## Publications

### Doctoral Dissertation

K. 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] **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.

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

### Articles in peer reviewed journals

[1] T. G. Vlogman and **Kartik Jain**. Efficient coupled lattice boltzmann and discrete element method simulations of small particles in complex geometries. *Computers & Mathematics with Applications*, 175:313–329, October 2024.

[2] L. van de Velde, E. Groot Jebbink, **Kartik Jain**, M. Versluis, and M. Reijnen. Lesion eccentricity plays a key role in determining the pressure gradient of serial stenotic lesions: Results from a computational hemodynamics study. *CardioVascular and Interventional Radiology*, 47(5):533–542, March 2024. PMID:38565717.

[3] N. Blanken, B. Heiles, A. Kuliesh, M. Versluis, **Kartik Jain**, D. Maresca, and G. Lajoinie. Proteus: A physically realistic contrast-enhanced ultrasound simulator part I: Numerical methods. *IEEE Transactions on Ultrasonics, Ferroelectrics, and Frequency Control*, 00(0):0000000, July 2024. PMID:00000000.

[4] T. Snoeijink, T. Vlogman, J. Roosen, E. Groot Jebbink, **Kartik Jain**, and J. Nijsen. Transarterial radioembolization: a systematic review on gaining control over the parameters that influence microsphere distribution. *Drug Delivery*, 30(1):2226366, 2023. PMID:37341184.

[5] M. A. Heinrich, I. Uboldi, P. R. Kuninty, M. Ankone, J. van Baarlen, Y. S. Zhang, **Kartik Jain**, and J. Prakash. Microarchitectural mimicking of stroma-induced vasculature compression in pancreatic tumors using a 3d engineered model. *Bioactive Materials*, 22:18–33, 2023. PMID:36203956.

[6] R. Hebbink, B. Wessels, R. Hagmeijer, and **Kartik Jain**. Computational analysis of human upper airway aerodynamics. *Medical & Biological Engineering & Computing*, 61(2):541–553, 2023. PMID:36538266.

[7] **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.

[8] A. Wagner, E. Eggenweiler, F. Weinhardt, Z. Trivedi, D. Krach, C. Lohrmann, **Kartik Jain**, N. Karadimitriou, C. Bringedal, P. Voland, C. Holm, H. Class, H. Steeb, and I. Rybak. Permeability estimation of regular porous structures: A benchmark for comparison of methods. *Transport in Porous Media*, 00:1–23, 2021.

[9] M. Ivantsits, L. Goubergrits, J.-M. Kuhnigk, M. Huellebrand, J. Brüning, T. Kossen, B. Pfahringer, J. Schaller, A. Spuler, T. Kuehne, Y. Jia, X. Li, S. Shit, B. Menze, Z. Su, J. Ma, Z. Nie, **Kartik Jain**, Y. Liu, Y. Lin, and A. 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.

[10] S. Engelhard, L. van de Velde, E. G. Jebbink, **Kartik Jain**, C. Zeebregts, M. Versluis, and M. Reijnen. Blood flow quantification in peripheral arterial disease: emerging diagnostic techniques in endovascular surgery. volume 38. May 2021. PMID:33970476.

[11] **Kartik Jain**. Transition to turbulence in an oscillatory flow through stenosis. *Biomechanics and Modeling in Mechanobiology*, 19:113–131, 2020. PMID:31359287.

[12] **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.

[13] 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. PMID:30203115.

[14] **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 craniovertebral junction. *International journal for numerical methods in biomedical engineering*, 33(9), 2017. PMID:27863152.

[15] **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.

[16] **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. PMID:27806613.

**Peer reviewed conference proceedings**

[1] T. G. Vlogman and **Kartik Jain**. Influence of injection parameters on the targeted delivery of microspheres to liver tumors during radioembolization. 4(0):583 – 586, 2024. 8th International Conference on Computational and Mathematical Biomedical Engineering.

[2] T. 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.

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[4] 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.

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