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

schuetzkejan@gmail.com

Karlsruhe, Germany

jschuetzke.github.io

/in/jan-schuetzke

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

Journal 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

Journal 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
- Developement 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
- SQL
- 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*