Alec Jacobson Curriculum Vitæ

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Academic Positions

Associate Professor (with tenure), 2022–*present*
Department of Computer Science
Department of Mathematics (courtesy)
University of Toronto

Senior Research Scientist, 2021–*present*
Adobe Research Toronto

Faculty Affiliate, 2020–*present*
Vector Institute

Assistant Professor, 2016–2022
Department of Computer Science
University of Toronto

Canada Research Chair in Geometry Processing, 2017–*present*

Postdoctoral Fellow, 2014–2016
Department of Computer Science
Columbia University

Postdoctoral Fellow, 2013–2014
Department of Computer Science
Eidgenössische Technische Hochschule Zürich (ETH Zurich)

Education

PhD in Computer Science, 2013
ETH Zurich
Thesis: *Algorithms and Interfaces for Real-Time Deformation of 2D and 3D Shapes*
Advisor: Olga Sorkine-Hornung

MA in Computer Science, 2011
Courant Institute, New York University
Advisors: Olga Sorkine-Hornung, Denis Zorin

BA with joint major in Mathematics and Computer Science, 2009
Courant Institute, New York University
Advisor: Denis Zorin

Awards and Honors

2024 ACM SIGGRAPH Test of Time Award

2024 Symposium on Geometry Processing Best Paper, Honourable Mention
2023 CS-Can/Info-Can Outstanding Early Career Computer Science Research Award
2023 Outstanding Teaching Award
2022 Canada Research Chair renewal
2022 Sloan Research Fellowship
2022 ACM SIGGRAPH North America, Best Paper Award
2021 ICCV, Sketching for Human Expressively Workshop, Best Paper Award
2020 ACM SIGGRAPH Significant New Researcher Award
2020 ACM Distinguished Speaker
2020 NeurIPS Top 10% Reviewer
2019 Ontario Early Researcher Award
2019 Eurographics Best Paper, Honourable mention
2018 Back cover image on *Proceedings of ACM SIGGRAPH North America*
2018 Computer Graphics Forum Cover Image
2018 Graphics Interface Best Poster Award
2017 Eurographics Significant Young Researcher Award
2017 Canada Research Chair
2017 Eurographics/ACM Symposium on Geometry Processing Dataset Award
2017 Eurographics Junior Fellow
2017 NSERC Discovery Accelerator Supplement (1 of 125 across Canada)
2017 ACM SIGGRAPH/Eurographics Symposium on Computer Animation Best Poster Award
2016 Connaught New Researcher
2015 Eurographics/ACM Symposium on Geometry Processing Software Award
2015 US Junior Oberwolfach Fellow
2015 NYCASCENT Fellow
2015 Back cover image on *Proceedings of ACM SIGGRAPH Asia*
2014 Eurographics Best PhD Thesis
2014 Heidelberg Laureate Forum Young Researcher
2013 ETH Medal for Outstanding Doctoral Dissertation, *top 8% university-wide*
2013 Intel PhD Fellowship
2011 Back cover image on *Proceedings of ACM SIGGRAPH North America*
2009 New York University Henry M. MacCracken Fellowship (3 years)
2009 Grand Prize, Games For Learning Institute Game Design Challenge
2009 New York University Founder's Day Award

Research Funding

2023	Adobe gift
2023	LEAF+ $10,000
2022	Adobe gift
2022	NSERC Discovery $370,000 CAD
2022	DSI Catalyst Grant $100,000 CAD
2022	Sloan Research Fellowship $75,000 USD
2021	Fields Institute, FURSP *four summer undergraduate research fellows*
2021	Fields Institute *Symposium on Geometry Processing Funding* $10,000 CAD
2020	Fields Institute, FURSP *four summer undergraduate research fellows*
2020	Fields Institute *Hackathon Funding* $15,000 CAD
2019–2020	SSHRC-CRSH New Frontiers in Research Fund *11.9% acceptance rate* $250,000 CAD
2019	Autodesk gift
2019	Ontario Early Researcher Award $140,000 CAD
2019	Facebook Oculus Hardware gift
2019	Fields Institute *Workshop Funding* $25,000 CAD
2018–2020	Fields Institute CQAM Lab $160,000 CAD
2018	Mitacs Globalink Research Award - Campus France $3,500 CAD
2018	Autodesk gift
2018	MESH Inc. gift
2018	Fields Institute *Workshop Funding* $25,000 CAD
2018	NSERC USRA *one summer undergraduate research fellow*

2018	Fields Institute, FURSP *three summer undergraduate research fellows*
2018	Engineering Science Research Opportunities Fund *one summer undergraduate research fellow*
2018	Fields Institute *one visiting faculty researcher* $3,500 CAD
2017–2022	NSERC Discovery, RGPIN–2017–05235 $155,000 CAD
2017–2020	NSERC Discovery Accelerator Supplement, RGPAS–2017–507938 $120,000 CAD
2017–2022	Canada Research Chair $158,335 CAD
2017–2018	Fields Institute *one visiting faculty researcher* $10,500 CAD
2017	Fields Institute, FURSP *four summer undergraduate research fellows*
2017	NSERC USRA *one summer undergraduate research fellow*
2016–*present*	Adobe Systems gift
2016–2017	Connaught New Researcher Award $10,000 CAD
2015	SGP Software Award €1,000 EUR
2014	US Junior Oberwolfach Fellow €200 EUR
2012	Intel Doctoral Student Honor Programme $35,000 USD

ACM SIGGRAPH Publications

1. Lily Goli, Sara Sabour, George Kopanas, Mark Matthews, Dmitry Lagun, Leonidas Guibas, **Alec Jacobson**, David J. Fleet, Andrea Tagliasacchi. “SpotlessSplats: Ignoring Distractors in 3D Gaussian Splatting,” *ACM Transactions on Graphics* (conditionally accepted), 2025.
2. Yuta Noma, Silvia Sellán, Nicholas Sharp, Karan Singh, **Alec Jacobson**. “Surface-Filling Curve Flows via Implicit Medial Axes,” *ACM SIGGRAPH North America*, 2024.
3. Honglin Chen, Hsueh-Ti Derek Liu, David I.W. Levin, Changxi Zheng, **Alec Jacobson**. “Stabler Neo-Hookean Simulation: Absolute Eigenvalue Filtering for Projected Newton,” *ACM SIGGRAPH North America*, 2024.
4. Yong Li, Shoaib Kamil, Keenan Crane, **Alec Jacobson**, Yotam Gingold. “I❤Mesh: A DSL for Mesh Processing,” *ACM Transactions on Graphics*, 2024.
5. Yun-Chun Chen, Selena Ling, Zhiqin Chen, Vladimir G. Kim, Matheus Gadelha, **Alec Jacobson**. “Text-guided Controllable Mesh Refinement for Interactive 3D Modeling,” *ACM SIGGRAPH Asia*, 2024.

