Dr. Joseph Nagel

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Experience

since 2025 Associate Director (Staff ML Engineer), Moody's Analytics, Munich

Computer Vision on Aerial Imagery for Property Risk

- Finetuned ViT-based foundation models with LoRA and other PEFT techniques
- Ensured the quality of model predictions at new geographic locations in the context of international expansion

2024–2025 Cofounder / Head of AI, Validatior, Munich

Startup for Safe and Trustworthy AI

- Helped raising €700k of pre-seed funding
- Implemented a platform for adversarial robustness assessment in the context of tabular data
- Finetuned LLMs for detecting and classifying toxicity of Al-generated texts

2021–2023 ML Research Engineer, Epic Games, Munich

R&D in Generative AI for 3D Animation

- Productized the C++ optimization problem solver of the Unreal Engine MetaHuman Animator®
- Improved motion capture through VAE-based prior models (90% reduction of end user complaints)
- Developed RNN and CNN algorithms for time series forecasting of future animation frames
- Enabled the style transfer between different emotions in an animation with GANs and DDPMs

2018–2021 Senior Data Scientist, Airbus, Munich

R&D for Robust Deep Learning and Computer Vision

- Initiated and led a research project on safety-critical AI
- Realized a confidence estimation POC for predicting the landing distance based on Bayesian neural networks
- $\bullet \ {\it Conducted a project on the robustness of visual collision avoidance during autonomous aircraft taxity of the conduction of the c$
- Developed a 3D detector for material defects in CT scans of additive manufacturing (30% cost reduction)

Education

2012–2017 PhD in Computational Science & Engineering, ETH Zurich, Switzerland

Research in Machine Learning for Physical Simulations

Thesis: "Bayesian Techniques for Inverse Uncertainty Quantification" (doi: 10.3929/ethz-a-010835772)

Distinctions: ETH Medal, Prize by the Swiss Community for Computational Methods in Applied Sciences

Topics: Uncertainty Quantification • Statistical Inference • MCMC • Inverse Problems

Projects: Forecasting of urban river floods for risk assessment and decision-making • Dam breach uncertainty analysis from simulations and historical failure data • Prediction of the structural performance of masonry walls with brick-level data • Damage identification for a civil NASA aircraft from in-flight measurements

2005–2011 **Diploma in Physics**, University of Bonn, Germany

Specialization in Theoretical Physics and Scientific Computing

Thesis: "Lattice Quantum Chromodynamics on GPUs", Grade: 1.4