

Tobias Schanz

Data Science / Deep Learning



About me

My name is Tobias Schanz, and I am currently finishing my PhD in the field of deep learning. I am seeking employment that will enable me to expand my expertise in the field of neural networks and apply my skills to a new position.

Areas of specialization

- Deep Learning • PEP8
- Neural Networks
- Quick Prototyping

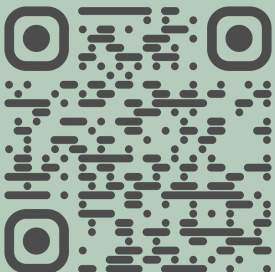
Interests

- Traveling
- Wind Surfing
- Computer Games
- Making Music

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in tobias-schanz

t-schanz



SHORT RÉSUMÉ

2020–2024

PhD Student

• HELMHOLTZ-ZENTRUM HEREON •

PyTorch • Semi-Supervised Learning • Large Scale Data Analyses

Generative Neural Networks • ONNX • Time Series Analysis and Prediction

- Develop a novel method to train generative neural networks.
- Use semi-supervised learning to detect and classify marine life in underwater camera images at large scale.
- More information in the full curriculum.



2019–2020

Data Scientist

• AKRA GMBH •

SQLAlchemy • Plotly • scikit-learn • InfluxDB • PostgreSQL

Flask • Swagger • Git

- Data quality assurance, analysis, and visualization.
- Integration of unstructured and structured data into structured databases.
- Outlier detection and data integrity checking for geospatial data.
- Development of APIs for internal use.



DEGREES

(2024) **(Dr. rer. nat.)**

MODEL-DRIVEN MACHINE LEARNING

• Hereon • Expected in June 2024

2019 **M.Sc. Meteorology**

HAMBURG • UHH

2018 **B.Sc. Meteorology**

HAMBURG • UHH

PROGRAMMING

Python



PyTorch



Lightning



Pandas



SciPy



Tensorflow



CERTIFICATES & GRANTS

2016 DAAD full scholarship for studying one semester in the USA

2019 Official Docker Certification

2019 IBM Data Science (Coursera)

2021 Neuromatch Deep Learning

PUBLICATIONS

2023 *A New Strategy for Training Deep Learning Ensembles*, Schanz et al. EGU General Assembly 2023.

2023 *Robust detection of marine life with label-free image feature learning and probability calibration*, Schanz et al. Mach. Learn.: Sci. Technol. 4 035007.

2024 *Training Quantitative Generative Neural Networks with Random Functions and Ensemble Losses*, Schanz et al. submitted to ICML2024.

LANGUAGES

German | C2 mother tongue

English | C2 nearly native level

FULL CURRICULUM

For a digital version of my CV, more projects, and a more comprehensive list of my skills, take a look at my homepage <https://t-schanz.github.io>.

2020–2024

PhD Student

· HELMHOLTZ-ZENTRUM HEREON ·

Prototyping Teaching Team-Lead

- 2023: Group leader for two months. Responsibilities included hiring post-docs, organizing meetings with group members, writing evaluations, exchanging information with department leads.
- 2023: Teaching assistant for the workshop *Physics Informed Machine Learning Based on the Shallow Water Equation*.
- 2022: Winning the *AI-HERO Hackathon for energy-efficient AI* organized by Helmholtz-AI.
- 2021 and 2023: Teaching assistant for the course *Practical Deep Learning with Climate Data*.
- 2021: Attending the Neuromatch academy for deep learning.
- 2020: Mentor at the HIDA Datathon 2020.



2019–2020

Data Scientist

· AKRA GMBH ·

SQLAlchemy Plotly scikit-learn InfluxDB PostgreSQL
Flask Swagger Git

- Data quality assurance, analysis, and visualization.
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- Development of APIs for internal use.



2019–2019

Research Cruise

· RESEARCH VESSEL SONNE ·

Python Plotly Pandas Numpy NetCDF

- Six-week-long research cruise over the Pacific Ocean from Vancouver to Singapore for the Max-Planck Institute for Meteorology.
- Analysis and verification of radiation and satellite data.



2017–2019

M.Sc. Meteorology

· UNIVERSITY OF HAMBURG ·

Python TensorFlow Keras NetCDF Dask HPC Fortran
Numerical Simulations Bit Data Analysis

- Master thesis about applying convolutional neural networks for processing raw radar measurements into radar echo maps.



2017–2017

Internship

· GERMAN WEATHER SERVICE (DWD) ·

Python Numpy ArcGIS Fortran

- Development of a Python routine for automatically creating daily and monthly radiation maps.



2016–2019

Student Helper

· MAX-PLANCK-INSTITUTE FOR METEOROLOGY ·

Python Numpy Fortran NetCDF Dask Matplotlib Plotly Sphinx

- Development of several APIs for internal use.
- Creating and implementing an algorithm for live detection of clouds in camera images.
- Automatic masking of meteorologic phenomena in radar data.
- Near-real-time visualization of measurements.
- Data quality and integrity management.
- Documentation of code and processes.



2014–2018

B.Sc. Meteorology

· UNIVERSITY OF HAMBURG ·

Python Numpy Fortran NetCDF Numerical Simulations

- Bachelor thesis about retrieving atmospheric water content using aerosol measurements and atmospheric radiation models.

