

Bernhard Specht

Research Engineer

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I turn hard problems into shipped products. From brain-computer interfaces to privacy-preserving ML systems and beyond — I research, build, and deliver end-to-end.

EXPERIENCE

Lead Software Engineer

Mar 2023 – Present

MyelinZ / Myelin-H

Luxembourg

- Built the full product from scratch — backend, data pipeline, health score computation, real-time sensor-driven game engine, clinical dashboard for patient tracking, and mobile app ([BodyMirror](#))
- Led software development and hardware integration, turning neurological paradigms and clinical tests into interactive games for remote patient monitoring and rehabilitation ([demos](#))
- Platform adopted and tested by major clinics for neurological patient care
- Accelerated team productivity by improving development workflows, e.g. through AI-assisted tooling

Researcher — Mayo Clinic Platform Accelerate

Jul 2025 – Feb 2026

MyelinZ in collaboration with Mayo Clinic Platform

Luxembourg

- Automated extraction of clinical metrics from unstructured medical notes, enlarging the dataset and replacing manual annotation
- Predicted multiple sclerosis progression with a focus on depression and anxiety using longitudinal clinical data

Software & IoT Engineer

Apr 2021 – Mar 2023

Pentland Firth Software GmbH

Munich, Germany

- Developed indoor navigation with path planning on smart shopping carts using ultrawideband signals
- Maintained and improved a custom deployment pipeline serving over 4,000 shopping carts

Working Student & Teaching Assistant

Oct 2016 – Jul 2017

Technical University of Munich

Munich, Germany

- Supported researchers in developing brain-computer interfaces, designed and conducted experiments using brain and muscle signals
- Taught 'Computational Intelligence' — ML algorithms including supervised/unsupervised learning, neural networks, and reinforcement learning

Working Student

Aug 2014 – Sep 2016

Silver Atena Electronic Systems Engineering GmbH

Munich, Germany

- Increased safety in embedded systems by automating memory validation and implementing protocols to supervise chips with companion chips

EDUCATION

Industrial Ph.D. — Brain-Computer Interfaces for Remote Neurological Monitoring Mar 2023 – Present

Myelin-H, University of Luxembourg & Luxembourg Institute of Science and Technology (LIST) Luxembourg

- Funded by the Luxembourg National Research Fund (FNR)
- Built a hybrid brain-computer interface for remote neurological monitoring and rehabilitation using multi-modal sensor data
- Developed a privacy-preserving federated learning system where raw medical data never leaves patients' mobile devices

B.Sc. & M.Sc. Electrical Engineering and Information Technology Oct 2013 – Oct 2020

Technical University of Munich Munich, Germany

- M.Sc. focused on Neural Engineering, machine learning, and brain-computer interfaces
- Master thesis with exchange at Dalian Ligong University (Dalian, China): Joint Optimization of Haptic Communication and Resource Allocation

Chinese Language Studies and Exchange — HSK6 Sep 2012 – Oct 2013, Sep 2017 – Jun 2018

Tongji University (Shanghai) & Nanjing University (Confucius Institute Scholarship) China

SELECTED PROJECTS & PUBLICATIONS

Proof of Capacity Mining Software 2018

Scavenger & Nogrod

- Developed an energy-efficient cryptocurrency miner based on proof of capacity with GPU acceleration, adopted by multiple cryptocurrencies ([Scavenger](#))
- Built software to validate miners' proofs and distribute mining rewards based on estimated disk capacity ([Nogrod](#))

Publications

- Specht B. et al. "Real-Time Robot Reach-To-Grasp Movements Control Via EOG and EMG Signals Decoding." IEEE ICRA, 2020 (first author)
- Specht B. et al. "Multiple Sclerosis in the Digital Health Age: Challenges and Opportunities — A Systematic Review." medRxiv, 2023 (first author)
- Specht B. et al. "PrivateBoost: Privacy-Preserving Federated Gradient Boosting." — in preparation (first author)
- Specht B. et al. "Predicting Depression and Anxiety Progression in Multiple Sclerosis from Longitudinal Clinical Data Using Machine Learning." — in preparation (first author)

SKILLS

Languages: Rust, C/C++, Python, Go, Dart · **Mobile & Games:** Flutter, Unity, iOS, Android · **Cloud & Systems:** Google Cloud Platform, Firebase, Terraform, Linux, Docker, Nix, shell scripting · **Databases:** SQL, PostgreSQL, ClickHouse · **Embedded:** ESP32, Arduino · **Machine Learning/AI:** common ML/DL tooling, Claude Code, Copilot, LLMs · **Spoken:** German, English, Chinese (HSK6)