Jacob Schmieder

Medical Physicist · Senior Data Scientist · AI & ML Researcher · AI Architect

JSchmie Jacob Schmieder

Profile

Medical physicist with a strong background in theoretical and computational physics, scientific computing, and machine learning. I am seeking a PhD position in physics, AI, or their intersection, where I can contribute to scientifically driven research through physical understanding, quantitative analysis, and computational methods.

Research & Professional Experience

Senior Data Scientist / AI Advisor — Leipzig, Germany

Deutsches Biomasseforschungszentrum (DBFZ) — Jan. 2023 - Dec. 2025

- Developed reproducible ML/analysis pipelines for research projects (Python, PyTorch/JAX).
- Operated HPC workflows (Slurm, CUDA/multi-GPU, Apptainer/Singularity, Docker) for reliable large-scale runs.
- Research software quality: Git, tests, CI, packaging, documentation (LaTeX/Typst/Sphinx/Markdown).
- Security basics in workflows: dependency/container CVE scans and SBOMs (integrated into CI where applicable).

Education

M.Sc. Medical Physics — Halle (Saale), Germany

Master's thesis: "Machine Learning Optimization of Gaussian Basis Sets" at the Institute of Physics in the group of Prof. Dr. Miguel Marques. — 2019 - 2022

B.Sc. Medical Physics — Halle (Saale), Germany

Bachelor's thesis: "Electroencephalogram analysis to evaluate consciousness states" (EEG Analyse zum Test von Bewusstsein) at the Institute of Physics in the group of Jan Kantelhardt. — 2015 - 2019

Selected Presentations

Numerical Information Field Theory for Acoustic Monitoring — Helmholtz AI Conf., Karlsruhe

Poster — Jun 2025

KI für kritische Infrastruktur: Open-Source-Lösungen für Verwaltung und Industrie — Data Week, Leipzig

Talk — Jun 2025

Additional Qualifications

Scientific Assistant, HASP Student Laboratory — Halle (Saale), Germany

Martin-Luther-University Halle (Saale) — 2016 - 2022

- Supervised students visiting the lab, explained physics phenomena, and set up new experiments.

Elected Member, Physics Student Council — Halle (Saale), Germany

Fachschaftsrat der Physik, Martin-Luther-University — 2019 - 2021

- Represented students and coordinated activities for the physics department.

Skills

Scientific Computing & ML	**Python**, NumPy/SciPy/pandas, PyTorch / JAX, Statistics & optimization, Matplotlib/Plotly
HPC & Research Infrastructure	Slurm, CUDA / multi-GPU, Apptainer/Singularity, Docker, Performance tuning
Reproducible Research Software	Git, Tests (pytest), pyproject.toml packaging, CI (GitHub/GitLab), Docs (LaTeX, Typst, Sphinx, Markdown)
Security (basics)	Dependency/container CVE scans, SBOMs
Collaboration & Leadership	Mentoring & supervision, Training (Python/HPC/containers), Kanban workflows

Projects

ScrAIbe — Speech-to-Text & Speaker Diarization (Python) — JSchmie/ScrAIbe

Author/Maintainer 2024 - Present

- Research-oriented transcription toolkit (Whisper/faster-whisper) with speaker diarization via pyannote; broad media input via FFmpeg.
- Reproducible software delivery: CLI/API, automated tests, packaged releases (PyPI), and maintained documentation.

ScrAIbe-WebUI — Web Service for Automated Transcription

JSchmie/ScrAIbe-WebUI

Author/Maintainer 2024 - Present

- Gradio-based interface for synchronous (live) and asynchronous transcription; supports mic/webcam capture and common audio/video formats.
- Container-first deployment (Docker/Compose), configurable via config.yaml; integrates diarization and model selection for research workflows.

Languages

- German - native
- English - proficient