Jan Schützke

Data Scientist
Machine Learning Engineer

Jan Schützke
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Germany

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Education

PhD Mechanical Engineering/Karlsruhe Institute of Technology
October 2019 – October 2023 (projected)

Development of automated workflows for the analysis of spectroscopic or diffraction data in the field of material science by means of neural networks

Master of Science/Karlsruhe Institute of Technology
October 2017 – October 2019

Mechanical Engineering, Major in Robotics and Information Technology
Thesis title: "Evaluation of Machine Learning Approaches for Crystalline Phase Identification"

Bachelor of Science/Karlsruhe Institute of Technology
October 2013 – October 2017

Mechanical Engineering, Major in Mechatronics and 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"

Internships and Work Experience

Research Scholar/Lawrence Berkeley National Laboratory
February 2022 – April 2022, Berkeley, CA, USA

Visiting researcher in the group of Prof. Ceder
Exchange and collaboration on the development of neural network structures for the analysis of powder XRD patterns in battery materials research

Master's Student/Bruker Corp.
March 2019 – August 2019, Karlsruhe

Development of Deep Learning solution for the analysis of XRD signals from multi-phase powder samples.

Student Worker/Karlsruhe Institute of Technology
June 2018 – March 2019

Development of a proof of concept for identification of synapses in bio-medical microscopy image stacks using a Faster R-CNN architecture

Research

— Publications —

Schuetzke, Jan et al. "Streamlining Materials Discovery: An AI-Driven Approach for Rapid Identification of Prospects from XRD Data". *In preparation.*

Schuetzke, Jan et al. "A universal synthetic dataset for machine learning on spectroscopic data." ArXiv (2022): 2206.06031. *Under review* at npj Computational Materials.

Schuetzke, Jan et al. "Enhancing deep-learning training for phase identification in powder X-ray diffractograms." IUCrJ 8 (2021): 408 - 420.

— Conference Talks —

Schuetzke, Jan et al. "A Critical Review of Neural Networks for the Use with Spectroscopic Data" (invited talk). 33rd European Crystallographic Meeting (ECM 2022), Versailles, France, 23.–27. August 2022

Schuetzke, Jan et al. "A Critical Review of Neural Networks for the Identification of X-ray Diffraction Powder Patterns". Denver X-ray Conference (2022), Rockville, Maryland, USA, 1.-5. August 2022

Schuetzke Jan et al. "Application of Machine Learning to XRD Phase Identification" (Poster). Denver X-Ray Conference (2020), Denver, CO, USA, 17.–20. August 2020

Schuetzke, Jan et al. "Siamese Networks for 1D Signal Identification". 30th Workshop Computational Intelligence, Berlin, Germany, 26.-27. November 2020

Skills

Programming - **Python, SQL, MATLAB,** C++, Java

Frameworks - **Keras, Tensorflow, Scikit-learn**, PyTorch

Development - **VS Code, Jupyter Notebook, Docker, Git, CI/CD**, Colab

Data manipulation - **Numpy, Pandas, Scipy, OpenCV**

Computing - **Linux, ssh, Azure, Kubernetes**