

LENNART JUSTIN SCHULZE

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Mechanical Engineer (M.Sc. & Dr.-Ing.) with interdisciplinary research experience in computational fluid dynamics for biological and manufacturing applications. Experienced in algorithm development for fluid simulations, data analysis and international scientific communication.

EDUCATION

Apr 2018 – Feb 2021	Technical University of Munich (TUM), Germany M.Sc. Mechanical Engineering, grade: 1.3 (top 13%)
Aug 2020 – Feb 2021	Visiting scholar, Master thesis at Northwestern University, IL, USA
Apr 2019 – Sep 2019	Semester abroad at Keio University Tokyo, Japan
Oct 2013 – Apr 2018	Technical University of Munich (TUM), Germany B.Sc. Mechanical Engineering, grade: 2.4 (top 30%)
Aug 2004 – Mar 2013	Gymnasium im Kannenbäckerland, Höhr-Grenzhausen, Germany Advanced courses: Mathematics, Latin, English. Abitur grade: 1.8



WORK EXPERIENCE

Jun 2021 – now	Doctoral Researcher at the Max-Planck Institute of Molecular Cell Biology and Genetics and the Faculty of Computer Science of the Technical University of Dresden Independent planning and performing of interdisciplinary research projects, formulation and implementation of mathematical algorithms in high-performance computing libraries, and supervision of student projects. PhD thesis title: Mesh-free Methods for the Adaptive Discretization and High-order Approximation of Dynamic Surfaces
Nov 2019 – Jun 2020	Working student at MVTec Software GmbH Software development for the analysis and visualization of machine vision data
2015 – 2019	Twelve assistant contracts at the Faculty for Mathematics and Faculty for Mechanical Engineering of TUM Lecturing tutor within lectures for numerical mathematics, mathematical analysis
Mar 2016 – Oct 2016	Internship at Dr. Ing. h.c. F. Porsche AG Research and development of an automated evaluation program for air springs

TECHNICAL STRENGTHS

Expertise	Numerical Simulations, Point Clouds, High-Performance Computing, Data Analysis
Programming Languages	C, C++, CUDA, Python, MATLAB, Bash, R
Software & Tools	Paraview, Git, LaTeX, MS Office, Large Language Models (LLMs), OpenFOAM

LANGUAGE SKILLS

Native Speaker	English and German
Advanced Skills	Italian
Basic Skills	Japanese, Latin (Advanced Latinum)

SCHOLARSHIPS

Aug 2020 – Dec 2020	PROMOS by the German Academic Exchange Service (DAAD)
Apr 2019 – Aug 2019	Japan Student Services Organization (JASSO)
Apr 2018 – Apr 2019	Technical University of Munich MATLAB Scholarship

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EXTRACURRICULAR ACTIVITIES

Community Activities	Science Goes To School – Science communication Involvement as "MATLAB Student Ambassador"
Sports & Leisure	Hiking, Tennis, Skateboarding, Music, Photography

RESEARCH OUTPUT

May 2026	L.J. Schulze, and I.F. Sbalzarini: Globally adaptive and locally regular point discretization of curved surfaces. Under review for journal publication, preprint available at arXiv:2605.03803
Oct 2025	L. J. Schulze: Mesh-free Methods for the Adaptive Discretization and High-order Approximation of Dynamic Surfaces. Ph.D. thesis, TU Dresden
Jun 2025	L. J. Schulze, A. Foggia, P. Suhrcke, and I. F. Sbalzarini: Adaptive Particle Discretization of Curved Surfaces. Presentation at <i>ADMOS 2025</i> , Barcelona, Spain.
Oct 2024	L. J. Schulze, S. K. T. Veettil, and I. F. Sbalzarini. A high-order fully Lagrangian particle level-set method for dynamic surfaces. <i>Journal of Computational Physics</i> , 515, 113262
Jul 2024	L. J. Schulze, S. K. T. Veettil, A. Foggia, and I. F. Sbalzarini. A Fully Lagrangian Particle Level-Set Method for Solving PDEs on Deforming Surfaces. Presentation at <i>SIAM Annual meeting 2024</i> , Spokane, Washington, USA.
Oct 2023	L.J. Schulze, S.K.T. Veettil, and I. F. Sbalzarini. A Fully Lagrangian Particle Level-Set Method for the Simulation of Dynamic Surfaces. Presentation at <i>PARTICLES 2023</i> , Milan, Italy.
Jun 2022	L.J. Schulze, V. Zago, G. Bilotta, R.A. Dalrymple. Localized kernel gradient correction for SPH simulations of water wave propagation. Proceedings paper and presentation at <i>2022 SPHERIC International Workshop</i> , Catania, Italy.
Dec 2021	V. Zago, L.J. Schulze, G. Bilotta, N. Al Mashaan, R.A. Dalrymple. Overcoming excessive numerical dissipation in SPH modeling of water waves. <i>Coastal Engineering</i> , 170, 104018.
Jun 2021	V. Zago, L.J. Schulze, G. Bilotta, N. Al Mashaan, R.A. Dalrymple. A conservative Corrective SPH for water wave propagation. Proceedings paper and presentation at <i>2021 SPHERIC International Workshop</i> , Newark, NJ, US, and online
Jun 2020 – Dec 2020	Master thesis: "Corrective Methods for free Surface Water Wave Propagation in Smoothed Particle Hydrodynamics" at the Department for Civil and Environmental Engineering, Northwestern University, grade: 1.0
Oct 2018 – Mar 2019	Semester thesis: "Modeling Marangoni Effects through Weakly Compressible Smoothed Particle Hydrodynamics" at the Institute for Computational Mechanics, Faculty of Mechanical Engineering, TUM, grade: 1.0
Jun 2017 – Dec 2017	Bachelor thesis: "Lagrange Multiplier Functions for mortar-like Contact Simulations considering large Deformations" at the Institute for Computational Mechanics, Faculty of Mechanical Engineering, TUM, grade: 1.0