6. Siqi Wang, Chenxi Liu, Daniele Panozzo, Denis Zorin, **Alec Jacobson**. “Bézier Spline Simplification Using Locally Integrated Error Metrics,” *ACM SIGGRAPH Asia*, 2023.
7. Honglin Chen, Hsueh-Ti Derek Liu, **Alec Jacobson**, David I.W. Levin, Changxi Zheng. “Trust-Region Eigenvalue Filtering for Projected Newton,” *ACM SIGGRAPH Asia*, 2024.
8. Dylan Rowe, **Alec Jacobson**, Oded Stein. “Sharpening and Sparsifying with Surface Hessians,” *ACM SIGGRAPH Asia*, 2024.
9. Silvia Sellán, **Alec Jacobson**. “Neural Stochastic Screened Poisson Surface Reconstruction,” *ACM SIGGRAPH Asia*, 2023.
10. Zoë Marschner, Silvia Sellán, Hsueh-Ti Derek Liu, **Alec Jacobson**. “Constructive Solid Geometry on Neural Signed Distance Fields,” *ACM SIGGRAPH Asia*, 2023.
11. Towaki Takikawa, Thomas Müller, Merlin Nimier-David, Alex Evans, Sanja Fidler, **Alec Jacobson**, Alexander Keller. “Compact Neural Graphic Primitives with Learned Hash Probing,” *ACM SIGGRAPH Asia*, 2023.
12. Seungbae Bang, Kirill Serkh, Oded Stein, **Alec Jacobson**. “An Adaptive Fast-Multipole-Accelerated Hybrid Boundary Integral Equation Method for Accurate Diffusion Curves,” *ACM SIGGRAPH Asia*, 2023.
13. Jiayi Eris Zhang, Jérémie Dumas, Yun (Raymond) Fei, **Alec Jacobson**, Doug L. James, Danny M. Kaufman. “Progressive Shell Quasistatics for Unstructured Meshes,” *ACM SIGGRAPH Asia*, 2023.
14. Nicholas Sharp, Cristian Romero Garcia, David Levin, **Alec Jacobson**, Etienne Vouga, Paul Kry, Justin Solomon. “Data-Free Learning of Reduced-Order Kinematics,” *ACM SIGGRAPH (North America)*, 2023.
15. Xiaochun Tong, Hsueh-Ti Derek Liu, Yotam Gingold, **Alec Jacobson**. “Differentiable Heightfield Path Tracing with Accelerated Discontinuities,” *ACM SIGGRAPH (North America)*, 2023.
16. Otman Benchekroun, Jiayi Eris Zhang, Siddartha Chaudhuri, Eitan Grinspun, Yi Zhou, **Alec Jacobson**. “Fast Complementary Dynamics via Skinning Eigenmodes,” *ACM SIGGRAPH (North America)*, 2023.
17. Hsueh-Ti Derek Liu, Benjamin Chislett, Mark Gillespie, Nick Sharp, **Alec Jacobson**, Keenan Crane. “Surface Simplification using Intrinsic Error Metrics,” *ACM SIGGRAPH (North America)*, 2023.
18. Yun-Chun Chen, Vladimir G. Kim, Noam Aigerman, **Alec Jacobson**. “Neural Progressive Meshes,” *ACM SIGGRAPH (North America)*, 2023.
19. Marzia Riso, Giacomo Nazzaro, Enrico Puppo, **Alec Jacobson**, Qingnan Zhou, Fabio Pellacini. “BoolSurf : Boolean Operations on Surfaces,” *ACM Transactions on Graphics (Proc. SIGGRAPH Asia)*, 2022.
20. Jiayi Eris Zhang, Jérémie Dumas, Yun (Raymond) Fei, **Alec Jacobson**, Doug L. James, Danny M. Kaufman. “Progressive Simulation for Cloth Quasistatics,” *ACM Transactions on Graphics (Proc. SIGGRAPH Asia)*, 2022.
21. Yong Li, Shoaib Kamil, **Alec Jacobson**, Yotam Gingold. “H❤rtDown: Document Processor for Executable Linear Algebra Papers,” *ACM SIGGRAPH Asia*, 2022.
22. Silvia Sellán, **Alec Jacobson**. “Stochastic Poisson Surface Reconstruction,” *ACM Transactions on Graphics (Proc. SIGGRAPH Asia)*, 2022.
23. Silvia Sellán, Jack Luong, Leticia Mattos Da Silva, Aravind Ramakrishnan, Yuchuan Yang, **Alec Jacobson**. “Breaking Good: Fracture Modes for Realtime Destruction,” *ACM Transactions on Graphics*, 2022.
24. Towaki Takikawa, Alex Evans, Jonathan Tremblay, Thomas Müller, Morgan McGuire, **Alec Jacobson**, Sanja Fidler. “Variable Bitrate Neural Fields,” *ACM SIGGRAPH North America*, 2022.
25. Hsueh-Ti Derek Liu, Francis Williams, **Alec Jacobson**, Sanja Fidler, Or Litany. “Learning Smooth Neural Functions via Lipschitz Regularization,” *ACM SIGGRAPH North America*, 2022.
26. Nicholas Sharp, **Alec Jacobson**. “Spelunking the Deep: Guaranteed Queries for General Neural Implicit Surfaces,” *ACM Transactions on Graphics (Prof. SIGGRAPH North America)*, 2022.

27. Yong Li, Shoaib Kamil, **Alec Jacobson**, Yotam Gingold. "I❤LA: Compilable Markdown for Linear Algebra," *ACM Transactions on Graphics (Proc. SIGGRAPH Asia)*, 2021.
28. Baptiste Nicolet, **Alec Jacobson**, Wenzel Jakob. "Large Steps in Inverse Rendering of Geometry," *ACM Transactions on Graphics (Proc. SIGGRAPH Asia)*, 2021.
29. Silvia Sellán, Noam Aigerman, **Alec Jacobson**. "Swept Volumes via Spacetime Numerical Continuation," *ACM Transactions on Graphics (Proc. SIGGRAPH North America)*, 2021.
    Patent Filed.
30. Hsueh-Ti Derek Liu, Jiayi Eris Zhang, Mirela Ben Chen, **Alec Jacobson**. "Surface Multigrid via Intrinsic Prolongation," *ACM Transactions on Graphics (Proc. SIGGRAPH North America)*, 2021.
31. Rinat Abdrashitov, Seungbae Bang, David I.W. Levin, **Alec Jacobson**. "Interactive Modelling of Volumetric Musculoskeletal Anatomy," *ACM Transactions on Graphics (Proc. SIGGRAPH North America)*, 2021.
32. Jiayi Eris Zhang, Seungbae Bang, David I.W. Levin, **Alec Jacobson**. "Complementary Dynamics," *ACM Transactions on Graphics (Proc. SIGGRAPH Asia)*, 2020.
33. Silvia Sellán, Jacob Kesten, Ang Yan Sheng, **Alec Jacobson**. "Opening and Closing Surfaces," *ACM Transactions on Graphics (Proc. SIGGRAPH Asia)*, 2020.
34. Honglin Chen, Hsueh-Ti Derek Liu, **Alec Jacobson**, David I.W. Levin. "Chordal Decomposition for Spectral Coarsening," *ACM Transactions on Graphics (Proc. SIGGRAPH Asia)*, 2020.
35. Hsueh-Ti Derek Liu, Vladimir G. Kim, Siddhartha Chaudhuri, Noam Aigerman, **Alec Jacobson**. "Neural Subdivision," *ACM Transactions on Graphics (Proc. SIGGRAPH North America)*, 2020.
    Patent: US11257290.
36. Silvia Sellán, Noam Aigerman, **Alec Jacobson**. "Developability of Heightfields via Rank Minimization," *ACM Transactions on Graphics (Proc. SIGGRAPH North America)*, 2020.
    Patent: US11080819.
37. Oded Stein, **Alec Jacobson**, Max Wardetzky, Eitan Grinspun. "A Smoothness Energy without Boundary Distortion for Curved Surfaces," *ACM Transactions on Graphics*, 2020.
38. Hsueh-Ti Derek Liu, **Alec Jacobson**. "Cubic Stylization," *ACM Transactions on Graphics (Proc. SIGGRAPH Asia)*, 2019.
39. Dario Seyb, **Alec Jacobson**, Derek Nowrouzezahrai, Wojciech Jarosz. "Non-linear sphere tracing for rendering deformed signed distance fields," *ACM Transactions on Graphics (Proc. SIGGRAPH Asia)*, 2019.
40. Hsueh-Ti Derek Liu, **Alec Jacobson**, Maks Ovsjanikov. "Spectral Coarsening for Geometric Operators," *ACM Transactions on Graphics (Proc. SIGGRAPH North America)*, 2019.
41. Yixin Hu, Teseo Schneider, Xifeng Gao, Qingnan Zhou, **Alec Jacobson**, Denis Zorin, Daniele Panozzo. "TriWild: Robust Triangulation with Curve Constraints." *ACM Transactions on Graphics (Proc. SIGGRAPH North America)*, 2019.
42. Rinat Abdrashitov, **Alec Jacobson**, Karan Singh. "A System for Efficient 3D Printed Stop-Motion Face Animation," *ACM Transactions on Graphics*, 2019.
43. Hsueh-Ti Derek Liu, Michael Tao, **Alec Jacobson**. "Paparazzi: Surface Editing by way of Multi-View Image Processing," *ACM Transactions on Graphics (Proc. SIGGRAPH Asia)*, 2018.
44. Gavin Barill, Nia G. Dickson, Ryan Schmidt, David I.W. Levin, **Alec Jacobson**. "Fast Winding Numbers for Soups and Clouds," *ACM Transactions on Graphics (Proc. SIGGRAPH North America)*, 2018.
45. Yixin Hu, Qingnan Zhou, Xifeng Gao, **Alec Jacobson**, Denis Zorin, Daniele Panozzo. "Tetrahedral Meshing in the Wild," *ACM Transactions on Graphics (Proc. SIGGRAPH North America)*, 2018.

