

Dr. Benedikt Zönnchen

Curriculum vitae

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BZoennchen



Academic education

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

Job history (non-academic)

- 09/2023 - today **Scientific director (Postdoc)**, *Hochschule München University of Applied Sciences, MUC.DAI*
- 02/2022 - 09/2023 **Educational-tech engineer**, *Hochschule München University of Applied Sciences, FK07*
- 08/2020 - 01/2022 **Senior advisor for education in CS**, *Hochschule München University of Applied Sciences, FK07*
- 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 / machine learning

- Python **Excellent knowledge**, Python developer since 2016 (NumPy, Pandas, Django, SciPy), scripting, trainer for Python, author of an open textbook ([Link](#))
- Java **Excellent knowledge**, Java developer since 2006, main contributor to the open-source simulation framework Vadere ([Link](#)), language of my education at Siemens and the bachelor program
- OpenCL **Very good knowledge**, GPU programming during my PhD project
- PyTorch, Scikit-learn **Good knowledge**, teaching, development of a melody generator (LSTM, Transformer)
- JS, HTML, CSS, PHP **Good knowledge**, contributor to a social media platform (1 year), p5.js visualizations ([Link](#))
- 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)
- Rust, Scala, Haskell **Basic knowledge**, personal interest

Other technologies

- Git **Excellent knowledge**, Git user since 2011

LaTeX	Excellent knowledge , LaTeX advocate since 2011
Jupyter ecosystem	Very good knowledge , deployment of a JupyterHub, Development of Jupyter notebooks for my students, author of an interactive Jupyter book
SuperCollider	Very good knowledge , digital signal processing, sound design, live programming, author of an open textbook (Link)
Docker	Basic knowledge , usage in the context of education and scientific work

Academic interests

AI4all	How can machine learning methods enhance the capability of action of the general public?
CreativeAI	How can the intentionality of artists find expression through the use of generative methods of machine learning? Which methods are suitable and how can intentionality be better realized?
AI4S & SAI	How can the methods of machine learning assist us in achieving sustainability goals, and to what extent do they endanger these goals? How can we reduce energy consumption during training and inference?

Other interests

Bildung	Free and open education, schooling and education in the digital era
Complex systems	How can large crowds be microscopically simulated in real-time? (Past research interest), Emergence in complex systems

Private interests

Philosophy	Philosophy in films, phenomenology, constructivism, philosophy of mind
Creative Coding	Live programming, algorithmic composition, sound design, generative design
Formal methods	Automata theory, logic, online- and approximation algorithms

Teaching

Winter 2023/24	Artificial Intelligence in Culture and Arts , project-based workshop, <i>trainer</i> , HM & HMTM
Winter 2023/24	Sustainable AI , Vorlesung (bachelor), <i>trainer and coordinator</i> , HM
Sommer 2023	Artificial Intelligence in Culture and Arts , workshop, <i>Trainer</i> , HM & HMTM
Winter 2022/23	Sustainable AI , lecture (bachelor), <i>lecturer</i> , HM
Winter 2022/23	Computational Thinking , lecture (bachelor), <i>trainer</i> , HM
Winter 2021/22	Computational Thinking , lecture (bachelor), <i>trainer</i> , HM
Annually since 2020	Preparation for Computer Science , 5-day course (bachelor), <i>trainer and coordinator</i> , HM
Winter 2019/20	Machine Learning in Crowd Modeling and Simulation , <i>guest lecture</i> , TUM
Winter 2016/17	Linear Algebra , lecture (bachelor), <i>lecturer</i> , HM
Summer 2016	Scientific Computing , Seminar (bachelor), <i>lecturer</i> , HM
Summer 2016	Theoretical Computer Science , lecture (bachelor), <i>trainer</i> , HM

Publications

- 2023 **Benedikt Zönnchen**, Markus Friedrich und Veronika Thurne, Nachhaltigkeit in der informatischen Lehre am Beispiel KI, In *Tagungsband zum 5. Symposium zur Hochschullehre in den MINT-Fächern*, 10.57825/repo_in-4411
- 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

Recent Talks

- 2023 **Generative AI in the context of XR**, XR for the middle class, IHK Munich, [link](#)
- 2023 **Generative AI: between tool and communication partner**, Ready for the future: AI-skills as part of the curriculum, Dialogue forum, HM, [link](#)

Scholarships & awards

- 2023 **MINT Challenge award** (Award for the course *Sustainable AI*)
- 2022 **Dissertation award** (Oskar-von-Miller Award)
- 2021 **Dissertation award** (Bund der Freunde der Technischen Universität München e. V.)
- 2012 – heute Alumni of the **German Academic Scholarship Foundation** (Studienstiftung des deutschen Volkes) and the **Max Weber-Program of the State of Bavaria** (Max Weber-Programm Bayern)
- 2013 **RiMEA sponsorship award, Valedictorian**