Christian Hafner

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CAREER

2023 – **Research Engineer**, *Computer Graphics & Physics Simulation*
Institute of Science and Technology Austria (ISTA)
Wojtan Group

2017 – 2023 **PhD Candidate,** *Computational Fabrication*
Institute of Science and Technology Austria (ISTA)
Thesis title: Inverse Shape Design with Parametric Representations: Kirchhoff Rods and Parametric Surface Models
Advisor: Bernd Bickel
Thesis committee: Chris Wojtan, Doug L. James, David I. W. Levin

2015 – 2017 **Research Assistant,** *Computer Graphics & Applied Geometry*
TU Wien, Austria
Advisors: Michael Wimmer, Helmut Pottmann

2013 – 2015 **Master of Science, pass with distinction,** *Visual Computing*
TU Wien, Austria
Thesis title: Optimization of Natural Frequencies for Fabrication-Aware Shape Modeling
Advisor: Michael Wimmer

2009 – 2013 **Bachelor of Science, pass with distinction,** *Software & Information Engineering*
TU Wien, Austria

PUBLICATIONS

Xie P., **Hafner C.**, Wojtan C. (2026).
Fast and Exact Winding Numbers for Triangle Meshes.
ACM Transactions on Graphics (Siggraph 2026).

Kalinov A., Ly M., **Hafner C.**, Wojtan C. (2026).
Physics-Inspired Procedural Texturing of Extremely Deformable Surfaces.
ACM Transactions on Graphics (Siggraph 2026).

Wei Z., **Hafner C.**, Kalinov A., Heiss-Synak P., Wojtan C. (2026).
Circles of Confidence for Multi-Label Geometry Completion.
Computer Graphics Forum (SGP 2026).

Hafner C., Ly M., Wojtan C. (2024)
Spin-It Faster: Quadrics Solve All Topology Optimization Problems That Only Depend on Mass Moments.
ACM Transactions on Graphics (Siggraph 2024)
Siggraph 2024 Technical Paper Awards: Honorable Mention

Hafner C., Bickel B. (2023).
The Design Space of Kirchhoff Rods.
ACM Transactions on Graphics (Siggraph Asia 2023).

Zhenyuan L., Piovarči M., **Hafner C.**, Charrondière R., Bickel B. (2023)
Directionality-Aware Design of Embroidery Patterns.
Computer Graphics Forum (Eurographics 2023).

Hafner C., Bickel B. (2021).
The Design Space of Plane Elastic Curves.
ACM Transactions on Graphics (Siggraph 2021).

Jeschke S., **Hafner C.**, Chentanez N., Macklin M., Müller-Fischer M., Wojtan C. (2020).
Making Procedural Water Waves Boundary-Aware.
Computer Graphics Forum (SCA 2020).

Hafner C., Schumacher C., Knoop E., Auzinger T., Bickel B., Bächer M. (2019).
X-CAD: Optimizing CAD Models with Extended Finite Elements.
ACM Transactions on Graphics (Siggraph Asia 2019)

Schreck C., **Hafner C.**, Wojtan C. (2019).
Fundamental Solutions for Water Wave Animation.
ACM Transactions on Graphics (Siggraph 2019).

Musialski P.*, **Hafner C.***, Rist F., Birsak M., Wimmer M., Kobbelt L. (2016). (* co-first authors)
Non-Linear Shape Optimization Using Local Subspace Projections.
ACM Transactions on Graphics (Siggraph 2016).

Hafner C., Musialski P., Auzinger T., Wimmer M., Kobbelt L. (2015).
Optimization of Natural Frequencies for Fabrication-Aware Shape Modeling.
Siggraph 2015 Poster.