46. Oded Stein, Eitan Grinspun, Max Wardetzky, **Alec Jacobson**. “Natural Boundary Conditions for Smoothing in Geometry Processing,” *ACM Transactions on Graphics*, 2018.
47. Songrun Liu, Zachary Ferguson, **Alec Jacobson**, Yotam Gingold. “Seamless: Seam erasure and seam-aware decoupling of shape from mesh resolution,” *ACM Transactions on Graphics (Proc. SIGGRAPH Asia)*, 2017.
48. Qingnan Zhou, Eitan Grinspun, Denis Zorin, **Alec Jacobson**. “Mesh Arrangements for Solid Geometry,” *ACM Transactions on Graphics (Proc. SIGGRAPH North America)*, 2016.
49. Akash Garg, **Alec Jacobson**, Eitan Grinspun. “Computational Design of Reconfigurables,” *ACM Transactions on Graphics (Proc. SIGGRAPH North America)*, 2016.
50. Oliver Glauser, Wan-Chun Ma, Daniele Panozzo, **Alec Jacobson**, Otmar Hilliges, Olga Sorkine-Hornung. “Rig Animation with a Tangible and Modular Input Device,” *ACM Transactions on Graphics (Proc. SIGGRAPH North America)*, 2016.
51. Leonardo Sacht, Etienne Vouga, **Alec Jacobson**. “Nested Cages,” *ACM Transactions on Graphics (Proc. SIGGRAPH Asia)*, 2015.
52. Yu Wang, **Alec Jacobson**, Jernej Barbič, Ladislav Kavan. “Linear Subspace Design for Real-Time Shape Deformation,” *ACM Transactions on Graphics (Proc. SIGGRAPH North America)*, 2015.
53. Songrun Liu, **Alec Jacobson**, Yotam Gingold. “Skinning Cubic Bézier Splines and Catmull-Clark Subdivision Surfaces,” *ACM Transactions on Graphics (Proc. SIGGRAPH Asia)*, 2014.
54. Daniel Sýkora, Ladislav Kavan, Martin Čadík, Ondřej Jamriška, **Alec Jacobson**, Brian Whited, Maryann Simmons, Olga Sorkine-Hornung. “Ink-and-Ray: Bas-Relief Meshes for Adding Global Illumination Effects to Hand-Drawn Characters,” *ACM Transactions on Graphics*, 2014.
55. **Alec Jacobson**, Daniele Panozzo, Oliver Glauser, Cédric Pradalier, Otmar Hilliges, Olga Sorkine-Hornung. “Tangible and Modular Input Device for Character Articulation,” *ACM Transactions on Graphics (Proc. SIGGRAPH North America)*, 2014.
56. **Alec Jacobson**, Ladislav Kavan, Olga Sorkine-Hornung. “Robust Inside-Outside Segmentation using Generalized Winding Numbers,” *ACM Transactions on Graphics (Proc. SIGGRAPH North America)*, 2013.
57. Kaan Yücer, **Alec Jacobson**, Alexander Hornung, Olga Sorkine. “Transfusive Image Manipulation,” *ACM Transactions on Graphics (Proc. SIGGRAPH Asia)*, 2012.
    Patent: US9202431
58. **Alec Jacobson**, Ilya Baran, Ladislav Kavan, Jovan Popović, Olga Sorkine. “Fast Automatic Skinning Transformations,” *ACM Transactions on Graphics (Proc. SIGGRAPH North America)*, 2012.
59. **Alec Jacobson**, Olga Sorkine. “Stretchable and Twistable Bones for Skeletal Shape Deformation,” *ACM Transactions on Graphics (Proc. SIGGRAPH Asia)*, 2011.
60. **Alec Jacobson**, Ilya Baran, Jovan Popović, Olga Sorkine. “Bounded Biharmonic Weights for Real-Time Shape Deformation,” *ACM Transactions on Graphics (Proc. SIGGRAPH North America)*, 2011.

Additional Journal and Conference Proceedings Publications

61. Aravind Ramakrishnan, David I.W. Levin, **Alec Jacobson**. “Rigid Body Adversarial Attacks,” *3DV*, 2025.
62. Chenxi Liu, Siqi Wang, Matthew Fisher, Deepali Aneja, **Alec Jacobson**. “2D Neural Fields with Learned Discontinuities,” *Eurographics*, 2025.
63. Leonardo Sacht, **Alec Jacobson**. “Cascading Upper Bounds for Triangle Soup Pompeiu-Hausdorff Distance,” *Eurographics/ACM SIGGRAPH Symposium on Geometry Processing*, 2024.
    Best Paper, Honorable Mention.

64. **Alec Jacobson**. "Optimized Dual-Volumes for Tetrahedral Meshes," *Eurographics/ACM SIGGRAPH Symposium on Geometry Processing*, 2024.
65. **Alec Jacobson**. "Gender Diversity of Graphics Conference Leadership," *ACM SIGGRAPH North America 'Talks'*, 2024.
66. Vikas Thamizharasan, Difan Liu, Shantanu Agarwal, Matthew Fisher, Michael Gharbi, Oliver Wang, **Alec Jacobson**, Evangelos Kalogerakis. "VecFusion: Vector Font Generation with Diffusion," *CVPR*, 2024.
Highlight.
67. Lily Goli, Cody Reading, Silvia Sellán, **Alec Jacobson**, Andrea Tagliasacchi. "Bayes' Rays: Uncertainty Quantification for Neural Radiance Fields," *CVPR*, 2024.
Highlight.
68. Kunho Kim, Mikaela Angelina Uy, Despoina Paschalidou, **Alec Jacobson**, Leonidas Guibas, Minhyuk Sung. "OptCtrlPoints: Optimizing Control Points for Biharmonic 3D Shape Deformation," *Pacific Graphics*, 2023.
69. Selena Ling, Nicholas Sharp, **Alec Jacobson**. "VectorAdam for Rotation Equivariant Geometry Optimization," *Neural Information Processing Systems*, 2022.
70. Silvia Sellán, Yun-Chun Chen, Ziyi Wu, Animesh Garg, **Alec Jacobson**. "Breaking Bad: A Dataset for Geometric Fracture and Reassembly," *Neural Information Processing Systems* (Datasets & Benchmarks Track), 2022.
71. Yun-Chun Chen, Haoda Li, Dylan Turpin, **Alec Jacobson**, Animesh Garg. "Neural Shape Mating: Self-Supervised Object Assembly with Adversarial Shape Priors," *CVPR*, 2022.
72. Xinhao Cai, Eulalie Coevoet, **Alec Jacobson**, Paul Kry. "Active Learning Neural C-space Signed Distance Fields for Reduced Deformable Self-Collision," *Graphics Interface*, 2022.
73. Josh Holinaty, **Alec Jacobson**, Fanny Chevalier. "Supporting Reference Imagery for Digital Drawing", *ICCV Workshop on Sketching for Human Expressivity*, 2021.
74. Yong Li, Shoaib Kamil, **Alec Jacobson**, Yotam Gingold. "I❤LA: Compilable Markdown for Linear Algebra," *ICLR Workshop on Rethinking ML Papers*, 2021.
75. Hsueh-Ti Derek Liu, **Alec Jacobson**. "Normal-Driven Spherical Shape Analogies," *Computer Graphics Forum (Proc. SGP)*, 2021.
76. Towaki Takikawa, Joey Litalien, Kangxue Yin, Karsten Kreis, Charles Loop, Derek Nowrouzezahrai, **Alec Jacobson**, Morgan McGuire, Sanja Fidler. "Neural Geometric Level of Detail: Real-time Rendering with Implicit 3D Shapes," *CVPR* , 2021.
Oral
77. Sarah Kushner, Risa Ulinski, Karan Singh, David I.W. Levin, **Alec Jacobson**. "Levitating Rigid Objects with Hidden Rods and Wires", *Computer Graphics Forum (Proc. Eurographics)*, 2021.
78. Jiayi Eris Zhang, **Alec Jacobson**, Marc Alexa. "Fast Updates for Least-Squares Rotational Alignment," *Computer Graphics Forum (Proc. Eurographics)*, 2021.
79. Ludwig Wilhelm Wall, **Alec Jacobson**, Daniel Vogel, Oliver Schneider. "Scrappy: Using Scrap Material as Infill to Make Fabrication More Sustainable", *ACM Conference on Human Factors in Computing Systems*, 2021.
80. Vismay Modi, Lawson Fulton, Shinjiro Sueda, **Alec Jacobson**, David I.W. Levin. "EMU: Efficient Muscle Simulation in Deformation Space," *Computer Graphics Forum*, 2020.
81. Jun Gao, Wenzheng Chen, Tommy Xiang, Morgan McGuire, **Alec Jacobson**, Sanja Fidler. "Learning Deformable Tetrahedral Meshes for 3D Reconstruction," *Neural Information Processing Systems*, 2020.
82. Josef Graus, **Alec Jacobson**, Yotam Gingold. "Interacting with Self-Similarity," *Computer-Aided Design*, 2020.

