Publications

Doctoral Dissertation

Kartik Jain. *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, 2016.

Book Chapters

[1] Vartan Kurtcuoglu, **Kartik Jain**, and Bryn A Martin. Modelling of cerebrospinal fluid flow by computational fluid dynamics. In *Biomechanics of the Brain*, pages 215–241. Springer, 2019.

[2] **Kartik Jain**. CADA challenge: Rupture risk assessment using computational fluid dynamics. In *Cerebral Aneurysm Detection. CADA 2020. Lecture Notes in Computer Science*, volume 12643, pages 75–86. Springer, Cham, 2021.

Selected articles in peer reviewed journals

[1] **Kartik Jain**, Jingfeng Jiang, Charles Strother, and Kent-André 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. PMID:27806613.

[2] **Kartik Jain**, Sabine Roller, and Kent-André 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.

[3] **Kartik Jain**, Geir Ringstad, Per-Kristian Eide, and Kent-André 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. PMID:27863152.

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[5] **Kartik Jain**. Efficacy of the FDA nozzle benchmark and the lattice Boltzmann method for the analysis of biomedical flows in transitional regime. *Medical & Biological Engineering & Computing*, 58:1817–1830, 2020. PMID:32507933.

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[7] Stefan Engelhard, Lennart van de Velde, Erik Groot Jebbink, **Kartik Jain**, Clark Zeebregts, Michel Versluis, and Michel Reijnen. Blood flow quantification in peripheral arterial disease: emerging diagnostic techniques in endovascular surgery. volume 38. May 2021. PMID:33970476.

[8] Matthias Ivantsits, Leonid Goubergrits, Jan-Martin Kuhnigk, Markus Huellebrand, Jan Brüning, Tabea Kossen, Boris Pfahringer, Jens Schaller, Andreas Spuler, Titus Kuehne, Yizhuan Jia, Xuesong Li, Suprosanna Shit, Bjoern Menze, Ziyu Su, Jun Ma, Ziwei Nie, **Kartik Jain**, Yanfei Liu, Yi Lin, and Anja Hennemuth. Detection and analysis of cerebral aneurysms based on X-ray rotational angiography - the CADA 2020 challenge. *Medical Image Analysis*, 00:1–23, 2021. PMID:34998111.

[9] Arndt Wagner, Elissa Eggenweiler, Felix Weinhardt, Zubin Trivedi, David Krach, Christoph Lohrmann, **Kartik Jain**, Nikolaos Karadimitriou, Carina Bringedal, Paul Voland, Christian Holm, Holger Class, Holger Steeb, and Iryna Rybak. Permeability estimation of regular porous structures: A benchmark for comparison of methods. *Transport in Porous Media*, 00:1–23, 2021.

[10] Rutger Hebbink, Bas Wessels, Rob Hagmeijer, and **Kartik Jain**. Computational analysis of human upper airway aerodynamics. *Medical & Biological Engineering & Computing*, 00:1–13, 2022. PMID:36538266.

[11] **Kartik Jain**. The effect of varying degrees of stenosis on transition to turbulence in oscillatory flows. *Biomechanics and Modeling in Mechanobiology*, pages 1–13, 2022. PMID:35445319.

[12] Marcel Alexander Heinrich, Irene Uboldi, Praneeth Reddy Kuninty, Marc Ankone, Joop van Baarlen, Yu Shrike Zhang, **Kartik Jain**, and Jai Prakash. Microarchitectural mimicking of stroma-induced vasculature compression in pancreatic tumors using a 3d engineered model. *Bioactive Materials*, 22:18–33, 2023. PMID:36203956.

[13] TJ Snoeijink, TG Vlogman, J Roosen, E Groot Jebbink, K Jain, and JFW Nijsen. Transarterial radioembolization: a systematic review on gaining control over the parameters that influence microsphere distribution. *Drug Delivery*, 30(1):2226366, 2023.

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[1] **Kartik Jain**, Simon Zimny, Harald Klimach, and Sabine 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.

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[3] Harald Klimach, **Kartik Jain**, and Sabine 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.

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[7] Tristan G. Vlogman and **Kartik Jain**. A parallel computational framework for simulation of microspheres in the liver vasculature. 3(0):372 – 375, 2022. 7th International Conference on Computational and Mathematical Biomedical Engineering.