Niklas Roschewsky

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Summary

Senior Data Scientist with 6+ years of experience specializing in applying machine learning to complex simulation and process control challenges in the semiconductor industry. Proven track record of leading teams and delivering high-value analytics products, from conception to integration, to create virtual twins of physical systems. Expertise in technical leadership, Bayesian optimization, and surrogate modeling.

Experience

Senior Data Scientist & Technical Owner Jul 2020 – Present
Lam Research *Portland, OR*

- Architected and led the development of a production AI system for model calibration and yield improvement, reducing solution deployment time from months to weeks and decreasing computational costs by 50%.
- Pioneered a novel algorithmic framework for semiconductor process optimization, reducing recipe development R&D cycles by an estimated 40%. This foundational research was published in **Nature (2023)**, establishing Lam as an industry leader in AI-driven R&D.
- Defined and executed the technical roadmap for the data science team, aligning algorithmic development with C-level business objectives for yield improvement and cost reduction.
- Directed the team's agile scrum process, improving on-time project delivery rates by 25% quarter-over-quarter and mentoring 3 data scientists in ML best practices.

Rotation Engineer Jul 2019 – Jul 2020
Lam Research *Fremont, CA*

- Selected for Lam's competitive engineering rotation program, gaining cross-functional expertise in hardware, customer engineering, and data analytics that directly informs my current data science work.
- Engineered and deployed a real-time data pipeline and monitoring dashboard for hardware telemetry, reducing tool diagnostic time by 50% and improving overall equipment effectiveness.
- Led root-cause analysis for critical customer escalations, using statistical analysis of hardware defect data to recommend engineering solutions that prevented recurrence.

Device Engineer Intern May 2017 – Aug 2017
Samsung Semiconductor *Santa Clara, CA*

- Designed and fabricated a novel test apparatus to characterize device performance under mechanical stress, providing key data for next-generation memory reliability models.
- Authored and published the experimental findings in the peer-reviewed journal **Applied Physics Letters**, validating the measurement methodology.

Technical Skills

Machine Learning & Optimization: Bayesian Optimization, Surrogate Modeling (Gaussian Processes), Deep Learning, Uncertainty Quantification, PyTorch, BoTorch, GPyTorch, Scikit-learn

Data Engineering & MLOps: Databricks, MLflow, Docker, CI/CD (Azure DevOps), Data Pipelines

Core Scientific Stack: Python, Pandas, NumPy, SciPy, Linux/Unix, Slurm

Education

University of California, Berkeley Berkeley, CA
Ph.D in Physics *Aug 2014 – May 2019*

Technical University of Munich Munich, Germany
MS in Physics *Oct 2012 – Jul 2014*

University of Göttingen Göttingen, Germany
B.Sc. in Physics *Oct 2009 – Jul 2012*

Selected Publications & Patents

A selection demonstrating expertise in quantitative modeling, experimental design, and solving complex problems in physical systems.

K. J. Kanarik, ... **N. Roschewsky**, et al. Human–machine collaboration for improving semiconductor process development. *Nature* **616**, 707–711 (2023).

N. M. Wilson, **N. Roschewsky**, S. Ramachandran. Method for Conditioning a Plasma Processing Chamber. U.S. Pat. App. Pub. No. 2023/0122167.

N. Roschewsky, T. Matsumura, S. Cheema, et al. Spin-orbit torques in ferrimagnetic GdFeCo alloys. *Appl. Phys. Lett.* **109**, 112403 (2016).

N. Roschewsky, E. S. Walker, P. Gowtham, et al. Spin-orbit torque and Nernst effect in Bi-Sb/Co heterostructures. *Phys. Rev. B* **99**, 195103 (2019).

(For a complete list of 13 peer-reviewed publications, see my Google Scholar profile.)

AWARDS & HONORS

Studienstiftung des deutschen Volkes Fellowship: Germany's most prestigious merit-based scholarship, awarded to fewer than 0.5% of German students.

Berkeley Gateway Fellowship: Merit-based fellowship for doctoral studies at UC Berkeley.