Dr. Steffen Illium

Machine Learning Expert
Data Scientist
Researcher

Data & Contact
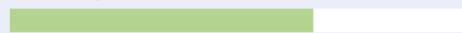
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Fields of research
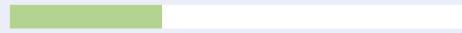
Machine Learning & Data Science

Anomaly & OOD Detection

RL & Multi-Agent Systems

Geoinformatics & Gen. Algorithms

Scale: 0 (basic skills) - 6 (expert)

Softskills

Independent, Structured, Ready to learn, Self-reflective, Organizational skills, Curious, Innovative, Able to resolve conflicts

Resume

I took my chance in research at LMU Munich, which allowed me to incorporate my personal interests, curiosity, and thirst for knowledge into a professional endeavor. You will find detailed information regarding my professional and personal experiences to date, which I have outlined below.

Academic career

2010 - 2015   **BSc Geography | ▓▓**   JGU Mainz
Embarking on an academic journey, I was initially fascinated by geography in general, driven by personal interest and a passion for scientific exploration. My growing interest in computer based analysis soon redirected my focus towards the practical applications within the field, particularly in geodata and geoinformation systems.

2015 - 2018   **MSc Geo-Informatics | ▓▓**   University of Augsburg
Progressing to a M.Sc, I developed my skills further, transforming the foundational knowledge from my B.Sc. into applied expertise. In this stage allowed me an in-depth exploration of programming for geo-informatics in various languages and database systems. My master's thesis was a journey into innovative territory, developing a novel approach for the automatic clustering of topological spatial data through deep neural networks.

2018 - 2024   **PhD in Computer Science | ▓▓**   LMU Munich
With an invitation to LMU Munich for further research, I embraced the opportunity to dive deeper into my passion for data science and neural networks. My Ph.D. journey allowed me extensive research and development of advanced models and concepts for sequential data and self-learning systems. This period was not only about applying these innovations to real-world datasets but also about contributing to foundational research, pushing the boundaries of knowledge in data science and neural network applications.
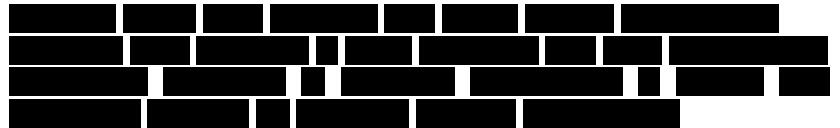
Professional experience and roles

2024	Senior AI Consultant & Researcher	XITASO GmbH
2018 - 2023	Research assistant & PhD. student	LMU Munich

Projects   ▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓

Teaching   IOS (2020) & Android (2019-2023) practical seminar
IMAPS, Bachelor's seminar & Master's seminar (2020-2023), Python Crash Course, Bachelor's (20), Master's theses (9), individual seminars (4)

Other   Organization and management of "OpenMunich" ▓▓▓▓▓▓▓
Panel discussion on the topic of deep learning ("OpenMunich", ▓▓▓▓)
Head of "DIGITALE WELT Magazin" online editorial team ▓▓▓▓▓▓▓
Assistance to the conference organization "DIGICON" ▓▓▓▓▓▓▓)

▓▓   **Working student**   ▓▓
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▓▓   **Time spent abroad (6 months)**   ▓▓
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▓▓   **Geography research assistant**   JGU Mainz
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Publications

2024	*Aquarium: A Comprehensive Framework for Exploring Predator-Prey Dynamics through Multi-Agent Reinforcement Learning Algorithms.*
2023	*Improving Primate Sounds Classification Using Binary Presorting for Deep Learning.* *VoronoiPatches: Evaluating a New Data Augmentation Method.* *Social Neural Network Soups with Surprise Minimization.* *Compression of GPS Trajectories using Autoencoders.*
2022	*Empirical Analysis of Limits for Memory Distance in Recurrent Neural Networks.* *CSG Tree Extraction from 3D Point Clouds and Meshes Using a Hybrid Approach.* *Constructing Organism Networks from Collaborative Self-Replicators.* *Towards Anomaly Detection in Reinforcement Learning.* *Case-Based Inverse Reinforcement Learning Using Temporal Coherence.*
2021	*Visual Transformers for Primates Classification and Covid Detection.* *Goals for Self-Replicating Neural Networks.* *Acoustic Anomaly Detection for Machine Sounds based on Image Transfer Learning.* *Deep and Recurrent Architecture for Primate Vocalization Classification.* *Analysis of Feature Representations for Anomalous Sound Detection.* *Acoustic Leak Detection in Water Networks.*
2020	*What to do in the Meantime: A Service Coverage Analysis for Parked Autonomous Vehicles.* *A Hybrid Approach for Segmenting and Fitting Solid Primitives to 3D Point Clouds.* *Policy Entropy for Out-of-Distribution Classification.* *Surgical Mask Detection with Convolutional Neural Networks and Data Augmentations on Spectrograms.*
2019	*Deep Neural Baselines for Computational Paralinguistics.* *Self-Replication in Neural Networks.*
2018	*Trajectory annotation using sequences of spatial perception.*

Talks

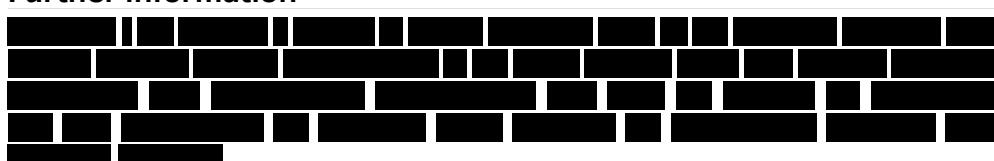|	
2024	Bitkom - Bitzip - "Verborgene Schätze heben – Wie datengestützte Wissensextraktion und KI den Fachkräftemangel lindern"
2024	Bitkom - Group of Experts on Machine Learning - "Schnittstelle GenAI: Wie Know-how erhalten und verfügbar wird"
2018-2023	Paper and Research Presentations
2019	OpenMunich - Panel Discussion - "Data & AI in Open Source"

Associations

2024	Bitkom & VDMA: Company Representation in AI Expert Groups

Award

2023	Internat. Conf. on Agents and Artificial Intelligence (ICAART) - Best Poster Award

Further information

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Data Scientist
Researcher

Programming ————

Python & LaTeX

Bash Script

Kotlin & PHP

HTML & CSS

SQL & NOSQL

Scale: 0 (basic skills) - 6 (expert) .

Systems ————

Arch Linux, NixOS, Debian Linux, Docker (Swarm), Kubernetes, Windows, Hypervisor

Software ————

PyTorch, Pandas, Shell, Docker, VS Code & IntelliJ, MS Office, WireGuard, ZFS

Languages ————

German

English

Hobbies & Interests ————

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