

# Teseo Schneider

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## Curriculum Vitae

### Personal Information

Last name **Schneider**.  
First name **Teseo**.  
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OrCID **0000-0002-5969-636X**.  
G-Scholar ID <https://scholar.google.ch/citations?user=DC4stPEAAAAJ>.  
Research gate [https://www.researchgate.net/profile/Teseo\\_Schneider](https://www.researchgate.net/profile/Teseo_Schneider).

### Education

2012–2017 **PhD in Computer Science**, *Università della Svizzera italiana*, Lugano.  
Geometry-Aware FEM in Computational Mechanics  
2010–2012 **Master of Science in Computer Science**, *Università della Svizzera italiana*,  
Lugano.  
Major in Computational Science  
2008–2010 **Bachelor of Science in Computer Science**, *Università della Svizzera italiana*,  
Lugano.  
2007–2008 **Bachelor of Science in Computer Science**, *ETH*, Zürich.  
First year  
2005–2007 **Bachelor in Mathematics**, *Université de Neuchâtel*, Neuchâtel.  
First two years

### Employment history

2021–Present **Assistant professor**, *University of Victoria*, Canada.  
2018–2021 **Assistant professor**, *Courant Institute at New York University*, New York.  
2017–2018 **Adjunct professor**, *Courant Institute at New York University*, New York.  
2012–2017 **PhD in Computer Science**, *Università della Svizzera italiana*, Lugano.  
2010–2012 **Student Research Assistant**, *Università della Svizzera italiana*, Lugano.  
2011 **Undergraduate Research Opportunities Program (UROP)**, *Università della Svizzera italiana*, Lugano.  
2011 **iPhone Software developer**, *Università della Svizzera italiana*, Lugano.  
2006 **Project Manager**, *Université de Neuchâtel*, Neuchâtel.

### Institutional responsibilities

2015–2016 **PhD Representative**, *Università della Svizzera italiana*, Lugano.

2012–2016 **Town Councillor**, *Monteggio*, Switzerland.

## Languages

Italian	<b>Mother-tongue</b>	
English	<b>Proficient</b>	<i>Proficient in both speaking and writing</i>
French	<b>Proficient</b>	<i>Proficient in both speaking and writing</i>
German	<b>Basic</b>	<i>Simple words and phrases only</i>

## Supervision of junior researchers

- 2016 **Simulating Water Erosion with the Augmented Reality Sandbox**, *Bachelor thesis*, Matteo Muscella.
- 2014 **Interactive Cage Design for Mesh Deformation**, *Master thesis*, Thomas Mantegazzi.
- 2014 **3D Scanner with the Kinect**, *Bachelor thesis*, Giorgio Gori.
- 2013 **Virtual 3D Table Tennis**, *Undergraduate Research Opportunities Program*, Raphael Schapfel.

## Teaching activities

### Conference Tutorial

- May 2020 **Black-Box Analysis: From Theory to Practice**, *S. Koch, T. Schneider, C. Li, and D. Panozzo*, IMR.  
<https://geometryprocessing.github.io/blackbox-computing-python/>
- Oct. 2019 **Black-Box Analysis: From Theory to Practice**, *T. Schneider*, IMR.  
<https://teseoch.github.io/blackbox-course-imr/>
- Jul. 2019 **Geometric Computing with Python**, *S. Koch, T. Schneider, F. Williams, and D. Panozzo*, SIGGRAPH.  
<https://geometryprocessing.github.io/geometric-computing-python/>

### Courses

- 2022 **Computer Graphics**, *University of Victoria*, BC, Canada.
- 2021 **Geometric Modelling**, *University of Victoria*, BC, Canada.
- 2019 **Intro to computer science**, *Courant Institute at New York University*, New York.
- 2018 **Intro to computer science**, *Courant Institute at New York University*, New York.
- 2017 **Intro to computer science**, *Courant Institute at New York University*, New York.

### Teaching assistantship

- 2014 **Computer Graphics**, *Università della Svizzera italiana*, Lugano.
- 2013 **Computer Graphics**, *Università della Svizzera italiana*, Lugano.
- 2013 **Geometry Processing**, *Università della Svizzera italiana*, Lugano.
- 2012 **Computer Graphics**, *Università della Svizzera italiana*, Lugano.

### High school events and courses

- 2022 **Verna J. Kirkness Education Foundation Program**, *Visualizing Math through Computers*.
- 2018 **NYU GSTEM**, *Automatic Tool Holder Generation Via Image Processing and Laser Cutting*.
- 2016 **Comunità Esperti Insegnamento dell'Informatica nelle Scuole**, *GPU accelerated image warping*.
- 2015 **Giornate Autogestite LiLu1**, *Ping pong virtuale*.
- 2013 **OpenGL course**.
- 2013 **High School Thesis in Computer Science**.
- 2012 **Special Day LiLu2**.

