolis, France
Started the parallel branch of Computational Geometry Algorithms Library (CGAL) as well as designed and implemented a parallel Delaunay triangulation algorithm as part of the Geometrica Group.

Exact Geometric Computation Lab, Febrauary 2006-July 2007
Courant Institute of Mathematical Sciences, New York University, New York
Advisor: Chee Yap
Assisted in the testing and debugging of CORE library v2.

Student Employment NYU, July 2006-July 2007
Steinhardt School of Education, New York University, New York
Advisor: Dr. Panos Mavromatis
Creating user interface libraries to ease the creation of music applications and applying it to the development of an AI based tutor application to train composers in counterpoint techniques.

Internship Sponsored by the NSF-IRES REUSSI program, May 2006-July 2006
National de Recherche en Informatique et Automatique, INRIA, Sophia-Antipolos, France
Implemented predicates to reduce the algebraic degree of the Computational Geometry Algorithms Library (CGAL) implementation of the additively weighted Voronoi diagram as part of the Geometrica Group.

iPod Genius, Mac Specialist, November 2004-May 2006
Apple Computers Inc, SoHo, NY and Menlo Park, NJ Prepared Early Field Failure Analysis on Nano and Version 5 (Video) iPods; Handled iPod related service issues; Presented GarageBand and iPod workshops; Installed airport, ram and video cards in Apple computers; Assisted customers with the purchase of Apple products; Worked with back of house issues such as inventory and product shrinkage avoidance.

Research Assistant, August 2003-October 2004
Center for Discrete Mathematics and Theoritical Computer Science
DIMACS, Rutgers University, Piscataway, NJ
Adviser: Dr. James Abello
Designed and implemented applications for use in the SEER Cancer data project; Investigated and implemented semi- external graph algorithms for processing graphs larger then 650,000 vertices and 6.5 million edges; Created applications for preprocessing SEER Cancer data for visualization.

Research Assistant, 2006-2007
Colgate University, Hamilton, NY
Adviser: Dr. Thomas Parks
Implemented algorithms in the java implementations of Process Networks (PN) and Communicating Sequential Processes to demonstrate the scalability of the PN Framework as well as compare the performance of the two systems.

Research Assistant, June 2001 - August 2001
Colgate University, Hamilton, NY
Research Adviser: Dr. Gary Urton
Investigated aspects of Incan culture and linguistic theory to assist in the design of a database of 23

Incan Quipus for use in understanding their communicative purpose.

Lab Administrator, April 2001 - June 2003
Colgate University, Hamilton, NY
Colgate Student Operated User Resource Center
Managed a staff of six System Analysts; Advised Laboratory Manager on reoccurring system problems; Administered and performed upgrades and maintenance on all computers in all campus public laboratories; Provided technological assistance, computer repairs and upgrades for students.

Completed Grants

SBIR Phase II: A Provable Data Lineage System for Scaling the Data Sharing Economy
Award Number: IIP-2052375
Dates Dec 2021-Nov 2023
Agency: National Science Foundation
Personnel: PI: Jonathan Heinecke; SP: DLM, Mike Wittie
Amount: $1,000,000.

CDS&E: Extracting Physics from High-Fidelity Simulations of Atomization using Geometric and Topological Data Analysis
Award Number: CBET-2152737
Dates July 2022-June 2025
Agency: National Science Foundation
Personnel: PI: Mark Owkes Co-PI DLM
Amount: $375,271.

Building a Montana Computing Consortium
Award Number: DUE-2221684
Dates Sept 2022-Aug 2023
Agency: National Science Foundation
Personnel: PI: Brittany Terese Fasy, Co-PI: DLM, Brock LaMeres, Binhai Zhu
Amount: $99,836.

Topology for Data Science: An Introductory Workshop for Undergraduates
Award Number: DMS-1955925
Dates: Feb 2020-Dec 2022
Personnel: PI: Stacey Hancock; Co-PI: DLM; SP: Brittany T. Fasy, Veronika Strnadova-Neeley
Agency: National Science Foundation
Amount: $30,474.

Yardstick: A Gas Price Oracle for Performant and Economical Blockchain-based Services
Award Number: MONVIC001
Dates: Aug 2020-Aug 2022
Agency: MSU Vice President for Research
Personnel: PI: Mike Wittie; Co-PI: DLM
Amount: $61,657.