83. Oded Stein, Max Wardetzky, **Alec Jacobson**, Eitan Grinspun. “A Simple Discretization of the Vector Dirichlet Energy,” *Computer Graphics Forum (Proc. SGP)*, 2020.
84. Thibault Lescoat, Hsueh-Ti Derek Liu, Jean-Marc Thiery, **Alec Jacobson**, Tamy Boubekeur, Maks Ovsjanikov. “Spectral Mesh Simplification,” *Computer Graphics Forum (Proc. Eurographics)*, 2020.
85. Wenzheng Chen, Jun Gao, Huan Ling, Edward J. Smith, Jaakko Lehtinen, **Alec Jacobson**, Sanja Fidler. “Learning to Predict 3D Objects with an Interpolation-based Differentiable Renderer,” *Neural Information Processing Systems*, 2019.
86. **Alec Jacobson**. “RodSteward: A Design-to-Assembly System for Fabrication using 3D-Printed Joints and Precision-Cut Rods,” *Computer Graphics Forum (Proc. Pacific Graphics)*, 2019.
87. Hsueh-Ti Derek Liu, Michael Tao, Chun-Liang Li, Derek Nowrouzezahrai, **Alec Jacobson**. “Beyond Pixel Norm-Balls: Parametric Adversaries using an Analytically Differentiable Renderer”, *International Conference on Learning Representations*, 2019.
88. Lawson Fulton, Vismay Modi, David Duvenaud, David I.W. Levin, **Alec Jacobson**. “Latent-space Dynamics for Reduced Deformable Simulation”, *Computer Graphics Forum (Proc. Eurographics)*, 2019.
89. Silvia Sellán, Herng Yi Cheng, Yuming Ma, Mitchell Dembowski, **Alec Jacobson**. “Solid Geometry Processing on Deconstructed Domains,” *Computer Graphics Forum*, 2019.
(presented at SGP 2019)
90. Oded Stein, **Alec Jacobson**, Eitan Grinspun. “Interactive Design of Castable Shapes using Two-Piece Rigid Molds,” *Computers & Graphics*, 2019.
91. Rahul Arora, **Alec Jacobson**, Timothy Richard Langlois, Karan Singh, David I.W. Levin. “Volumetric Michell Trusses for Parametric Design & Fabrication,” *Symposium on Computational Fabrication*, 2019.
92. Timothy Jeruzalski, John Kanji, **Alec Jacobson**, David I.W. Levin. “Error Bounded Online Compression of Rigid Body Simulations,” *Computer Graphics Forum (Proc. SCA)*, 2018.
93. Marek Dvorožňák, Saman Sepehri Nejad, **Alec Jacobson**, Ondřej Jamriška, Ladislav Kavan, Daniel Sýkora. “Seamless Reconstruction of Part-Based High-Relief Models from Hand-Drawn Images,” *Expressive*, 2018.
94. **Alec Jacobson**. “Generalized Matryoshka: Computational Design of Nesting Objects,” *Computer Graphics Forum (Proc. SGP)*, 2017.
95. Hsueh-Ti Derek Liu, **Alec Jacobson**, Keenan Crane. “A Dirac Operator for Extrinsic Shape Analysis,” *Computer Graphics Forum (Proc. SGP)*, 2017.
96. Jean-Charles Bazin, Claudia Plüss, Guo Yu, Tobias Martin, **Alec Jacobson**, Markus Gross. “Physically Based Video Editing,” *Computer Graphics Forum (Proc. Pacific Graphics)*, 2016.
97. **Alec Jacobson**. “Breathing Life into Shapes,” *Computer Graphics & Applications: Dissertation Impact*, 2015.
Invited by James D. Foley
98. Romain Prévost, **Alec Jacobson**, Wojciech Jarosz, Olga Sorkine-Hornung. “Large-Scale Spray Painting of Photographs by Interactive Optimization,” *Computers & Graphics*, 2015
99. **Alec Jacobson**, Ilya Baran, Jovan Popović, Olga Sorkine. “Bounded Biharmonic Weights for Real-Time Shape Deformation,” *Communications of the ACM: Research Highlights*, 2014.
Preface by Joe Waren, 中国版 translated by Kun Zhou
100. David Günther, **Alec Jacobson**, Jan Reininghaus, Hans-Peter Seidel, Olga Sorkine-Hornung, Tino Weinkauf. “Fast and Memory-Efficient Topological Denoising of 2D and 3D Scalar Fields,” *IEEE Transactions on Visualization and Computer Graphics (Proc. SciVis)*, 2014.

101. Kenshi Takayama, **Alec Jacobson**, Ladislav Kavan, Olga Sorkine-Hornung. “A Simple Method for Correcting Facet Orientations in Polygon Meshes Based on Ray Casting,” *Journal of Computer Graphics Techniques*, 2014.
102. **Alec Jacobson**. “Bijective Mappings with Generalized Barycentric Coordinates: a Counterexample,” *Journal of Graphics Tools*, 2013.
103. Leonardo Sacht, **Alec Jacobson**, Daniele Panozzo, Christian Schüller, Olga Sorkine-Hornung. “Consistent Volumetric Discretizations Inside Self-Intersecting Surfaces,” *Computer Graphics Forum (Proc. SGP)*, 2013.
104. **Alec Jacobson**, Tino Weinkauf, Olga Sorkine. “Smooth Shape-Aware Functions with Controlled Extrema,” *Computer Graphics Forum (Proc. SGP)*, 2012.
105. **Alec Jacobson**, Elif Tosun, Olga Sorkine, Denis Zorin. “Mixed Finite Elements for Variational Surface Modeling,” *Computer Graphics Forum (Proc. SGP)*, 2010.

Juried Demos, Workshop Courses, Posters, & Technical Reports

106. Sarah Kushner, Paul H. Dietz, **Alec Jacobson**. “Interactive 3D Zoetrope with a Strobing Flashlight,” *ACM User Interface Software and Technology Symposium Demos*, 2022.
107. Towaki Takikawa, Joey Litalien, Kangxue Yin, Karsten Kreis, Charles Loop, Derek Nowrouzezahrai, **Alec Jacobson**, Morgan McGuire, Sanja Fidler. “Neural Geometric Level of Detail: Real-time Rendering with Implicit 3D Shapes,” *Technical Report*, 2021.
108. Thomas Davies, Derek Nowrouzezahrai, **Alec Jacobson**. “On the Effectiveness of Weight-Encoded Neural Implicit 3D Shapes,” *Technical Report*, 2020.
109. Wenzheng Chen, Jun Gao, Huan Ling, Edward J. Smith, Jaakko Lehtinen, **Alec Jacobson**, Sanja Fidler. “Learning to Predict 3D Objects with an Interpolation-based Differentiable Renderer,” *arXiv*, 2019.
110. **Alec Jacobson**. “RodSteward: A Design-to-Assembly System for Fabrication using 3D-Printed Joints and Precision-Cut Rods,” *ACM Symposium on Computational Fabrication Posters & Short Talks*, 2019.
111. **Alec Jacobson**. “RodSteward: A Design-to-Assembly System for Fabrication using 3D-Printed Joints and Precision-Cut Rods,” *arXiv*, 2019.
112. Oded Stein, **Alec Jacobson**, Max Wardetzky, Eitan Grinspun. “A mixed finite element method with piecewise linear elements for the biharmonic equation on surfaces,” *arXiv*, 2019.
113. Oded Stein, **Alec Jacobson**, Max Wardetzky, Eitan Grinspun. “A Smoothness Energy without Boundary Distortion for Curved Surfaces,” *arXiv*, 2019.
114. Rahul Arora, **Alec Jacobson**, Timothy R. Langlois, Yijiang Huang, Caitlin Mueller, Wojciech Matusik, Ariel Shamir, Karan Singh, David I.W. Levin. “Designing Volumetric Truss Structures for Computational Fabrication,” *arXiv*, 2018.
115. Hsueh-Ti Derek Liu, Michael Tao, Chun-Liang Li, Derek Nowrouzezahrai, **Alec Jacobson**. “Adversarial Geometry and Lighting using a Differentiable Renderer,” *Technical Report*, 2018.
116. Silvia Sellán, Herng Yi Cheng, Yuming Ma, Mitchell Dembowski, **Alec Jacobson**. “Solving PDEs on Deconstructed Domains,” *Technical Report*, 2018.
117. Silvia Sellán, Herng Yi Cheng, Yuming Ma, Mitchell Dembowski, **Alec Jacobson**. “Solving PDEs on Deconstructed Domains,” *Symposium on Geometry Processing Posters*, 2018.
118. **Alec Jacobson**. “libigl: Prototyping Geometry Processing Research in C++,” *Graphics Interface Courses*, 2018.

119. Lawson Fulton, Vismay Modi, David Duvenaud, David I.W. Levin, **Alec Jacobson**. “Autodef: Non-linear Subspace Simulation for Large Deformation Elastodynamics,” *Graphics Interface Posters*, 2018.
Best Poster Award.
120. Michelle Arkhangorodsky, Yanjun Jiang, **Alec Jacobson**. “Simplification for Large-Scale Fabrication,” *Graphics Interface Posters*, 2018.
121. Andrew Nelles, **Alec Jacobson**. “Best-Fit Affine Progressive Meshes,” *Graphics Interface Posters*, 2018.
122. Sarah Kushner, **Alec Jacobson**. “Example-Based Print Preview for Laser Cutting,” *Graphics Interface Posters*, 2018.
123. Silvia Sellán, **Alec Jacobson**. “Solving PDEs on Overlapping Domains,” *Graphics Interface Posters*, 2018.
124. Gavin Barill, Nia G. Dickson, Ryan Schmidt, David I.W. Levin, **Alec Jacobson**. “Fast Winding Numbers for Soups and Clouds,” *Graphics Interface Posters*, 2018.
125. Rahul Arora, **Alec Jacobson**, Timothy Richard Langlois, Karan Singh, David I.W. Levin. “Designing Volumetric Truss Structures for Computational Fabrication,” *Graphics Interface Posters*, 2018.
126. Timothy Jeruzalski, John Kanji, **Alec Jacobson**, David I.W. Levin. “Error Bounded Online Compression of Rigid Body Simulations,” *Graphics Interface Posters*, 2018.
127. Rinat Abdrashitov, **Alec Jacobson**, Karan Singh. “f-Stop: A System for 3D Printed Stop-Motion Facial Animation,” *Graphics Interface Posters*, 2018.
128. Darren Moore, **Alec Jacobson**, David I.W. Levin. “Rigless Skinning for Interactive Vector Animation,” *Graphics Interface Posters*, 2018.
129. **Alec Jacobson**. “Human-Math Interaction,” *Computational Interactivity*, Report from Dagstuhl Seminar 17232, 2017.
130. Timothy Jeruzalski, Eugene Fiume, **Alec Jacobson**, David I.W. Levin. “Online Compression of Rigid Body Simulations using Physics-Inspired Interpolation,” *ACM SIGGRAPH Symposium on Computer Animation Posters*, 2017.
Best Poster Award.
131. **Alec Jacobson**, Daniele Panozzo. “libigl: Prototyping Geometry Processing Research in C++,” *ACM SIGGRAPH Asia Courses*, 2017.
132. **Alec Jacobson**, Daniele Panozzo. “libigl: Prototyping Geometry Processing Research in C++,” *Eurographics/ ACM Symposium on Geometry Processing Courses*, 2017.
133. Oliver Glauser, Benedek Vartok, Wan-Chun Ma, Daniele Panozzo, **Alec Jacobson**, Otmar Hilliges, Olga Sorkine-Hornung. “Rig Animation with a Tangible and Modular Input Device,” *ACM User Interface Software and Technology Symposium Demos*, 2016.
134. Qingnan Zhou, **Alec Jacobson**. “Thingi10K: A Dataset of 10000 3D-Printing Models”, *arXiv:1605.04797*, 2016
SGP 2017 Dataset Award
135. Akash Garg, **Alec Jacobson**, Eitan Grinspun. “Computational Design of Reconfigurables,” *Tristate Workshop on Imaging and Graphics Posters*, 2016.
136. Qingnan Zhou, **Alec Jacobson**. “Mesh Arrangements for Solid Geometry,” *Tristate Workshop on Imaging and Graphics Posters*, 2016.
137. Akash Garg, **Alec Jacobson**, Eitan Grinspun. “Computational Design of Reconfigurables,” *Symposium on Computational Fabrication Posters*, 2016.
138. Qingnan Zhou, **Alec Jacobson**. “Mesh Arrangements for Solid Geometry,” *Symposium on Computational Fabrication Posters*, 2016.