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### Professional Activities

- 2022 **PC Member**, *SGP*.
- 2022 **PC Member**, *VMV*.
- 2022 **Graduate School Chair**, *SGP*.
- 2021 **PC Member**, *VMV*.
- 2021 **PC Member**, *SGP*.
- 2021 **PC Member**, *Eurographics*.
- 2020 **PC Member**, *GMP*.
- 2020 **PC Member**, *Eurographics*.
- 2019 **PC Member**, *SIBGRAPI*.
- 2019 **PC Member**, *CAD/Graphics*.
- 2019 **PC Member**, *CGI*.
- 2019 **PC Member**, *GMP*.

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### Scientific reviewing activities

#### Proposals

- 2022 **NSERC Alliance Grant**.
- 2021 **Austrian Science Fund (FWF)**.

#### Journals

- 2022 **Symmetry**.
- 2022 **Transactions on Graphics**.
- 2022 **Transactions on Visualization and Computer Graphics**.
- 2022 **Graphical Models**.
- 2021 **Graphical Models**.
- 2021 **Transactions on Visualization and Computer Graphics**.
- 2021 **Transactions on Graphics**.
- 2021 **SIAM-GD**.

2021 **Engineering with Computers.**  
2021 **Mathematics and Computers in Simulation.**  
2020 **Computer Aided Geometric Design.**  
2020 **Graphical Models.**  
2020 **Mathematics.**  
2020 **Computer Graphics Forum.**  
2020 **Computational Mechanics.**  
2020 **Numerical Mathematics: Theory, Methods and Applications.**  
2020 **Transactions on Visualization and Computer Graphics.**  
2019 **Geophysics.**  
2019 **Geomechanics and Geoengineering.**  
2019 **IEEE Access.**  
2019 **Computer Aided Geometric Design.**  
2019 **Computer & Graphics.**  
2018 **The Visual Computer.**  
2018 **Transactions on Visualization and Computer Graphics.**  
2018 **Pattern Recognition Letters.**  
2017 **Transactions on Visualization and Computer Graphics.**  
2016 **Computer Aided Geometric Design.**  
2016 **Transactions on Visualization and Computer Graphics.**  
2016 **Computer & Graphics.**  
2015 **Graphical Models.**  
2014 **Computer Aided Geometric Design.**  
2013 **Computer Aided Geometric Design.**  
2013 **SIAM Journal on Imaging Sciences.**

#### Conferences

2022 **SIGGRAPH.**  
2021 **SIGGRAPH Asia.**  
2021 **SIGGRAPH.**  
2020 **Pacific Graphics.**  
2020 **SIGGRAPH Asia.**  
2020 **SIGGRAPH.**  
2019 **Pacific Graphics.**  
2019 **SIGGRAPH Asia.**  
2019 **Eurographics.**  
2019 **SIGGRAPH.**  
2016 **SIGGRAPH.**  
2015 **Symposium on Geometry Processing.**

## Contribution to Large Open-source Projects

**Continuous Collision Detection,** [continuous-collision-detection.github.io](https://continuous-collision-detection.github.io).

**PolyFEM,** <https://polyfem.github.io/>.

**LibIGL,** <https://libigl.github.io/>.

**WildMeshing,** <https://wildmeshing.github.io>.

<https://>

## Prizes, awards, fellowships

2022 **SMI,** *Young Investigator Award.*

2021 **NSERC,** *Discovery Grant.*

2019 **New York University, Courant Institute,** *Assistant Professor fellowship.*

2017 **Swiss National Science Foundation (SNSF),** *Early Postdoc.Mobility fellowship.*  
Barycentric polyhedral finite elements

