Nicolas Wagner

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About

I am Nicolas, a Ph.D. student who is about to defend his dissertation.

My research experience is focused on deep learning, (neural) physics-based simulations, character animation, GenAI, Explainable AI, and virtual reality. I also have extensive experience in the development, operation, and maintenance of software and hardware required for artificial intelligence, computer vision, and computer graphics.

I am passionate about all technologies that integrate artificial intelligence, complex data, and challenging applications. The avatar on the left is self-created, AI-ready, and can be controlled via self-developed neural animation methods. Even if I do not perfectly meet all your requirements, I am confident that I can fulfill the role you describe very well. Since, apart from my technical experiences, I have always been able to familiarize myself very quickly with novel, wide-ranging, and complex topics.

Education

2016 - 2019	**Johannes Gutenberg-University Mainz** Bachelor of Science in Computer Science - 1.5 > Thesis: Explainable CNNs with a Deep Convolutional DNF Learner	Mainz
2019 - 2021	**Technical University Darmstadt** Master of Science in Visual Computing - 1.0 with honors > Thesis: Federated Semi-Supervised Learning in Digital Pathology	Darmstadt
2022 - 2025	**Hessian Doctoral Center of Informatics** Pursuing the degree of Doctor of Natural Sciences > Thesis: Anatomically-Constrained Physics-Based Simulations for Facial Animations > Supervisor: Mario Botsch, Ulrich Schwanecke	Wiesbaden

Working Experience

Oct 2017 - Mar 2018	**Teaching Assistant** Johannes Gutenberg University Mainz > Giving tutorials in technical computer science.	Mainz
Mar 2018 - Jul 2018	**Java Backend Developer** anytips GmbH > Implementing from scratch the backend for a newly founded start-up.	Mainz
Jul 2018 - Sep 2019	**Student Research Assistant Machine Learning / Deep Learning** Johannes Gutenberg University Mainz > Research in the field of explainable AI. > Organizing conference workshops.	Mainz
Oct 2019 - Sep 2021	**Student Research Assistant Computer Vision / Deep Learning** RheinMain University of Applied Sciences Wiesbaden > Research in the field of deep learning for irregular data structures. > Administrating multi-GPU clusters and distributed training systems.	Wiesbaden

Oct 2021 - Dec 2024	**Research Associate** Technical University Dortmund > Mainly focused on developing a neural animation and simulation framework. > Collaborative work in a mixed university-industry team. > Planning and administrating sever hardware for large-scale datasets and distributed deep learning.	Dortmund
Dec 2024 - Today	**Research Associate** RheinMain University of Applied Sciences Wiesbaden > Continuation of the work above. > Construction of a multiview 3D video scanner and downstream solutions.	Wiesbaden
Dec 2024 - Today	**Lecturer GenAI** RheinMain University of Applied Sciences Wiesbaden > From theoretical foundations to todays models.	Wiesbaden

Publications (Scholar Link)

2021	**Rule extraction from binary neural networks with convolutional rules for model validation** S Burkhardt, J Brugger, N Wagner, Z Ahmadi, K Kersting, S Kramer	Frontiers in AI
2022	**Federated stain normalization for computational pathology** N Wagner, M Fuchs, Y Tolkach, A Mukhopadhyay	MICCAI
2022	**NeuralQAAD: an efficient differentiable framework for compressing high resolution consistent point clouds datasets.** N Wagner, U Schwanecke	VISIGRAPP
2023	**SoftDECA: computationally efficient physics-based facial animations** N Wagner, M Botsch, U Schwanecke	SIGGRAPH on MIG
2024	**SparseSoftDECA: efficient high-resolution physics-based facial animation from sparse landmarks** N Wagner, M Botsch, U Schwanecke	Computers &
2024	**AnaConDaR: anatomically-constrained data-adaptive facial retargeting** N Wagner, M Botsch, U Schwanecke	Computers &
2025	**NePHIM: a neural physics-based head-hand interaction model** N Wagner, M Botsch, U Schwanecke	Eurographics

Skills

Programming Languages	Python	(Very) Sound
	C++	(Very) Sound
	CUDA	Sound Knowledge
	Java, C#	Sound Knowledge
Frameworks - Excerpt	Weights & Biases, MLFlow, PyTorch, Numpy, Scipy, Sklearn, OpenCV, Scikit, Tensorflow, OpenMPI, OpenMP, PyTorch3D, Matplotlib, Pandas, Determined, Apache Spark, Slurm, ARKit, Mediapipe, HF Transformers & Diffusers	
Software - Excerpt	LMStudio, Docker, Enroot, Git, CMake, VSCode, CLion, PyCharm, Metashape, RealityCapture, Manus Polygon, Unity3D, Blender, Adobe Creative Suite, MySQL, SQLite, Tableau	
Cloud	AWS, GCP	