139. **Alec Jacobson**. “Boolean Operations using Generalized Winding Numbers,” Columbia University, 2016.
140. **Alec Jacobson**, Leonardo Sacht, Etienne Vouga. “Nested Cages,” *Oberwolfach Report: Discrete Differential Geometry*, 2015.
141. **Alec Jacobson**. “Skinning: Real-time Shape Deformation,” *Eurographics/ACM Symposium on Geometry Processing Invited Courses*, 2015.
142. Leonardo Sacht, Etienne Vouga, **Alec Jacobson**. “Nested Cages,” *Tristate Workshop on Imaging and Graphics Posters*, 2015.
143. Yu Wang, **Alec Jacobson**, Jernej Barbič, Ladislav Kavan. “Linear Subspace Design for Real-Time Shape Deformation,” *Tristate Workshop on Imaging and Graphics Posters*, 2015.
144. **Alec Jacobson**, Yotam Gingold. “Skinning: Real-time Shape Deformation,” *ACM SIGGRAPH Asia Invited Courses*, 2014.
145. **Alec Jacobson**, Zhigang Deng, Ladislav Kavan, J.P. Lewis. “Skinning: Real-time Shape Deformation,” *ACM SIGGRAPH Courses*, 2014.
146. Daniele Panozzo, **Alec Jacobson**. “libigl: A C++ Library for Geometry Processing without a Mesh Data Structure,” *Eurographics/ACM Symposium on Geometry Processing Courses*, 2014.
147. **Alec Jacobson**, Daniele Panozzo, Oliver Glauser, Cédric Pradalier, Otmar Hilliges, Olga Sorkine-Hornung. “Tangible and Modular Input Device for Character Articulation,” *ACM User Interface Software and Technology Symposium Demos*, 2014.
148. **Alec Jacobson**, Daniele Panozzo, Oliver Glauser, Cédric Pradalier, Otmar Hilliges, Olga Sorkine-Hornung. “Tangible and Modular Input Device for Character Articulation,” *ACM SIGGRAPH Emerging Technologies*, 2014.
149. Kenshi Takayama, **Alec Jacobson**, Ladislav Kavan, and Olga Sorkine-Hornung. “Consistently Orienting Facets in Polygon Meshes by Minimizing the Dirichlet Energy of Generalized Winding Numbers,” ETH Zurich, 2014.
150. **Alec Jacobson**. “Schur Complement Trick for Positive Semi-definite Energies,” Columbia University, 2014.
151. **Alec Jacobson**. “Bijective Mappings with Generalized Barycentric Coordinates: A Counterexample,” ETH Zurich, 2012.
152. **Alec Jacobson**, Olga Sorkine. “A Cotangent Laplacian for Images as Surfaces,” ETH Zurich, 2012.
153. Murphy Stein, **Alec Jacobson**, Yongming Hong. “Games for Learning Institute at NYU: Super Transformation,” *Games for Change Festival Demos*, 2010.

Open-source Projects

libigl: A Simple C++ Geometry Processing Library 2013–*present*
Alec Jacobson, Daniele Panozzo, and others

gptoolbox: Geometry Processing Toolbox for MATLAB 2013–*present*
Alec Jacobson and others

thingi10K: Ten Thousand 3D Models for Testing Robustness of Geometric Algorithms 2016–*present*
Qingnan Zhou and Alec Jacobson

Employment

2022–*present*	University of Toronto	Associate Professor
2021–*present*	Adobe Research	Senior Research Scientist
2016–2022	University of Toronto	Assistant Professor
2019–2021	Adobe Research	Visiting Professor, Consultant
2014–2016	Columbia University Mentor: Eitan Grinspun	Postdoctoral researcher & co-instructor
2013–2014	ETH Zurich Mentor: Olga Sorkine-Hornung	Postdoctoral researcher & teaching assistant
2011–2013	ETH Zurich Advisor: Olga Sorkine-Hornung	Graduate researcher & teaching assistant
2010	Adobe Research Advisor: Jovan Popović	Summer research intern
2009–2011	New York University Advisors: Olga Sorkine-Hornung, Denis Zorin	Graduate researcher
2008–2009	New York University Advisors: Denis Zorin, Yotam Gingold	Undergraduate researcher
2008	IBM Advisor: Chuck Wallace	Summer programming intern
2007	Mayo Clinic Advisor: Željko Bajzer	Summer research intern

Conference Talks

Eurographics/ACM SIGGRAPH Symposium on Geometry Processing (invited course) July 1, 2020
libigl: Prototyping Geometry Processing Research in C++

Pacific Graphics October, 17, 2019
RodSteward: A Design-to-Assembly System for Fabrication using 3D-Printed Joints and Precision-Cut Rods

Graphics Interface (invited talk) May 31, 2019
Interactive Design of Castable Shapes Using Two-Piece Rigid Molds

Graphics Interface (invited course) May 8, 2018
libigl: Prototyping Geometry Processing Research in C++

ACM SIGGRAPH Asia November 29, 2017
libigl: Prototyping Geometry Processing Research in C++

Eurographics/ACM SIGGRAPH Symposium on Geometry Processing July 3, 2017
Generalized Matryoshka: Computational Design of Nesting Objects

Eurographics/ACM SIGGRAPH Symposium on Geometry Processing (invited course) July 1, 2017
libigl: Prototyping Geometry Processing Research in C++

ACM SIGGRAPH North America July 27, 2016
Computational Design of Reconfigurables

Eurographics/ACM SIGGRAPH Symposium on Geometry Processing (invited course) June 18, 2016
Skinning: Real-time Shape Deformation, "Direct Methods & Automatic Methods"

Graphics Interface (invited talk) June 3, 2016
Large-Scale Painting of Photographs by Interactive Optimization

Eurographics/ACM SIGGRAPH Symposium on Geometry Processing (invited course) July 5, 2015
Skinning: Real-time Shape Deformation, "Direct Methods & Automatic Methods"

ACM SIGGRAPH Asia (invited course) December 3, 2014
Skinning: Real-time Shape Deformation, "Automatic Methods"

ACM SIGGRAPH North America August 14, 2014
Skinning: Real-time Shape Deformation, "Automatic Methods"

ACM SIGGRAPH North America August 12, 2014
Tangible and Modular Input Device for Character Articulation

Eurographics/ACM SIGGRAPH Symposium on Geometry Processing July 4, 2014
libigl: A C++ Library for Geometry Processing without a Mesh Data Structure

ACM SIGGRAPH North America July 22, 2013
Robust Inside-Outside Segmentation using Generalized Winding Numbers

ACM SIGGRAPH North America August 8, 2012
Fast Automatic Skinning Transformations

Eurographics/ACM SIGGRAPH Symposium on Geometry Processing July 16, 2012
Smooth Shape-Aware Functions with Controlled Extrema

ACM SIGGRAPH Asia December 14, 2011
Stretchable and Twistable Bones for Skeletal Shape Deformation

ACM SIGGRAPH North America August 10, 2011
Bounded Biharmonic Weights for Real-Time Deformation

Eurographics/ACM SIGGRAPH Symposium on Geometry Processing July 6, 2010
Mixed Finite Elements for Variational Surface Modeling

Invited Talks

Symposium on Geometry Processing *Keynote* June 25, 2024
The Triangle is Dead, Long Live the Triangle
invited by Ruizhen Hu and Sylvain Lefebvre

ETH Zurich IGL Reunion Workshop *Keynote* July 1, 2023
The First Pancake is Always Burnt
invited by Olga Sorkine-Hornung

KAIST Geometric and Visual Computing Workshop December 5, 2022
Practical Neural Fields
invited by Minhyuk Sung, Min H. Kim

Teaching & Learning Community of Practice March 8, 2022
Role-Playing in Paper-Reading Seminars
invited by Jessica Whitehead