## Promotional activities for my universities

2017 **CeBIT,** *Hannover, Germany.*

2016 **Tecday Bellinzona.**

2016 **CeBIT,** *Hannover, Germany.*

2015 **Tecday Lugano.**

2014 **Tecday Locarno.**

2014 **INF USI 10 years anniversary,** *Lugano, Switzerland.*

2014 **Sportech,** *Tenero, Switzerland.*

## Publications in peer-reviewed scientific journals

- Mar. 2022 **Sparsity-Specific Code Optimization using Expression Trees**, *P. Herholz, X. Tang, T. Schneider, Shoaib Kamil, Daniele Panozzo, and Olga Sorkine-Hornung*, ACM Transactions on Graphics, <https://arxiv.org/abs/2110.12865>.
- Feb. 2022 **Rear traction forces drive adherent tissue migration in vivo**, *N. Yamaguchi, Z. Zhang, T. Schneider, B. Wang, D. Panozzo, and H. Knaut*, Nature Cell Biology, <https://www.nature.com/articles/s41556-022-00844-9>.
- Jan. 2022 **A Large Scale Comparison of Tetrahedral and Hexahedral Elements for Finite Element Analysis**, *T. Schneider, Y. Hu, J. Dumas, X. Gao, D. Panozzo, and D. Zorin*, ACM Transactions on Graphics, <https://arxiv.org/abs/1903.09332>.
- Dec. 2021 **ACORNS: An Easy-To-Use Code Generator for Gradients and Hessians**, *D. Desai, E. Shuchatowitz, Z. Jiang, T. Schneider, and D. Panozzo*, SoftwareX, <https://www.sciencedirect.com/science/article/pii/S2352711021001540>.
- Dec. 2021 **Isogeometric high order mesh generation**, *T. Schneider, D. Panozzo, and X. Zhou*, Computer Methods in Applied Mechanics and Engineering, <https://web.uvic.ca/~teseo/profile/publications/cmame2021/2021-IGA.pdf>.
- Oct. 2021 **A Large Scale Benchmark and an Inclusion-Based Algorithm for Continuous Collision Detection**, *B. Wang, Z. Ferguson, T. Schneider, X. Jian, M. Attene, and D. Panozzo*, ACM Transactions on Graphics, <http://web.uvic.ca/~teseo/profile/publications/ccd/2021-CCD.pdf>.
- Aug. 2021 **Intersection-free Rigid Body Dynamics**, *Z. Ferguson, M. Li, T. Schneider, F. Gil-Ureta, T. Langlois, C. Jiang, D. Zorin, D. Kaufman, and D. Panozzo*, ACM Transactions on Graphics (SIGGRAPH), [http://web.uvic.ca/~teseo/profile/publications/rigid-ipc/rigid\\_ipc\\_paper\\_350ppi.pdf](http://web.uvic.ca/~teseo/profile/publications/rigid-ipc/rigid_ipc_paper_350ppi.pdf).
- Aug. 2021 **Bijjective and Coarse High-Order Tetrahedral Meshes**, *Z. Jiang, Z. Zhang, Y. Hu, T. Schneider, D. Zorin, and D. Panozzo*, ACM Transactions on Graphics (SIGGRAPH), <http://web.uvic.ca/~teseo/profile/publications/curved/bichon.pdf>.
- Dec. 2020 **Bijjective Projection in a Shell**, *Z. Jiang, T. Schneider, D. Zorin, and D. Panozzo*, ACM Transactions on Graphics (SIGGRAPH), <http://web.uvic.ca/~teseo/profile/publications/shell/2020-BijjectivePrism.pdf>.
- Jul. 2020 **EGGS: Sparsity-Specific Code Generation**, *X. Tang, T. Schneider, S. Kamil, A. Panda, J. Li, and D. Panozzo*, Computer Graphics Forum, <https://diglib.eg.org/handle/10.1111/cgf14080>.
- Jul. 2020 **Incremental Potential Contact: Intersection- and Inversion-free, Large-Deformation Dynamics**, *M. Li, Z. Ferguson, T. Schneider, T. Langlois, D. Zorin, D. Panozzo, C. Jiang, and D. Kaufman*, ACM Transactions on Graphics (SIGGRAPH), <https://ipc-sim.github.io/file/IPC-paper-fullRes.pdf>.
- Jul. 2020 **Exact and Efficient Polyhedral Envelope Containment Check**, *B. Wang, T. Schneider, Y. Hu, M. Attene, and D. Panozzo*, ACM Transactions on Graphics (SIGGRAPH), <http://web.uvic.ca/~teseo/profile/publications/fast-envelope/2020-Fast-Envelope.pdf>.

