

Dr. Benedikt Zönnchen

Curriculum vitae

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Academic education

- 03/2016 - 07/2020 *Technical University of Munich (TUM), Prof. Hans-Joachim Bungartz
Munich University of Applied Sciences (MUAS), Prof. Gerta Köster*
Computer Science (Dr. rer. nat.), summa cum laude
PhD thesis Efficient parallel algorithms for large-scale pedestrian simulation
- 10/2013 - 02/2016 *Technical University of Munich (TUM), Computer Science (M. Sc.)*, Grade: 1.5
Master thesis Implementation of an efficient equivalence test for sequential & linear tree-to-word transducers
- 10/2010 - 09/2013 *Munich University of Applied Sciences (MUAS), Computer Science (B. Sc.)*, Grade: 1.17
Bachelor thesis Navigation around pedestrian groups and queueing using a dynamic adaption of travelling times in the fast marching algorithm



Job history (non-academic)

- 02/2022 - today **Software developer for CSplus and plusCS education**, Munich University of Applied Sciences
08/2020 - 01/2022 **Senior advisor for education in computer science**, Munich University of Applied Sciences
03/2011 - 10/2011 **Software developer (working student)**, Prevero AG
09/2008 - 07/2009 **Web developer**, Nokia Siemens Networks GmbH & Co. KG
09/2005 - 07/2008 **Software developer (education)**, Siemens AG

Practical experience

Software development

- Java **Excellent knowledge**, Java developer since 2006, main contributor to the open-source simulation framework Vadere, language of my education at Siemens and the Bachelor program
- Python **Excellent knowledge**, Python developer since the start of my dissertation (2016), scripting, trainer for Python, author of a free Python textbook
- JS, HTML, CSS **Very good knowledge**, contributor to a social media platform (1 year), P5JS visualizations
- OpenCL **Very good knowledge**, GPU programming during my PhD project
- C/C++ **Good knowledge**, high performance computing during my PhD project
- Database, SQL **Good knowledge**, constant use during my work as software developer
- PHP **Basic knowledge**, contributor to a social media platform (1 year)
- Scala, Haskell **Basic knowledge**, personal interest in functional programming

Other technologies

- Git **Excellent knowledge**, Git user since 2011
- LaTeX **Excellent knowledge**, LaTeX advocate since 2011
- Docker, Kubernetes **Basic knowledge**, installation of my own Kubernetes cluster for educational purposes
- Jupyter ecosystem **Very good knowledge**, installation a JupyterHub for a lecture, Development of Jupyter notebooks for my students, author of an interactive Jupyter book

Teaching

- Winter 2021/22 **Computational Thinking**, lecture (bachelor), *trainer*, MUAS
Winter 2021/22 **Preparation for Computer Science**, 5-day course (bachelor), *trainer and coordinator*, MUAS
Winter 2020/21 **Preparation for Computer Science**, 5-day course (bachelor), *trainer and coordinator*, MUAS
Winter 2019/20 **Machine Learning in Crowd Modeling and Simulation**, *guest lecture*, TUM
Winter 2016/17 **Linear Algebra**, lecture (bachelor), *lecturer*, MUAS
Summer 2016 **Scientific Computing**, Seminar (bachelor), *lecturer*, MUAS
Summer 2016 **Theoretical Computer Science**, lecture (bachelor), *trainer*, MUAS

Field of interests

- Free and open education, schooling and education in the digital era
- Modelling and simulation, mesh generation, design of efficient and parallel algorithms
- Theoretical computer science, automata theory, constructivist mathematics, music theory
- Algorithmic art, algorithm visualization, sonification
- Film critique and analysis, philosophy, chess, history of mathematics and computer science

Publications

- 2022 Sabine Hammer, Sarah Ottinger, Veronika Thurner and **Benedikt Zönnchen**, Bonding in times of pandemia – a concept for purely virtual kick-off days to the student entry phase, In *Mobility for Smart Cities and Regional Development – Challenges for Higher Education*, 10.1007/978-3-030-93904-5_19
- 2020 **Benedikt Zönnchen**, and Gerta Köster, GPGPU computing for microscopic pedestrian simulation, In *Parallel Computing: Technology Trends*, 10.3233/APC200029
- 2020 **Benedikt Zönnchen**, Benedikt Kleinmeier and Gerta Köster, Vadere – a simulation framework to compare locomotion models, In *Traffic and Granular Flow 2019*, 10.1007/978-3-030-55973-1_41
- 2019 **Benedikt Zönnchen**, Benedikt Kleinmeier, Marion Gödel and Gerta Köster, Vadere: an open-source simulation framework to promote interdisciplinary understanding, In *Collective Dynamics*, 4, 10.17815/CD.2019.21
- 2019 **Benedikt Zönnchen**, Matthias Laubinger and Gerta Köster, Towards faster navigation algorithms on four fields, In *Traffic and Granular Flow '17*, 10.1007/978-3-030-11440-4_34
- 2018 **Benedikt Zönnchen** and Gerta Köster, A parallel generator for sparse unstructured meshes to solve the eikonal equation, In *Journal of Computational Science*, 10.1016/j.jocs.2018.09.009
- 2015 Gerta Köster and **Benedikt Zönnchen**, A queuing model based on social attitudes, In *Traffic and Granular Flow '15*, 10.1007/978-3-319-33482-0
- 2016 **Benedikt Zönnchen** and Gerta Köster, Detecting arbitrarily shaped queues using the fast marching method, *8th International Conference on Pedestrian and Evacuation Dynamics*, Hefei, China
- 2014 Gerta Köster and **Benedikt Zönnchen**, Queuing at bottlenecks using a dynamic floor field for navigation, In *Transportation Research Procedia*, 10.1016/j.trpro.2014.09.029

Scholarships & awards

- 2022 **Dissertation award** (Oskar-von-Miller Award)
- 2021 **Dissertation award** (Bund der Freunde der Technischen Universität München e. V.)
- 04/2012 – 05/2016 **German Academic Scholarship Foundation** (Studienstiftung des deutschen Volkes)
- 06/2012 – 05/2016 **Max Weber-Program of the State of Bavaria** (Max Weber-Programm Bayern)
- 2013 **RiMEA sponsorship award, Valedictorian**