Huawei Research: Recent Advances in Visual Media Content Generation May 28, 2021
Moving Geometry by Looking at It

invited by Richard Zhang, Changqing Zou

Adobe Research — February 22, 2021
Complementary Digital Design
invited by Jovan Popović

AIA Symposium On Artificial Intelligence In Architecture, Engineering, And Construction — October 20, 2020
How do we get to ubiquitous 3D?
invited by Benjamin Dillenburger, Matthias Kohler

ACM SIGGRAPH Significant New Research Award Talk — August 23, 2020
Geometry in 2020
invited by John “Spike” Hughes

nVidia — July 29, 2020
Geometry Processing in the Wild
invited by Sanja Fidler, Jun Gao

TEDx University of Toronto *Keynote* — February 13, 2020
Geometry Processing in the Wild
invited by Tracy Barber, Sumana Dhanani

New York University — January 31, 2020
Cubic Stylization
invited by Daniele Panozzo

Dagstuhl Seminar on Interactive Design and Simulation — December 17, 2019
Spectral Coarsening of Geometric Operators
invited by Jörg Peters, Thomas Grandine, Ulrich Reif, Olga Sorkine-Hornung

AI For Engineering Summer School — August 16, 2019
Geometry Processing in the Wild
invited by Hesam Salehipour, Mike Haley

Beijing Film Academy — July 28, 2019
Geometry Processing in the Wild
invited by Baoquan Chen

Symposium on Art and A.I. — June 25, 2019
Toward Three-Dimensional Cinematography
invited by Pia Kleber, David Rokeby, Tamara Trojanowska

Shape Modeling International *Keynote* — June 21, 2019
Geometry Processing in the Wild
invited by Giuseppe Patanè, Raphaelle Chaine

CVPR Workshop on Deep Generative Models for 3D Understanding — June 17, 2019
Geometry Processing in the Wild
invited by Xavier Snelgrove

Graphics Interface — May 30, 2019
Geometry Processing in the Wild
invited by Robert J. Teather, Andrea Tagliasacchi

Fields Institute Workshop on Robust Geometric Algorithms for Computational Fabrication II — May 3, 2019
Solid Geometry Processing on Deconstructed Domains
invited by Daniel Hambleton

University of Victoria — April 18, 2019

Geometry Processing in the Wild
invited by Andrea Tagliasacchi

University of British Columbia — April 17, 2019
Geometry Processing in the Wild
invited by Michiel van de Panne

National Research Council Canada, Computer Science Colloquium Series — April 16, 2019
Geometry Processing in the Wild
invited by Pengcheng Xi

Concordia University — March 12, 2019
Geometry Processing in the Wild
invited by Tiberiu Popa

Bellairs Workshop on Computer Animation — February 16, 2019
Moving Geometry by Looking at It
invited by Paul Kry

Carnegie Mellon University, Robotics Institute Seminar — February 8, 2019
Geometry Processing in the Wild
invited by Keenan Crane

CG Connect Toronto — November 27, 2018
Robust Geometry Processing: the Life Cycle of a Messy Shape
invited by Martin de Lasa, Laurence Cymet, and Nikola Milosevic

Dagstuhl Seminar on Computational Aspects of Fabrication — October 26, 2018
Robust Geometry Processing: the Life Cycle of a Messy Shape
invited by Bernd Bickel, Marc Alexa, Kristina Shea, Jessica Hodgins

Fields Institute Workshop on Robust Geometric Algorithms for Computational Fabrication — May 1, 2018
Fast Winding Numbers for Soups and Clouds
invited by Alla Sheffer, Olga Sorkine-Hornung

George Mason University — April 26, 2018
Fast Winding Numbers for Soups and Clouds
invited by Yotam Gingold

Bellairs Workshop on Computer Animation — February 10, 2018
From Reconfigurables to Matryoshka, Optimizing Shapes and Motions over Space-Time
invited by Paul Kry

BIRS Workshop on Geometry & Computation for Interactive Simulation — September 25, 2017
From Reconfigurables to Matryoshka, Optimizing Shapes and Motions over Space-Time
invited by Jorg Peters, Ulrich Reif, and Dinesh Pai

Dagstuhl Seminar on Computational Interactivity — June 6, 2017
Human Math Interaction
invited by Xiaojun Bi, Otmar Hilliges, Takeo Igarashi, and Antti Oulasvirta

Graphics Interface — May 19, 2017
Breaking Barriers between Humans and Geometry
invited by Elmar Eisemann

University of Waterloo — April 18, 2017
Robust Geometry Processing for Irregularly Bounded Domains
invited by Christopher Batty

Bellairs Workshop on Computer Animation — February 4, 2017
Robust Geometry Processing for Irregularly Bounded Domains
invited by Paul Kry

Toronto User Experience — October 25, 2016
Breaking Barriers between Humans and Geometry
invited by Daniel Wigdor

Cornell University — March 22, 2016
Breaking Barriers between Humans and Geometry
invited by Steve Marschner

Adobe Research — March 14, 2016
Breaking Barriers between Humans and Geometry
invited by David Salesin

Purdue University — March 10, 2016
Breaking Barriers between Humans and Geometry
invited by Voicu Popescu

University of Toronto — March 7, 2016
Breaking Barriers between Humans and Geometry
invited by Karan Singh

University of Southern California — February 18, 2016
Breaking Barriers between Humans and Geometry
invited by Jernej Barbič

UC Riverside — February 10, 2016
Breaking Barriers between Humans and Geometry
invited by K. K. Ramakrishnan

University of Tokyo — October 30, 2015
Breaking Barriers between Humans and Geometry
invited by Takeo Igarashi

Geometry Workshop in Seggau — July 12, 2015
Nested Cages
invited by Alexander I. Bobenko, Helmut Pottmann, and Johannes Wallner

Oberwolfach Discrete Differential Geometry Workshop — March 5, 2015
Nested Cages
invited by Alexander I. Bobenko, Richard Kenyon and Peter Schröder

City University of Hong Kong — December 9, 2014
From Model to Motion
invited by Hongbo Fu

Visual Effects Society, London — September 17, 2014
Tangible and Modular Input Device for Character Articulation
invited by Ean Carr

Double Negative, London — September 17, 2014
Tangible and Modular Input Device for Character Articulation
invited by Ean Carr

Polytechnic Institute of New York University — August 1, 2014
Tangible and Modular Input Device for Character Articulation
invited by Andy Nealen

George Mason University — July 19, 2013
Robust Inside-Outside Segmentation using Generalized Winding Numbers
invited by Yotam Gingold

New York University — June 25, 2013
Robust Inside-Outside Segmentation using Generalized Winding Numbers
invited by Qingnan Zhou

CVGC Seminar Series, Columbia University — June 18, 2013
Algorithms and Interfaces for Real-Time Deformation of 2D and 3D Shapes
invited by Eitan Grinspun

Max-Planck-Institut für Informatik, Saarbrücken — February 26, 2013
Achieving High-quality Shape Deformation in Real Time
invited by Tino Weinkauf

Workshop on Computer Graphics and Emerging Technology, Shenzhen Institutes of Advanced Technology — November 26, 2012
Achieving High-quality Shape Deformation in Real Time
invited by Baoquan Chen

New York University — July 31, 2012
Fast Automatic Skinning Transformations
invited by Denis Zorin

NSF Workshop on Barycentric Coordinates in Geometry Processing and Finite/Boundary Element Methods — July 25, 2012
High-quality Weight Functions via Constrained Optimization
invited by Kai Hormann

Freie Universität — June 22, 2012
High-quality Weight Functions via Constrained Optimization
invited by Konrad Polthier

SIGGRAPH Tokyo (teleconference) — February 24, 2012
Stretchable, Twistable Bones for Skeletal Shape Deformation
invited by Jun Saito

LiberoVision, Zurich — February 2, 2012
Real-time Shape Deformation:
Bounded Biharmonic Weights and Stretchable, Twistable Bones
invited by Remo Ziegler

DISI University of Genoa — June 27, 2011
Real-time Deformation: Bounded Biharmonic Weights and Stretchable, Twistable Bones
invited by Enrico Puppo

ETH Zurich-Disney Research Zurich Tech Talk — October 20, 2010
Mixed Finite Elements for Variational Surface Modeling
invited by Alexander Hornung

Panels

Huawei Research: Recent Advances in Visual Media Content Generation — May 28, 2021
invited by Richard Zhang, Changqing Zou

AIA Symposium On Artificial Intelligence In Architecture, Engineering, And Construction — October 20, 2020
invited by Benjamin Dillenburger, Matthias Kohler

Mitacs Panel Discussion Session — November 13, 2019
invited by Monica Caverson

Beijing Film Academy — July 28, 2019
invited by Baoquan Chen

Fields CQAM Launch — June 28, 2018
invited by Huaxiong Huang

Teaching

2022	Seminar in Geometry and Animation University of Toronto	Instructor
2022	Geometry Processing University of Toronto	Instructor
2022	Computer Graphics University of Toronto	Instructor
2020	Geometry Processing University of Toronto	Instructor
2020	Seminar in Geometry and Animation University of Toronto	Instructor
2019	Seminar in Geometry and Animation University of Toronto	Instructor
2016–2019	Computer Graphics University of Toronto *Designed novel curriculum*	Instructor
2017–2018	Geometry Processing University of Toronto *Designed novel curriculum*	Instructor
2015	Seminar in Geometry and Animation Columbia University *Designed novel curriculum*	Co-instructor
2013	Advanced Topics in Visual Computing ETH Zurich	Co-instructor
2011–2013	Computer Graphics ETH Zurich	Assistant
2008–2009	America Counts Math Intervention Clinton Public Middle School for Artists and Writers, New York	Student teacher