Collaborative Research: ABI Innovation:
Biofilm Resource and Information Database (BRaID): A Tool to Fuse Diverse Biofilm Data Types
Award Number: DBI-1661530
Dates: Aug 2017-July 2021
Personnel: PI: DLM; co-PI: Brendan Mumey; SP: Matthew Fields
Agency: National Science Foundation
Amount: $299,853.

Expanding Screening Capacity to Enghance Montana's COVID-19 Response Capabilities

Dates: Sept - Dec 2020
Personnel: PI: Connie Chang co-PI: Matthew Fields, Raina Plowright, Deborah Keil, James Wilking, and DLM
Agency: State of Montana
Amount: $ 778,000

SBIR Phase I: A Microservices Approach To Low-Latency Process Interaction Through Distributed Ledges
Award Number: IIP-1843991
Dates Feb 2019-Dec 2020
Agency: National Science Foundation Personnel: PI: Jonathan Heinecke; SP: DLM, Mike Wittie
Amount: $224,989.

MSU Block Grant for Grad School Recruiting
Dates: January 2019 Personnel: MSU CS Graduate Student Recruiting Committee Agency: MSU Graduate School Amount: $3, 500.

Integrating Writing into STEM
Dates: August 2018
Personnel: DLM
Agency: MSU Writing Center
Amount: $5,000.

Heidelberg Laureate Forum
Dates: Summer 2013
Personnel: DLM
Agency: Heidelberg Laureate Forum
Amount: $1,000.

Department of Energy Rickover Fellowship
Dates: August 2010 – 2012
Agency: Naval Reactors division of the U.S. Department of Energy
Amount: Two years of graduate study and stipend

Google Lime Scholarship
Dates: Summer 2009
Agency: Google and the Lime Foundation
Amount: $10,000.

Colgate Summer Research
Dates: Summer 2001
Agency: Colgate Division of Natural Sciences
Amount: $1,500.

GRADUATE STUDENTS

Brad McCoy (2019-2024)

Britney Gibbs (2019-2023)

UNDERGRADUATE RA'S

McNair Scholars: Angus Tomlinson (AY '17-'18) Justin O'Dea (AY '16-17),

REU Students: Emily Flanagan (Univ Washington, Summer '19), Luke Askew (Colorado State Univ, Summer '19), Clair Duval (Clemson Summer, '19), Brook Huntington (Gonzaga, Summer '18), Kira Wencek (Univ Rhode Island, AY '17-'18)

MSU USP, IMBRE, RYRE, VPR Advisees (Undergraduate Research Grants): Eli Quist (AY '20-), Ben Holmgren (AY '18-), Seth Bassetti (AY '20-21), Nic Dzomba (AY '18) Levi Rak (Spr. '18), Britney Gibbs (AY '17-'18), Carie Pointer (AY '17), Alex Calderwood (AY '16),

Other MSU Undergraduate Research Advisees: George Engel (Summer '18) Brendan Kristiansen (AY '17-19), Brett Layman (Summer '17),

Graduate Teaching

Instructor, Computational Geometry, Spring 2019, Spring 2021
Montana State University, Bozeman, MT

Instructor, Advanced Data Mining, Fall 2016, Fall 2020
Montana State University, Bozeman, MT

Instructor, Advanced Databases, Fall 2017, Fall 2019, Fall 2021
Montana State University, Bozeman, MT

Undergraduate Teaching

Instructor, Data Mining, Spring 2022
Montana State University, Bozeman, MT

Instructor, Graphics, Spring 2018, Spring 2020
Montana State University, Bozeman, MT

Instructor, Programming Languages, Spring 2017
Montana State University, Bozeman, MT

Instructor, Intro to Scientific Programming, Summer 2012
UNC-Chapel Hill, Chapel Hill, NC

Grad Research Consultant & TA, Intro to Scientific Programming, Fall 2008
UNC-Chapel Hill, Chapel Hill, NC

Awards and Honors

Recipient of the Apple Best of Brand Award: Awarded to the Apple employee who most exemplifies the ideals of Apple as decided by co-workers, 2005.

Ranked #69 in Apple world wide sales performance, 2005.

