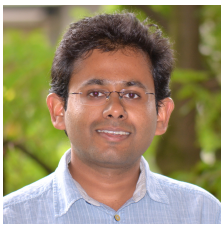
Dr.-Ing. Kartik Jain

Senior Scientist, University of Stuttgart, Germany
☎ +49 (0) 176 770 51530, ✉ kartik.jain@icp.uni-stuttgart.de
Google Scholar, ORCiD ResearcherID
Birth: 05.Dec.1986, New Delhi, Nationality: Indian
Marital Status: Single



Employment

08/18 – present	**University of Stuttgart, Germany** *Position:* Senior Scientist, Institute for Computational Physics
08/16 – 07/18	**University of Zürich, Switzerland** *Position:* Postdoctoral researcher, Institute of Physiology, Faculty of Medicine
02/13 – 07/16	**University of Siegen, Germany** *Position:* Scientist, Simulation Techniques & Scientific Computing
03/11 – 01/13	**German Research School for Simulation Sciences GmbH, Aachen** *Position:* Student research assistant within the RWTH Aachen University
07/07 – 09/10	**Tech Mahindra Ltd., India** *Position:* Software developer and analyst in the projects of BT and AT&T

Education

02/13 – 08/16	**Doctor of Engineering (Dr.-Ing.)** ***summa cum laude (with distinction)*** University of Siegen, Germany **Date of defense:** 22.08.2016, **Advisor:** Prof. Sabine Roller
10/10 – 11/12	**Master of Science (MSc)** Mechanical Engineering, RWTH Aachen University, Germany Major field of study: Simulation Sciences Aggregate GPA: 1.8/5.0 – US equivalent of 3.36 **MS Thesis Advisor:** Prof. Sabine Roller
08/03 – 06/07	**Bachelor of Technology (B.Tech)** Kurukshetra University, India Major field of study: Instrumentation and Control Engineering Aggregate score: 75.6% (First class and honors)

Academic Competence

Lattice Boltzmann Hydrodynamics, High Performance Computing, Multiscale Scientific Computing, Reduced order modeling, Finite Element/Volume methods, Numerical optimization, High performance matrix computations, MPI and OpenMP programming, Fortran, C, Python, Lua, Matlab, LaTeX, Musubi

Computing Resource Grants

2017	*Modeling of flow and transport in renal vasculature* received 1.5 million CPU hours on the *Piz Daint* supercomputer, Swiss National Supercomputing Center, Lugano, Switzerland
2015	*Simulation of cerebrospinal fluid in the spinal canal* received 5 million CPU hours on NEC SX-ACE machine installed at the Tohoku University, Japan
2013	*Multiscale modeling of physiological flow and thrombosis in stented Intracranial Aneurysms* received 20 million CPU hours on the *SuperMUC*, Leibniz Supercomputing Center, Munich, Germany

Research Stays

May-Jun 15	*Conquer Chiari Research Center, University of Akron, Akron, Ohio, USA*
Oct 14	*Center for Biomedical Computing, Simula Research Lab, Oslo,* Norway

Invited Talks

May 18	Lecture at the Zürich University of Applied Sciences (ZHAW), Wädenswil, Switzerland
Feb 18	International Neurovascular Exploratory Workshop - iNEW'2018, Zürich, Switzerland
Sep 17	Institute of Nuclear Waste Management, Paul Scherrer Institute, Villigen, Switzerland
Jul 14	LRZ Review meeting, Munich, Germany

Outreach

- Kidney project showcased to general public during Scientifica, 2017
- Project *Simulating Transitional Hemodynamics in Intracranial Aneurysms at Extreme Scale* advertised by the Gauss Center for Supercomputing
- *Musubi* LBM solver is one of the most scalable solvers, advertised by the Research Center Jülich

Publications

Doctoral Dissertation

[Jain, 2016] Jain, K. (2016). *Transition to Turbulence in Physiological Flows: Direct Numerical Simulation of Hemodynamics in Intracranial Aneurysms and Cerebrospinal Fluid Hydrodynamics in the Spinal Canal*. PhD thesis, Universität Siegen, Germany.

TOP 10 PEER REVIEWED PUBLICATIONS

[1] V. C. Frostelid, **Kartik Jain**, A. Jensen, and K.-A. Mardal. Experimental investigation of transitional flow in cerebral aneurysms. 3(0):674 – 677, 2017. 2017 Computational and Mathematical Biomedical Engineering.

[2] H. Klimach, **Kartik Jain**, and S. Roller. End-to-end parallel simulations with apes. In *Parallel Computing: Accelerating Computational Science and Engineering (CSE)*, volume 25 of *Advances in Parallel Computing*, pages 703–711, Munich, Germany, September 2014. IOS Press.

[3] J. Qi, **Kartik Jain**, H. Klimach, and S. Roller. Performance evaluation of the LBM solver Musubi on various HPC architectures. In *Advances in Parallel Computing: On the Road to Exascale*, volume 27 of *Advances in Parallel Computing*, pages 807–816. IOS Press, March 2016.

[4] **Kartik Jain**, J. Jiang, C. Strother, and K.-A. Mardal. Transitional hemodynamics in intracranial aneurysms - comparative velocity investigations with high resolution lattice Boltzmann simulations, normal resolution ANSYS simulations and MR imaging. *Medical Physics*, 43:6186–6198, 2016.

[5] **Kartik Jain** and K.-A. Mardal. Exploring the critical reynolds number for transition in intracranial aneurysms - highly resolved simulations below Kolmogorov scales. 3(0):560 – 563, 2015. 2015 Computational and Mathematical Biomedical Engineering.

[6] **Kartik Jain**, G. Ringstad, P.-K. Eide, and K.-A. Mardal. Direct numerical simulation of transitional hydrodynamics of the cerebrospinal fluid in chiari I malformation: The role of cranio-vertebral junction. *International journal for numerical methods in biomedical engineering*, 33(9), 2017.

[7] **Kartik Jain**, S. Roller, and K.-A. Mardal. Transitional flow in intracranial aneurysms–a space and time refinement study below the Kolmogorov scales using lattice Boltzmann method. *Computers & Fluids*, 127:36–46, 2016.

[8] **Kartik Jain**, S. Zimny, H. Klimach, and S. Roller. Thrombosis modeling in stented cerebral aneurysms with lattice Boltzmann method. In *Proceedings of the 26th Nordic Seminar on Computational Mechanics*, pages 206–209, Oslo, Norway, 2013.

[9] K. Valen-Sendstad, A. W. Bergersen, others, **Kartik Jain**, and more. Real-world variability in the prediction of intracranial aneurysm wall shear stress: the 2015 international aneurysm cfd challenge. *Cardiovascular Engineering and Technology*, pages 1–21, 2018.

[10] S. Zimny, B. Chopard, O. Malaspinas, E. Lorenz, **Kartik Jain**, S. Roller, and J. Bernsdorf. A multiscale approach for the coupled simulation of blood flow and thrombus formation in intracranial aneurysms. *Procedia Computer Science*, 18:1006–1015, 2013.