Postdoc Advising

Chenxi Liu — 2023–*present*

Postdoc Fellow, University of Toronto

Teemu Tyni 2021–*present*
Postdoc Fellow, University of Toronto

Nicholas Sharp 2021–2022
Postdoc Fellow, University of Toronto
next stop: NVIDIA

Seungbae Bang 2019–2022
Postdoc Fellow, University of Toronto
next stop: Amazon

Etienne Corman 2018–2019
Postdoc Fellow, University of Toronto
next stop: faculty position, CNRS

PhD Advising

Yun-Chun Chen 2022–*present*
PhD candidate, University of Toronto

Lily Goli 2022–*present*
PhD candidate, University of Toronto

Selena Ling 2021–*present*
PhD candidate, University of Toronto

Aravind Ramakrishnan 2021–*present*
PhD candidate, University of Toronto

Towaki Takikawa 2020–*present*
PhD candidate, University of Toronto

Silvia Sellán 2019–*present*
PhD candidate, University of Toronto

Risa Ulinski 2019–2020
PhD candidate, University of Toronto

Hsueh-Ti Derek Liu 2017–*present*
PhD candidate, University of Toronto

Sarah Kushner 2017–*present*
PhD candidate, University of Toronto

Changjian Li 2018–2019
visiting PhD candidate, University of Hong Kong

Leonardo Koller Sacht 2012–2014
visiting PhD student from IMPA, ETH Zurich
next stop: adjunct professor at Universidade Federal de Santa Catarina

Doctoral Committee

Jonas Zehnder 2021

Université de Montréal
Quasi Second-Order Methods for PDE-Constrained Forward and Inverse Problems

Rahul Arora — July 19, 2021
University of Toronto
Creative Visual Expression in Immersive 3D Environments

Baptiste Angles — April 18, 2019
University of Victoria
Geometric Modeling with Primitives

Songrun Liu — April 27, 2018
George Mason University
Openning Up New Possibilities Of Linear Blend Skinning

Akash Garg — February 13, 2017
Columbia University
Interactive, Computation Assisted Design Tools

Masters Advising

Otman Benchekroun — 2020–*present*
MSc candidate, University of Toronto

Josh Holinaty — 2019–2021
MSc candidate, University of Toronto

Thomas Davies — 2019–2021
MSc candidate, University of Toronto

Risa Ulinski — 2019–2021
PhD candidate, University of Toronto

Nicholas Sharp — 2021–2022
Postdoc Fellow, University of Toronto
next stop: NVidia

Otman Benchekroun — 2020–2022
MSc candidate, University of Toronto
next stop: PhD University of Toronto

Seungbae Bang — 2019–2022
Postdoc Fellow, University of Toronto
next stop: Amazon

Junrui Xu — 2019
MScAC, University of Toronto
next stop: RockMass

Aditya Sanghi — 2018
MScAC, University of Toronto
next stop: Autodesk

Gavin Barill — 2017–2019
MSc, University of Toronto
next stop: PhD candidate McGill Unversity, Mathematics

Lawson Fulton — 2017–2019

MSc, University of Toronto
next stop: software engineer at MESH Inc.

Timothy Jeruzalski 2016–2018
MSc, University of Toronto
next stop: PhD candidate at University of Toronto

Stefan Messmer 2013–2014
MS, ETH Zurich
next stop: senior software engineer at MP Technology

Christian Schulz 2012
MS, ETH Zurich
next stop: PhD candidate at ETH Zurich

David Meier 2012
MS, ETH Zurich
next stop: software engineer at LiberoVision

Oliver Glauser 2011–2012
MS, ETH Zurich
next stop: PhD candidate at ETH Zurich

Yang Song 2010–2011
MA, New York University
next stop: PhD candidate at University of Utah

Undergraduates and summer students

Eris Zhang 2019–2021
University of Toronto

Seyed Alireza Fatemi Jahromi 2021–2021
Sharif University of Technology

Zoë Marschner 2021–2021
Massachusetts Institute of Technology

Charles Bullingham 2021–2021
University of Toronto

Junda Zhao 2021–2021
University of Toronto

Jennifer Guo 2021–2021
University of Toronto

Jacob Ridgeway 2021–2021
University of Toronto

Aditya Chetan 2021–2021
IIIT Delhi

Andrew Wang 2020–2021
University of Toronto

Xiaochun Tong 2020–2021
University of Toronto

Letícia Matos de Silva 2020–2021
University of California Los Angeles, *visiting*
Fields Undergraduate Summer Research Program

Jack Luong 2020–2021
California State University, Fresno *visiting*
Fields Undergraduate Summer Research Program

Yuchuan Yang 2020–2021
University of California Los Angeles, *visiting*
Fields Undergraduate Summer Research Program

Aravind Ramakrishnan 2020–2021
University of Maryland, *visiting*
Fields Undergraduate Summer Research Program

Cindy Zhu 2019–2020
Unionville High School, *visiting*

Nanik Adnani 2019
Monarch Park Collegiate Institute *visiting*

Silvia Sellán 2018
University of Oviedo, *visiting*
Fields Undergraduate Summer Research Program

Jacob Kesten 2018
Rice University, *visiting*
Fields Undergraduate Summer Research Program

Ang Yan Sheng 2018
National University of Singapore, *visiting*
Fields Undergraduate Summer Research Program

Arjun Chhabra 2018
University of Toronto

Lizhe Chen 2018
University of Toronto

Eduard Gonzalvo Gelabert 2017–2018
Universitat Politècnica de Catalunya, *visiting*
Centre de Formació Interdisciplinària Superior

Herng Yi 2017
Massachusetts Institute of Technology, *visiting*
Fields Undergraduate Summer Research Program

Silvia Sellán 2017
University of Oviedo, *visiting*
Fields Undergraduate Summer Research Program

Mitchell Dembowski 2017
Reyerson University, *visiting*
Fields Undergraduate Summer Research Program

Christine Ma 2017
University of Toronto
Fields Undergraduate Summer Research Program

Gavin Barill University of Toronto	2017
Darren Moore University of Toronto	2017
Lawson Fulton University of Toronto	2017
Klint Qinami Columbia University	2016
Lucas Schuermann Columbia University	2015
Vaibhav Vavilala Columbia University	2015
Dingzeyu Li visiting BA student from HKUST, ETH Zurich *next stop: PhD candidate at Columbia University*	2012–2013

Editorial Posts, Workshop Organizing, Program Chairing

Early Career Researcher Award Chair, *CHCCS Graphics Interface*, 2021–2022
Editor in Chief Search Committee Member, *ACM Transactions on Graphics*, 2021
General Chair, *Symposium on Geometry Processing*, 2021
Associate Editor, *ACM TOG*, 2020–*present*
Associate Editor, *Computer Graphics Forum*, 2021–*present*
Program Chair, *Pacific Graphics*, 2020
Program Chair, *Symposium on Geometry Processing*, 2020
Program Chair, *Graphics Interface*, 2020
Organizer, Fields Institute *libigl Hackathon* (postponed due to COVID–19 pandemic), 2020
Software & Dataset Awards Chair, *Symposium on Geometry Processing*, 2019–2020
Organizer, Fields Institute *Workshop on Robust Geometric Algorithms for Computational Fabrication*, 2019
Graduate School Chair, *Symposium on Geometry Processing*, 2018
Organizer, *Fields Institute Workshop on Robust Geometric Algorithms for Computational Fabrication*, 2018
Associate Editor, *Computers & Graphics*, 2017–2020 Posters Chair, *Pacific Graphics*, 2017

Conference Program Committees

ACM SIGGRAPH North America, 2017, 2018, 2020
ACM SIGGRAPH Asia, 2019, 2021, 2022, 2023
ACM SIGGRAPH North America Conflict of Interest Coordinator, 2019
ACM SIGGRAPH Asia Doctoral Consortium Committee, 2018
ACM SIGGRAPH Asia Courses, 2015
ACM SIGGRAPH Asia Technical Briefs & Posters, 2016, 2017, 2018
CAD/Graphics, 2015
CVPR Workshop on Learning 3D Generative Models, 2020
Eurographics, 2017, 2018
Eurographics Short Papers, 2012, 2013, 2014
Geometric Modeling and Processing, 2014, 2015, 2016, 2017
Graphics Interface, 2017

International Conference on 3D Vision (3DV), 2015, 2016, 2017
Pacific Graphics, 2014, 2015, 2016, 2017, 2019
Shape Modeling International, 2016, 2018, 2019
Shape Modeling International – Fabrication and Sculpting Event (FASE), 2019
Symposium on Computer Animation, 2015, 2016, 2017, 2018, 2020
Symposium on Computational Fabrication, 2017
Symposium on Geometry Processing, 2013, 2014, 2015, 2016, 2017, 2018, 2019, 2021
Symposium on Geometry Processing Reproducibility Stamp, 2016
Replicability Stamp, 2017, 2018, 2019, 2020, 2021