- Jul. 2020 **Fast Tetrahedral Meshing in the Wild**, *Y. Hu, T. Schneider, B. Wang, D. Zorin, and D. Panozzo*, ACM Transactions on Graphics (SIGGRAPH), <https://arxiv.org/abs/1908.03581>.
- Sept. 2019 **CELLOGRAM: On the fly Traction Force Microscopy**, *T. Lendenmann, T. Schneider, J. Dumas, M. Tarini, A. Bajpai, W. Chen, D. Poulidakos, A. Ferrari, and D. Panozzo*, Nano Letters, <https://pubs.acs.org/doi/10.1021/acs.nanolett.9b01505>.
- Feb. 2019 **TriWild: Robust Triangulation with Curve Constraints**, *Y. Hu, T. Schneider, X. Gao, Q. Zhou, A. Jacobson, D. Zorin, and D. Panozzo*, ACM Transactions on Graphics (SIGGRAPH), <https://arxiv.org/pdf/1804.03245.pdf>.
- Feb. 2019 **Poly-Spline Finite Element Method**, *T. Schneider, J. Dumas, X. Gao, M. Botsch, D. Panozzo, and D. Zorin*, ACM Transactions on Graphics (TOG), <https://arxiv.org/pdf/1804.03245.pdf>.
- Oct. 2018 **Decoupling Simulation Accuracy from Mesh Quality**, *T. Schneider, Y. Hu, J. Dumas, X. Gao, D. Panozzo, and D. Zorin*, ACM Transactions on Graphics (SIGGRAPH Asia).  
<http://web.uvic.ca/~teseo/publications/siggraph2018/downloads/Schneider.2018.DSA.pdf>
- Sept. 2018 **Behaviour of exponential three-point coordinates at the vertices of convex polygons**, *D. Anisimov, K. Hormann, and T. Schneider*, Journal of Computational and Applied Mathematics.  
<https://www.sciencedirect.com/science/article/pii/S0377042718305995>
- Jan. 2018 **OpenCL based parallel algorithm for RBF-PUM interpolation**, *R. Cavoretto, T. Schneider, and P. Zulian*, Journal of Scientific Computing.  
<https://link.springer.com/article/10.1007/s10915-017-0431-x>
- Dec. 2017 **Parametric Finite elements with bijective mappings**, *P. Zulian, T. Schneider, K. Hormann, and R. Krause*, BIT Numerical Mathematics.  
<https://link.springer.com/article/10.1007/s10543-017-0669-6>
- Oct. 2017 **Generalized Barycentric Coordinates in Computer Graphics and Computational Mechanics**, *K. Hormann and N. Sukumar*, Chapter 4 of the book.  
<https://www.crcpress.com/Generalized-Barycentric-Coordinates-in-Computer-Graphics-and-Hormann-Sukumar/p/book/9781498763592>
- May. 2015 **Smooth bijective maps between arbitrary planar polygons**, *T. Schneider and K. Hormann*, Computer Aided Geometric Design, 2015, Proceedings of GMP.  
<http://dl.acm.org/citation.cfm?id=2797520>
- Apr. 2014 **Curvature-based blending of closed planar curves**, *M. Saba, T. Schneider, R. Scateni, and K. Hormann*, Graphical Models, 76, 2014, Proceedings of GMP.  
<http://www.sciencedirect.com/science/article/pii/S1524070314000319>
- Jun. 2013 **Bijective composite mean value mappings**, *T. Schneider, K. Hormann, and M. S. Floater*, Computer Graphics Forum, 32(5):137–146, July 2013, Proceedings of SGP.  
<http://dl.acm.org/citation.cfm?id=2600308>

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## Peer-reviewed conference proceedings

- May. 2022 **Fast and Exact Root Parity for Continuous Collision Detection**, *B. Wang, Z. Ferguson, X. Jian, M. Attene, D. Panozzo, and T. Schneider*, Eurographics 2022, [https://continuous-collision-detection.github.io/root\\_parity/root-parity-ccd-paper.pdf](https://continuous-collision-detection.github.io/root_parity/root-parity-ccd-paper.pdf).
- Sept. 2021 **An Extensible Benchmark Suite for Learning to Simulate Physical Systems**, *K. Otness, A. Gjoka, J. Bruna, D. Panozzo, B. Peherstorfer, T. Schneider, and D. Zorin*, NEURIPS, <https://web.uvic.ca/~teseo/profile/publications/nurips2021/2021-PhysBench.pdf>.
- Jun. 2021 **Robust and Asymptotically Locally Optimal UAV-Trajectory Generation Based on Spline Subdivision**, *R. Ni, T. Schneider, D. Panozzo, Z. Pan, and X. Gao*, IEEE International Conference on Robotics and Automation, <http://web.uvic.ca/~teseo/profile/publications/icra2021/2021-Drone.pdf>.
- Mar. 2019 **Deep Geometric Prior for Surface Reconstruction**, *F. Williams, T. Schneider, C. Silva, D. Zorin, J. Bruna, and D. Panozzo*, CVPR 2019, <https://arxiv.org/pdf/1811.10943.pdf>.
- Dec. 2016 **Design and Evaluation of a Wearable AR System for Sharing Personalized Content on Ski Resort Maps**, *A. Fedosov, E. Niforatos, I. Elhart, T. Schneider, D. Anisimov, and M. Langheinrich*, Proceedings of the 7th Augmented Human International Conference 2016, Proceedings of AH 16. <http://dl.acm.org/citation.cfm?id=3012721>
- Oct. 2016 **CuboidMatrix: Exploring Dynamic Structural Connections in Software Components using Space-Time Cube**, *T. Schneider, Y. Tymchuk, R. Salgado, and A. Bergel*, Proceedings of VISSOFT 2016 (3rd IEEE Working Conference on Software Visualization), 2016, Proceedings of VISSOFT. <http://scg.unibe.ch/archive/papers/Schn16a.pdf>
- Sept. 2015 **Vestige: A Visualization Framework for Engineering Geometry-Related Software**, *T. Schneider, P. Zulian, M. R. Azadmanesh, R. Krause, and M. Hauswirth*, Proceedings of VISSOFT 2015 (3rd IEEE Working Conference on Software Visualization), 2015, Proceedings of VISSOFT. <http://ieeexplore.ieee.org/document/7332412/>
- Nov. 2009 **An IDE-based, Integrated Solution to Schema Evolution of Object-Oriented Software**, *M. Piccioni, M. Orioly, B. Meyer, and T. Schneider*, Automated Software Engineering, 2009. ASE '09. 24th IEEE/ACM International Conference on, pages 650–654, Nov. 2009. <http://ieeexplore.ieee.org/document/5431717/authors>