Patents

[1] Taylor Heinecke, David L. Millman, and Mike Wittie. "System and method for creating and maintaining immutability, agreement and availability of data". U.S. Patent 12160532. 2024.

[2] Taylor Heinecke et al. "Systems and Methods for Establishing Trustless Interoperability Between Verifiable Computing Structures or Systems". U.S. Provisional Patent Application 63729264. 2024.

[3] Alexander Libby and David L. Millman. "System and Method for Providing a Visual Scroll Representation of Production Data". U.S. Patent 10354008B2. 2019.

Software

[4] BLOCKY Inc. *Attestion Service*. Attestion Service is a tool that allows users to produced attestations of data and computation using trusted execution enviroments. URL: `https://blocky.rocks`.

[5] BLOCKY Inc. *Pallets*. BLOCKY is a data security platform that helps users trust data by creating simple tools for interacting with with distributed ledgers. URL: `https://blocky.rocks`.

[6] Nowsta Inc. *Payments & Logistics Platform*. Nowsta is a payments and logistics platform that provides next day wage disbursements and scheduling tools such as communication and automated scheduling. URL: `https://nowsta.com`.

[7] ProductionPro Technologies Inc. *ProductionPro*. ProductionPro is a collaboration and smart data management system used for film, theatre, and television productions. Data management paradigms are suggested by extracting information from a production's script. URL: `https://production.pro`.

[8] Brittany T. Fasy et al. *TDA: Statistical Tools for Topological Data Analysis*. R package version 1.6.9. 2019. URL: `https://CRAN.R-project.org/package=TDA`.

Journal Papers

[9] Brittany Terese Fasy et al. "A Faithful Discretization of Verbose Directional Transforms". In: *To appear in Discrete & Computational Geometry* (Nov. 2025). URL: `https://doi.org/10.1007/s00454-025-00791-w`.

[10] Robin Lynne Belton et al. "Reconstructing Embedded Graphs from Persistence Diagrams". In: *Computational Geometry* 90 (Oct. 2020). Special Issue on the 30th Canadian Conference on Computational Geometry, p. 101658.

[11] David P. Griesheimer et al. "MC21 v.6.0 – A Continuous-Energy Monte Carlo Particle Transport Code with Integrated Reactor Feedback Capabilities". In: *Annals of Nuclear Energy* 82 (Aug. 2015). Special Issue on the SNA+MC 2013, pp. 29–40.

[12] David P. Griesheimer, David L. Millman, and Clarence R. Willis. "Analysis of Distances Between Inclusions in Finite Binary Stochastic Materials". In: *Journal of Quantitative Spectroscopy and Radiative Transfer* 112.4 (Mar. 2011), pp. 577–598.

[13] Vicente H.F. Batista et al. "Parallel Geometric Algorithms for Multi-Core Computers". In: *Computational Geometry* 43.8 (Nov. 2010). Special Issue on the 25th Annual Symposium on Computational Geometry (SoCG'09), pp. 663–677.

Refereed Conference and Workshop Publications

Conference papers accepted as journal articles are listed above (so each paper is listed once)

[14] Brittany Terese Fasy, David L. Millman, and Anna Schenfisch. "How Small Can Faithful Sets Be? Ordering Topological Descriptors". In: *CCCG '24: Proceedings of the 36th Canadian Conference on Computational Geometry*. Electronic proceedings. 2024.

[15] Bradley McCoy et al. "From Curves to Words and Back Again: Geometric Computation of Minimum-Area Homotopy". In: *WADS '23: Proceedings of the 18th Algorithms and Data Structures Symposium*. Electronic proceedings. 2023.

[16] Thiruvarangan Ramaraj et al. "Development of an Ontology for Biofilms". In: *BiOK '23: IEEE Biological Ontologies and Knowledge Bases*. electronic proceedings. 2023.

[17] Brittany Terese Fasy et al. "DBSpan: Density-Based Clustering Using a Spanner, With an Application to Persistence Diagrams". In: *TDA at SIAM Symposium on Data Mining*. electronic proceedings. 2022.

[18] Saidur Rahman et al. "Dynamic Checkpoint Initiation in Serverless MEC". In: *COINS 2022: IEEE International Conference on Omni-layer Intelligent Systems*. 2022.