AWARDS

2024	Technical Papers Awards: Honorable Mention, *ACM Siggraph*
2024	Eurographics 2024 PhD Award, *Eurographics Association*
2016	State Award for Best Master's and Diploma Theses, *Republic of Austria*
2016	Best Speaker Award (Information and Communication Technology), *Vienna young Scientists Symposium, Austria*
2013	Best Demo (Course Project, Real-Time Rendering), *TU Wien, Computer Graphics Group*
2013	Best Visualization (Course Project, Visualization 2), *TU Wien, Visualization Group*
2012	Best Game (Course Project, Computer Graphics 2), *TU Wien, Computer Graphics Group*

TEACHING

Spring 2022	Computational Aspects of Digital Fabrication, *TU Wien* **(Lecturer)**
Spring 2020	Data Science and Scientific Computing Track Core Course, *ISTA* **(Teaching Assistant, Student evaluation 4.9/5)**
Spring 2019	Data Science and Scientific Computing Track Core Course, *ISTA* **(Teaching Assistant, Student evaluation 4.6/5)**
Fall 2016	Modeling in Computer Graphics, *TU Wien* **(Teaching Assistant)**
Spring 2016	Algorithms for Real-Time Rendering, *TU Wien* **(Teaching Assistant)**

INTERNSHIPS AND ROTATIONS

Jun – Oct 2018	Internship with Moritz Bächer, *Disney Research Zurich* **(Developed simulation and shape optimization method for CAD models)**
Mar – Apr 2018	Rotation with Chris Wojtan, *ISTA* **(Developed real-time simulation of gravity-capillary rings on water)**
Jan – Feb 2018	Rotation with Herbert Edelsbrunner, *ISTA* **(Introduction to simplicial homology)**
Oct – Nov 2017	Rotation with Bernd Bickel, *ISTA* **(Developed computational tool for designing buckling behavior of elastic objects)**

LEADERSHIP, SERVICE, AND OUTREACH

Jun 2025	OpenCampus@ISTA **(Presented Spin-It Faster)**
Oct 2024	Young-Science-Kongress **(Talk for students aged 15-19)**
Jun 2024	OpenCampus@ISTA **(Presented Spin-It Faster)**
Aug 2023	OpenCampus@ISTA **(Presented water wave simulation research)**
Aug 2021	Project mentor at the MIT Summer Geometry Institute 2021 **(Mentored student research project)**
Aug 2019	Talk at 3D printing summer camp **(Interactive talk for children aged 12-16)**
May 2019	OpenCampus@ISTA **(Presented 3D printing exhibition)**
Sep 2017	European Researchers Night **(Public outreach about 3D printing research)**

CONFERENCE VISITS

Aug 3-7, 2024	Discrete Geometric Structures 2026
Jul 1-3, 2026	SGP 2026
Jun 8-12, 2026	Curves & Surfaces 2026 **(Gave invited talk)**
Aug 10-14, 2025	Siggraph 2025
Jul 7-11, 2025	ESMC 2025 **(Gave two technical talks)**
Sep 2-6, 2024	Discrete Geometric Structures 2024
Jul 28 – Aug 1, ’24	Siggraph 2024 **(Presented technical paper)**
Apr 22-26, 2024	Eurographics 2024 **(Received PhD Award)**
Jan 15-17, 2024	Wintergraph 2024 **(Presented group overview)**
Dec 12-15, 2023	Siggraph Asia 2023 **(Presented technical paper)**
Aug 28 – Sep 1, ‘23	Geometry Workshop Innsbruck 2023
Aug 6-10, 2023	Siggraph 2023
Aug 4-6, 2023	Symposium on Computer Animation 2023
Oct 16-19, 2022	Workshop Graphyz 2 **(Presented ongoing work)**
Sep 20-25, 2021	Geometry Workshop Obergurgl 2021 **(Presented ongoing work)**
Aug 9-13, 2021	Siggraph 2021 **(Presented technical paper)**
Aug 17-28, 2020	Siggraph 2020
Nov 17-20, 2019	Siggraph Asia 2019 **(Presented technical paper)**
Oct 24-25, 2019	Workshop Graphyz
Jul 28 – Aug 1, ‘19	Siggraph 2019 **(Presented fast forward)**
May 6-10, 2019	Eurographics 2019
Aug 12-16, 2018	Siggraph 2018
Apr 16-20, 2018	Eurographics 2018
Jul 24-28, 2016	Siggraph 2016 **(Presented technical paper)**

REVIEW ACTIVITY

ACM Siggraph Asia Technical Papers	2020, 2023, 2024, 2025
ACM Siggraph Posters	2021, 2025, 2026
ACM Siggraph Technical Papers	2022, 2023, 2024, 2025, 2026
ACM Symposium on Computational Fabrication	2025, 2026
IEEE TVCG	2025, 2026
Computer Aided Geometric Design	2026