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## Invited talks

- Sept. 2019 **Black Box Analysis**, *NIST*, Gaithersburg, Maryland.
- Sept. 2019 **Black-Box Analysis: from a broken mesh to a robust simulation**, *MIT*, Boston, Massachusetts.
- Aug. 2018 **First Steps Toward Black-Box Analysis**, *UBC*, British Columbia, Canada.

Nov. 2016 **Bijjective maps, or the art of taking small steps**, *Johannes Kepler University*, Linz, Austria.

### Oral contributions to conferences

Oct. 2019 **Decoupling Simulation Accuracy from Mesh Quality**, *International Meshing Roundtable*, Buffalo, New York.

Jun. 2019 **First Steps Toward Black-Box Finite Element Analysis**, *SIAM Conference on Computational Geometric Design*, Vancouver, Canada.

Oct. 2018 **Poly-Spline Finite Element Method**, *IGA 2018: Integrating Design and Analysis*, Austin, Texas.

Jul. 2017 **Parametric Finite Elements with Bijjective Mappings**, *SIAM Annual Meeting*, Pittsburgh, Pennsylvania.

Oct. 2016 **CuboidMatrix: Exploring Dynamic Structural Connections in Software Components using Space-Time Cube**, *IEEE Working Conference on Software Visualization*, Raleigh, North Carolina.

Apr. 2016 **Parametric Finite Elements with Bijjective Mappings**, *Colloque Numérique Suisse*, Fribourg, Switzerland.

Sept. 2015 **Vestige: A Visualization Framework for Engineering Geometry-Related Software**, *IEEE Working Conference on Software Visualization*, Bremen, Germany.

Sept. 2015 **Bijjective Finite Element Method**, *European Community in Computational Methods in Applied Sciences*, Ferrara, Italy.

Jul. 2015 **Bijjective Finite Element Method**, *National Congress on Computational Mechanics*, San Diego, California.

Jun. 2015 **Smooth Bijjective Maps Between Arbitrary Planar Polygons**, *Geometric Modeling and Processing*, Lugano, Switzerland.

Jun. 2014 **Curvature-Based Blending of Closed Planar Curves**, *Curves and Surfaces Conference*, Paris, France.

Nov. 2013 **Bijjective Composite Mean Value Mappings**, *Symposium on Solid and Physical Modeling*, Denver, USA.

Jul. 2013 **Bijjective Composite Mean Value Mappings**, *Geometric Modeling and Processing*, Genova, Italy.

### Poster contributions to conferences

Apr. 2017 **OpenCL based parallel algorithm for RBF-PUM interpolation**, *Colloque Numérique Suisse*, Basel, Switzerland.

Sept. 2016 **OpenCL based parallel algorithm for RBF-PUM interpolation**, *4th Dolomites Workshop on Constructive Approximation and Applications*, Alba di Canazei, Italy.

Sept. 2013 **Bijjective Composite Mean Value Mappings**, *Workshop on Vision, Modeling and Visualization*, Lugano, Switzerland.

Jul. 2012 **Finite differences with high orders of approximation for irregularly discretized domains**, *Symposium on Barycentric Coordinates*, New York, USA.