Awards Committees

Pacific Graphics Awards, 2019
Symposium on Geometry Processing Software Award, 2017, 2018, 2019
Symposium on Geometry Processing Dataset Award, 2018

Conference Session Chairing

ACM SIGGRAPH North America, 2017, 2018, 2019, 2020
ACM SIGGRAPH Asia, 2018, 2019
ACM SIGGRAPH Asia Technical Briefs, 2017
Eurographics, 2017
Graphics Interface, 2017, 2018, 2019
Pacific Graphics, 2019
Symposium on Geometry Processing, 2015, 2016, 2017, 2019
TEDxUofTSalon, 2017
Tristate Workshop on Imaging and Graphics, 2015

Funding Referee Service

New Frontiers in Research Fund Exploration, Multidisciplinary Review Panel, 2021
Fields Undergraduate Research Summer Program, Committee 2019
United States-Israel Binational Science Foundation
Israeli Science Foundation
Mitacs Accelerate
NSERC Discovery
SNF Early PostDoc.Mobility Fellowship

Referee Service

ACM SIGGRAPH North America
ACM SIGGRAPH Asia
ACM SIGGRAPH Asia Courses
ACM SIGCHI
ACM Transactions and Graphics
ACM Transactions on Spatial Algorithms and Systems
CAD/Graphics
CVPR Conference on Computer Vision and Pattern Recognition

CVPR Learning 3D Generative Models Workshop
Computer Aided Geometric Design
Computer Graphics Forum
Computers and Graphics
ECCV European Conference on Computer Vision
Engineering with Computers
Eurographics
Eurographics Short Papers
Geometric Modeling and Processing
Graphical Models
Graphics Interface
IEEE Computer Graphics and Applications
IEEE Transactions on Visualization and Computer Graphics
IEEE Transactions on Pattern Analysis and Machine Intelligence
IEEE Robotics & Automation Letters
ICLR
ICML, *Expert Reviewer*
International Conference on 3D Vision (3DV)
International Journal of Computer Vision
International Journal for Numerical Methods in Engineering
Journal of Computer Graphics Techniques
Journal of Graphics Tools
Mathematical Geosciences
NeurIPS
Pacific Graphics
SIAM Journal of Imaging Sciences
SIBGRAPI Conference on Graphics, Patterns and Images
Shape Modeling International
Symposium on Computer Animation
Symposium on Computational Fabrication
Symposium on Geometry Processing
TEI ACM Conference on Tangible, Embedded and Embodied Interactions
UIST ACM Symposium on User Interface Software and Technology

Additional Service

Toronto Geometry Colloquium, *Advisor*
University of Toronto, Computer Graphics Club, *Faculty Coordinator*

Visitors I have hosted

James Jacobs — February 24, 2020
Ziva Dynamics
Physically based Character Simulation and Articulation for Games and Film

Herng Yi Cheng — January 29, 2020
University of Toronto, Mathematics
Tackling electoral manipulation with geometry and graph theory

Adrian Butscher — December 12, 2019

Autodesk Research
Demystifying Topology Optimization

Changxi Zheng — December 3, 2019
Columbia University
Computational Design for Bridging Physical and Digital Worlds

Michal Edelstein — November 6, 2019
Technion
Automatic Non-Isometric Shape Correspondence using a Genetic Algorithm

Seungbae Bang — October 9, 2019
KAIST
Breathing life into digital characters

Mirela Ben Chen — September 18, 2019
Technion
Chebyshev Nets from Commuting PolyVector Fields

Francis Williams — August 12, 2019
New York University
Geometric Priors of Feedfoward ReLU Networks

Thomas Lumpe — August 7, 2019
ETH Zurich
4D Printing in Engineering Design Research: Materials, Methods, and Applications

Dale Hayward — July 22, 2019
See Creatures Films
Bone Mother: The Challenges of Making an Indie 3D-Printed Film

Brady Peters — May 16, 2019
University of Toronto, Daniels Faculty of Architecture
Computer-generated Architecture: The Smithsonian Courtyard

Eitan Grinspun — May 14, 2019
Columbia University
A Geometric Perspective on Computing Motion

Yotam Gingold — May 6, 2019
George Mason University
Color, Geometry, and Time-Lapse Painting

Yu Zou — April 4, 2019
University of Toronto, Materials Science and Engineering
Additive manufacturing and mechanical properties of metallic materials across length scales

Maria Yablonina — April 1, 2019
University of Stuttgart
Task-Specific Architecture Machines

Marc Alexa — February 28, 2019
TU Berlin
Conforming Regular Triangulations

Andrea Tagliasacchi — January 31, 2019
Google
Capture, Tracking, and Compression of 4D Geometry

Changjian Li — September 13, 2018
The University of Hong Kong
BendSketch: Modeling Freeform Surfaces Through 2D Sketching

Yixin Hu — August, 9, 2018
New York University
Tetrahedral Meshing in the Wild

Oded Stein — April 6, 2018
Columbia University
Natural Boundary Conditions for Smoothing in Geometry Processing

Morgan McGuire — December 14, 2017
nVidia Research, University of Waterloo, Williams College
Realistic 3D Graphics in Real Time

Hanno Rein — December 7, 2017
University of Toronto, Physical and Environmental Sciences
The Numerical Challenges of Simulating Planetary Systems

Nobuyuki Umetani — November 16, 2017
Autodesk Research
Exploring Generative 3D Shapes Using Autoencoder Networks

Etienne Corman — September 22, 2017
Carnegie Mellon University
Functional Characterization of Deformation Fields

Dominik Michels — September 13, 2017
KAUST
On the Integration of Stiff Nonlinear Problems

Oliver Weeger — August 18, 2017
Singapore University of Technology and Design
Isogeometric collocation methods for nonlinear 3D rods

Marc Alexa — July 27, 2017
TU Berlin
Eye Tracking in 3D

Erik Postma — July 13, 2017
Maplesoft Research & Development
Examples of Computer Algebra with Maple

Nobuyuki Umetani — June 15, 2017
Autodesk Research
NeuralCFD: Learning Three-dimensional Flow for Interactive Aerodynamic Design

David Hahn — May 11, 2017
IST Austria
Simulating with surfaces: Boundary elements for liquids and fractures

Derek Liu — April 28, 2017
Carnegie Mellon University
A Spectrum of Spectra: From Instrinsic to Extrinsic Shape Analysis

Cory Mogk — April 13, 2017
Autodesk Research
More than AutoCAD and Maya: The Hidden Secrets of Autodesk

Liane Makatura — March 30, 2017
Dartmouth University
Environment-Scale Fabrication: Replicating Outdoor Climbing Experiences

Emilio Vital Brazil — March 9, 2017
IBM Research
Facing the high-dimensions: Inverse projection with radial basis functions

Eftychios Sifakis — February 23, 2017
University of Wisconsin, Madison
Digital humans, virtual surgery and fast fluids:
Do they have more in common than their hunger for performance?

Daniel Hambleton — February 16, 2017
MESH Inc.
IOGRAM: A New Development Platform for 3D Software

Joaquim Jorge — January 26, 2017
Instituto Superior Técnico
Multimodal interfaces for Shape Exploration: Beyond 2D Sketching

Marius Kintel — December 1, 2016
Shapefactory
OpenSCAD: A different approach to 3D Modeling

Ali Mazalek — November 24, 2016
Ryerson University
Movement, Material, Mind: Tangible and Embodied Interactions for Discovery and Learning

Noah Lockwood — November 7, 2016
Industrial Light and Magic
VFX and Computer Science: Raptors, Rathtars, and Augmented Reality

Nobuyuki Umetani — November 3, 2016
Autodesk Research
Printone: Interactive Resonance Simulation for Free-form Print-wind Instrument Design

Jovan Popović — October 26, 2016
Adobe Research
Character Animator

David Steinman — October 6, 2016
University of Toronto, Mechanical and Biomedical Engineering
Towards illustration-inspired visualization of cerebral aneurysm blood flow dynamics

David Duvenaud — September 22, 2016
University of Toronto, Machine Learning
Differentiating through physical simulations to optimize initial conditions

Christopher Batty — September 15, 2016
University of Waterloo
Surface-Only Animation of Gases and Liquids

David Palmer — September 8, 2016
Pixar Research
Discrete measured foliations and applications

Oded Stein — September 1, 2016
Columbia University

The finite element method for higher-order PDEs on subdivision surfaces

Oliver Glauser — April 21, 2016
ETH Zurich
Rig Animation with a Tangible and Modular Input Device

Roi Poranne — April 21, 2016
ETH Zurich
Scalable Locally Injective Mappings

Qingnan Zhou — March 24, 2016
New York University
Pushing the Limits of 3D Printing Technologies

Ken Perlin — June 18, 2015
New York University
Chalktalk

Andy Nealen — May 5, 2015
NYU Poly
Exploring Game Space

Noam Aigerman — August 18, 2014
Weizmann Institute
Representation of bijections between surface meshes using non-injective mappings to the plane

Maks Ovsjanikov — May 20, 2014
École Polytechnique
Geometry Processing via Linear Operators