[19] Anna Schenfisch, Brittany Terese Fasy, and David L. Millman. "Posets of Topological Descriptors". In: *Joint Math Meeting*. electronic proceedings. 2022.

[20] Anna Schenfisch et al. "Efficient Graph Reconstruction and Representation Using Augmented Persistence Diagrams". In: *CCCG '22: Proceedings of the 34th Canadian Conference on Computational Geometry*. Electronic proceedings. 2022.

[21] Saidur Rahman et al. "Short and Sweet Checkpoints for C-RAN MEC". In: *2021 IEEE Cloud Summit*. 2021, pp. 69–76.

[22] Kemal Turksonmez et al. "Two Ways Gas Price Oracles Miss The Mark". In: *COINS 2021: IEEE International Conference on Omni-layer Intelligent Systems*. 2021, pp. 1–7.

[23] Hannah Bratterud et al. "The Sung Diagram: Revitalizing the Eisenhower Matrix". In: *Diagrams 2020: Diagrammatic Representation and Inference*. Vol. 12169. Springer, 2020, pp. 498–502.

[24] Benjamin Holmgren et al. “If You Must Choose Among Your Children, Always Pick the Right One”. In: *CCCG ’20: Proceedings of the 32th Canadian Conference on Computational Geometry*. Electronic proceedings. 2020.

[25] Samuel Micka and David L. Millman. “First Steps Towards Lower-Bounding the Number of Topological Descriptors for Reconstruction”. In: *YRF’ 19: Young Researchers Forum*. Electronic proceedings. 2019.

[26] Ahmed Abdelkader et al. “Topological Distance Between Nonplanar Transportation Networks”. In: *FWCG ’18: Proceedings of the 29th Fall Workshop on Computational Geometry*. Electronic proceedings. 2018.

[27] Brittany Terese Fasy et al. “Challenges in Reconstructing Shapes from Euler Characteristic Curves”. In: *FWCG ’18: Proceedings of the 29th Fall Workshop on Computational Geometry*. Electronic proceedings. 2018.

[28] Clinton Freeman, David L. Millman, and Jack Snoeyink. “Gift Wrapping the Integer Hull in the Plane”. In: *EurooG ’14: Proceedings of 30th European Workshop on Computational Geometry,* Electronic proceedings. 2014.

[29] Brian R. Nease, Jeffery D. Densmore, and David L. Millman. “Residual Monte Carlo Using Kernel Density Estimators”. In: *ANS Winter Meeting and Nuclear Technology Expo*. Electronic proceedings. American Nuclear Society, 2014.

[30] David L. Millman et al. “Computing Numerically-Optimal Bounding Boxes for Constructive Solid Geometry (CSG) Components in Monte Carlo Particle Transport Calculations”. In: *SNA+MC 2013: Joint International Conference on Super Computing in Nuclear Applications + Monte Carlo*. Electronic proceedings. 2013.

[31] Brian R. Nease et al. “Geometric Templates for Improved Tracking Performance in Monte Carlo Codes”. In: *SNA+MC 2013: Joint International Conference on Super Computing in Nuclear Applications + Monte Carlo,* Electronic proceedings. 2013.

[32] David L. Millman and Jack Snoeyink. “Degree Algorithm Design for Computing Volumes of CSG Models”. In: *YRF’12: Young Researches Forum*. Electronic proceedings. 2012.

[33] David L. Millman et al. “Computing the Nearest Neighbor Transform Exactly with only Double Precision”. In: *ISVD ’12: Proceedings of the 9th International Symposium on Voronoi Diagrams in Science and Engineering*. 2012, pp. 66–74.

[34] David L. Millman et al. “Robust Volume Calculations for Constructive Solid Geometry (CSG) Components in Monte Carlo Transport Calculations”. In: *PHYSOR ’12: Advances in Reactor Physics*. Electronic proceedings. 2012.

[35] David L. Millman and Vishal Verma. “A Slow Algorithm for Computing the Gabriel Graph with Double Precision”. In: *CCCG ’11: Proceedings of the 23nd Canadian Conference on Computational Geometry*. 2011, pp. 485–487.

[36] David L. Millman and Jack Snoeyink. “Computing Planar Voronoi Diagrams in Double Precision: A Further Example of Degree-Driven Algorithm Design”. In: *SoCG ’10: Proceedings of the 26th Annual Symposium on Computational Geometry*. 2010, pp. 386–392.

