

# Jan Schützke

# **Data Scientist**

Experienced academic specializing in automating spectroscopic data analysis. Proficient in developing innovative algorithms and software solutions tailored to extract meaningful insights from complex spectral data sets. Ability to work in interdisciplinary teams to to drive impactful research outcomes.

Demonstration on https://spectra-identification.streamlit.app









#### AREAS OF EXPERTISE

Machine Learning

**Neural Networks** 

High-throughput Screening

**Cloud Computing** 

Data Analysis

Scientific Programming

DevOps

Computer Vision

# **EDUCATION**

## Ph.D. in Mechanical Engineering (Dr.-Ing.)

Karlsruhe Institute of Technology 10/2019 - 04/2024

Thesis title:

Spectra-based Neural Networks for Uncovering Novel Substances in Material Discovery Experiments

# M.Sc. in Mechanical Engineering

Karlsruhe Institute of Technology 10/2017 - 09/2019

Major in

- Robotics
- Information Technology

Thesis title:

Evaluation of Machine Learning Approaches for Crystalline Phase Identification

#### **B.Sc.** in Mechanical Engineering

Karlsruhe Institute of Technology 10/2013 - 09/2017

Major in

- Mechatronics
- Data Analytics

Thesis title:

Design and Development of a Concept for Networked Monitoring of Parameters in the Production of Capacitive Pressure Sensors by Use of Data-Mining

# **SELECTED PUBLICATIONS**

Iournal Article

Accelerating Materials Discovery: Automated Identification of Prospects from X-Ray

Diffraction Data in Fast Screening Experiments

Authors

J. Schuetzke, et. al.

Advanced Intelligent Systems, 2024

DOI: 10.1038/s41524-023-01055-y

Iournal Article

Validating neural networks for spectroscopic classification on a universal synthetic dataset

Authors

J. Schuetzke, et. al.

npj Computational Materials, 2023

DOI: 10.1002/aisy.202300501

#### WORK EXPERIENCE

#### Research Associate

Karlsruhe Institute of Technology, Karlsruhe, Germany 01/2019 - 09/2023

Lead researcher for automated spectra analysis

- Project management, ensuring effective execution, resource allocation, and progress tracking
- Coordination with external stakeholders (industry & academia)
- Implementing research solutions into production environments, providing scalable systems

## **Visiting Researcher**

Lawrence Berkeley National Laboratory, Berkeley, CA, USA 02/2022 - 04/2022

Collaboration on data analysis solutions for automated materials research laboratory

- Exchange on automated diffraction data analysis
- Development of proof of concept for automated scanning electron microscopy image analysis

#### **Student Associate**

Bruker AXS, Karlsruhe, Germany 03/2019 - 08/2019

Master thesis on automating phase identification analysis in X-ray diffraction data

- Coordination research-industry collaboration
- Leveraging resources on the Azure platform to architect and implement the proof of concept solution
- Design and development of the technical solution

#### **Student Associate**

Karlsruhe Institute of Technology, Karlsruhe, Germany 06/2018 - 02/2019

Member of research team to support funding proposal for automated microscopy data analysis project

- Leveraging expertise in image processing, machine learning, and algorithm development to design and implement the proof of concept solution

## Internship

Endress+Hauser SE+Co. KG, Maulburg, Germany 09/2016 - 04/2017

Realization of database project for production of capacitive pressure sensors

- Design and implementation of PostgreSQL database
- Development of Python scripts for data scraping and update of the database
- Implementation of BI-platform for continuous monitoring of production parameters

#### TECHNICAL SKILLS

# **Programming**

- Python
- SOL
- MATLAB
- C++
- Java

## **Frameworks**

- Keras
- TensorFlow
- scikit-learn
- PyTorch

## Computing

- Linux
- ssh
- Azure
- Kubernetes

#### **Development**

- VS Code
- Jupyter Notebook
- Docker
- GIT
- CI/CD
- Colab

#### **LANGUAGES**

German English Spanish

Native Full Professional Proficiency Basic