Christian Hafner

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✉ chafner@ist.ac.at
chrishafner.github.io
Work Institute of Science and Technology Austria
Am Campus 1, 3400 Klosterneuburg

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

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). (* joint 1st 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 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

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)**