[37] Matthew O’Meara et al. “Maximum Geodesic Routing in the Plane with Obstacles”. In: *CCCG ’10: Proceedings of the 22nd Canadian Conference on Computational Geometry*. 2010, pp. 107–108.

[38] David L. Millman and Jack Snoeyink. “Computing the Implicit Voronoi Diagram in Triple Precision”. In: *WADS‘09: Proceedings of the 11th International Symposium on Algorithms and Data Structures*. Vol. 5664. Springer Berlin Heidelberg, 2009, pp. 495–506.

Book Reviews

[39] Brittany Terese Fasy and David L. Millman. “Review of: Polyhedral and Algebraic Methods in Computational Geometry by Michael Joswig and Thorsten Theobald”. In: *SIGACT News* 46.3 (Sept. 2015), pp. 17–20.

[40] Brittany Terese Fasy and David L. Millman. “Review of: How to Fold It by Joseph O’Rourke”. In: *SIGACT News* 44.3 (Sept. 2013), pp. 17–19.

[41] Brittany Terese Fasy and David L. Millman. "Review of: Geometric Algebra: An Algebraic System for Computer Games and Animation by John A. Vince". In: *SIGACT News* 42.1 (Mar. 2011), pp. 46–48.
[42] Brittany Terese Fasy and David L. Millman. "Review of: Geometric Folding Algorithms by Erik D. Demaine and Joseph O'Rourke". In: *SIGACT News* 42.1 (Mar. 2011), pp. 43–46.
[43] Brittany Terese Fasy and David L. Millman. "Review of: Higher Arithmetic: An Algorithmic Introduction to Number Theory by Harold M. Edwards". In: *SIGACT News* 40.2 (June 2009), pp. 38–41.
[44] Brittany Terese Fasy and David L. Millman. "Review of: Geometric Algebra for Computer Science by Leo Dorst, Daniel Fontijne, Stephen Mann". In: *SIGACT News* 39.4 (Nov. 2008), pp. 27–30.

PRESENTATIONS

David Millman Approximate Nearest Neighbors in the Space of Persistence Diagrams MSU Applied Math Seminar Oct 1, 2020

Emily Flanagan, Brittany Terese Fasy, and DLM Optimal Partitioning of Road Networks Nation Council on Undergraduate Research (NCUR) 2020,

Ben Holmgren, Brad McCoy, Brittany Fasy, and DLM Using Hasse Diagrams to Compute a Gradient Vector Field Nation Council on Undergraduate Research (NCUR) 2020,

Luke Askew, Clare DuVal, George Engel, Brittany Terese Fasy, and DLM A Topology Driven Approach to Localization Nation Council on Undergraduate Research (NCUR) 2020,

Persistence Diagrams for Efficient Simplicial Complex Reconstruction Anna Schenfisch, Brittany Terese Fasy, DLM, Samuel Micka and Lucia Williams Algebraic Topology: Methods, Computation and Science (ATMCS) 2020

Stacey A. Hancock and DLM Bringing Data Science to Rural and Native American Communities in Montana 2019 National Workshop on Data Science Education June 26, 2019

Robin Belton, Brittany Terese Fasy, David L. Millman, Angus Tomlinson and Kira Wencek, Analyzing Musical Compositions with Topological Data Analysis, Poster at Algebraic Topology: Methods, Computation and Science (ATMCS) 2018, IST-Austria, June 2018.

Brittany Gibbs, David L. Millman and Brendan Mumey, Organizing and Analyzing Diverse Biofilm Data Types Using Ontology and Beyesian Networks, Nation Council on Undergraduate Research (NCUR) 2018, Oklahoma City, April 2018.

Angus Tomlinson, Robin Belton, Kira Wencek, Brittany Terese Fasy, and David L. Millman, Representing Musical Structure with Simplicial Complexes, Poster at Emerging Researchers National (ERN) Conference in STEM 2018, Washington D.C., February 2018.

DLM and Mike Wittie, What is Computer Science?, Montana State University, March 2017.

DLM, 'Start-Up' Your Career, Association for Women in Computing Seminar, Montana State University, February 2017.

