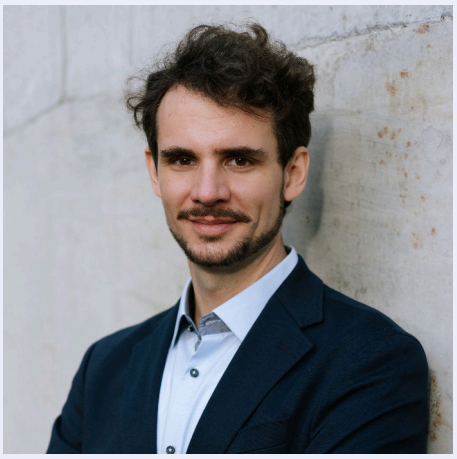

Dr. Steffen Illium

Machine Learning Expert
Data Scientist
Researcher

Data & Contact

[redacted]
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illiumst

Fields of research

Machine Learning & Data Science

Data Augmentation & Synthesis

Classification & Segmentation

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

Summary

Highly accomplished Machine Learning Researcher and Data Scientist holding a top-tier PhD in Computer Science. Possesses 6+ years of experience driving foundational research and developing novel algorithms, particularly in sequential data, anomaly detection, and self-supervised learning systems, resulting in numerous publications. Adept at translating complex research into practical solutions. Eager to contribute expertise in deep learning (PyTorch) and data science in a leading role.

Academic career

2010 - 2015 **BSc Geography |** [redacted] — JGU Mainz
Focused on foundational geographical principles and scientific exploration, progressively specializing in computer-based analysis, geodata, and geoinformation systems. Established a strong base for advanced studies in spatial data handling and analysis.

2015 - 2018 **MSc Geo-Informatics |** [redacted] — University of Augsburg
Developed applied expertise in Geo-Informatics, mastering programming across many languages and database systems relevant to the field. Culminated in a Master's thesis pioneering a novel deep neural network approach for the automatic clustering of topological spatial data.

2018 - 2024 **PhD in Computer Science |** [redacted] — LMU Munich
Conducted doctoral research focused on Data Science and Neural Networks. Developed and evaluated advanced models for sequential data analysis, computer vision and self-learning systems. Contributed significantly to foundational research while applying novel techniques to real-world datasets, advancing knowledge in the field.

Professional experience and roles

2024 **Senior AI Consultant** — XITASO GmbH
[redacted]

2018 - 2024 Research Assistant & PhD. Student — LMU Munich

Projects
[redacted]

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

Other
Head of "DIGITALE WELT Magazin" online editorial team [redacted]
Head of conference organization "OpenMunich" [redacted]
Assistance to the conference organization "DIGICON" [redacted])

[redacted] **Working student** [redacted]
[redacted]

[redacted] **Time spent abroad (6 months)** [redacted]
[redacted]

[redacted] **Geography research assistant** — JGU Mainz
[redacted]

Publications

2024 *Emergence in Multi-agent Systems: A Safety Perspective 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 Format - "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

[redacted]

Dr. Steffen Illium

Machine Learning Expert
Data Scientist
Researcher

Programming

Python & LaTeX

Linux Server Admin.

Kotlin & PHP

HTML & CSS

SQL & NOSQL

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

Systems

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

Software & Libraries

Numpy, PyTorch, Pandas, FastAPI, Bash/Shell, Docker, VS Code & IntelliJ, MS Office, WireGuard, ZFS

Languages

German (Native),
English (Fluent / C1)

Hobbies & Interests

[redacted]