DLM, Computing the Nearest Neighbor Transform Exactly with only Double Precision, Fourth Discrete Geometry and Algebraic Combinatorics Conference, University of Texas at Brownsville, April 2013.

DLM, Robust Volume Calculations for CSG Components in MC Transport Calculations, Data Group Seminar, University of Utah, Salt Lake City, UT, February 2013.

DLM, Degree-Driven Design of Geometric Algorithms for Point Location, and Volume Calculation, Theory Lunch, Carnegie Melon University, Pittsburgh, PA, November 2012.

DLM, Degree-Driven Geometric Algorithm Design, Graduating Bits session at Innovations in Theoretical Computer Science, Cambridge, MA, January 2012.

DLM, Approximate volumes of tremendous constructive solid geometry models. Poster presentation at Fall School on Shapes, Geometry and Algebra (SAGA), Kolympari, Greece, October 2010.

DLM, Two examples of degree-driven algorithm design, Guest lecture at The Institute of Science and Technology (IST) Austria in Maria Gugging, Austria, December 2009 and Duke University, Durham, NC February 2010.

Brittany Terese Fasy and DLM. Numerical issues in a geometric problem. Guest lecture, Duke University, Durham, NC, October 2008.

Brittany Terese Fasy and DLM. Exploring computational mathematics: Unfolding polyhedra. Contributed paper session at MathFest, Madision, WI, August 2008.

DLM. Lower degree predicates for the additively weighted Voronoi diagram. Poster presentation at Mathematic Association of America, Mathfest, Madision, WI, August 2008.

DLM. Streaming processing of spatial data. Presentation at University Research Day 2008, Chapel Hill, NC, March 2008.

DLM. A parallel Delaunay triangulation algorithm for CGAL. Presentation at REUSSI Seminar 2007, INRIA-Rocqencort and Geometricia group, INRIA-Sophia-Antipolis, France, June and July 2007.

DLM. Reducing the degree of the Apollonius diagram predicates. Presentation at REUSSI Seminar 2006, INRIA-Rocqencort, France, July 2006.

Event Organization

FWCG '21: The 29th Fall Workshop on Computational Geometry. Co-organizers Brittany Terese Fasy, DLM, Binh Zhu

Educational Forum on the Teaching of Computational Geometry and Topology: Some History, Current Practice, and Future Trends. Co-organizers DLM and Joe Mitchell.

Professional Affiliations

Association for Computing Machinery (ACM), 2008–Present

Society for Industry and Applied Mathematics (SIAM), 2007–2022

American Nuclear Society (ANS), 2010–2013

Mathematical Association of America (MAA), 2008–2012

MSU Service

GSoC Gradudate Recruitment Committee (2018-2022)

MSU Technology Advisory Committee (2017-2022)

GSoC Faculty search committee (2018-2019)

Professional Service

Referee, Journal of Geographic Information Systems 2021

Referee, ACM Symposium on Computational Geometry (2009, 2011-2013, 2015, 2020)

Referee, Journal of Parallel and Distributed Computing 2020

Referee, Journal of Mathematical Imaging and Vision 2020

Referee, National Council for Undergraduate Research (NCUR) 2020

Referee, European Symposium on Algorithms (2018)

Referee, SIAM: Algorithm Engineering Experiments (2017)

Referee, Women In Computational Topology (2017)

Program Commitee, International Workshop on Release Engineering (RELENG) 2016

Referee, Grace Hopper Conference, (2015-2021)

Book Reviewer, ACM Special Interest Group Algorithms and Computational Theory (SIGACT) (2008-2013)

Referee, Shape Modeling International (2011-2012)

Referee, ICST Transactions on Algorithms Engineering (2011)

Referee, Canadian Conference on Computational Geometry and Applications (IJCGA)(2010)

Referee, IEEE Computer Graphics and Applications (2009)

Referee, IEEE Robotics and Automation Magazine(2008)

Art & Music

Cave: An Art-Science Installation. The NeuroCave Collaborative, (Holter Museum of Art, August 2017-December 2017; Montana State University, Jan 2019-May 2019)

Recorded drum set, percussion, electronics, vocals, arranged and co-wrote Defenestrate Time, "When We're Alone" released Summer 2005.

Recorded drum set on the EP, Wholesale, "Saying More by Saying Less" released Spring 1999 on Exit 6 records.