

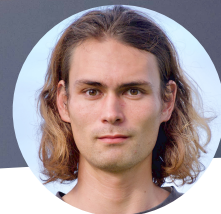
ALEXANDER TAKA EDELMANN

Engineering Physics

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INTRODUCTION

I am committed to fostering a positive environment for both myself and those around me. Driven by a passion for continuous learning and personal growth, I have spent half of my twenties living and working in three diverse countries outside of Europe. This experience has enriched my cultural understanding and enabled me to become fluent in English, and Japanese. As an individual passionate about physics, I also take great pleasure in surfing, skateboarding, photography and occasionally playing the piano and guitar. My curiosity extends to spending time at my computer, whether I am diving into textbooks or programming. For more insights into my journey and interests, please visit my [website](#).

EXPERIENCE

Master's Thesis (thesis on my website)

Qualcomm

📅 Sep 2025 – Mar 2026

📍 Munich

- Developed a custom full-field interferometric system for detecting and analysing vibrations in MEMS components
- Implemented MATLAB and Python backends to coordinate connected devices and execute fully automated measurement protocols
- Integrated the Python backend with FastAPI, using a multithreaded architecture to improve performance and responsiveness
- Built a user-friendly React frontend with Plotly.js for live measurement feedback, system control, and data visualisation
- Developed a robust, generic data-analysis pipeline to extract sub-nanometre vibration-amplitude and phase maps
- Presented project progress and technical results in regular group meetings
- Gained experience of work conducted in a large-scale industrial cleanroom environment

R&D Intern

Rohde & Schwarz GmbH & Co. KG

📅 Apr 2025 – Jul 2025

📍 Munich

- Received practical training in operating in-house test equipment, including vector signal generators, spectrum analysers, and oscilloscopes
- Performed antenna simulations and channel-capacity analyses for MIMO antenna systems using 3GPP channel models
- Developed a proof-of-concept web application for the R&S SMW200A vector signal generator using Flask and JavaScript
- Expanded knowledge of modern electromagnetic ray-tracing tools, including Ansys Perceive EM
- Participated in technical meetings with external company partners

Full-Stack Development

Independent Projects

📅 2021 – Present

📍 Remote

- Expanded on object-oriented programming experience in Python and C++ by learning PHP, JavaScript, and MySQL

OBJECTIVE

I am looking to contribute to a forward-thinking work environment that embraces modern technologies, evolves continuously, and values high-quality outcomes. I enjoy working in passionate, collaborative teams that take pride in creating excellent products, regardless of the domain. Equally important to me is an open and supportive culture with energetic, down-to-earth colleagues who value meaningful work as well as a healthy life outside of it.

COMPUTER SKILLS

Python FastAPI Flask C++ Javascript
Node.js React HTML CSS PHP
MySQL Bash (Unix Shell) git MATLAB
SPICE ANSYS HFSS Comsol LabVIEW
LaTeX C# Mathematica Inkscape (svg)
Blender

LANGUAGES

German

●●●●●

English

●●●●●

Japanese

●●●●●

French

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EDUCATION

🎓 M.Sc. Micro- and Nanotechnology

Munich University of Applied Sciences

📅 Jul 2026

📍 Munich

3 semester program (90 ECTS)
avg. grade: 1.2

🎓 B.Sc. Engineering Physics

Munich University of Applied Sciences

📅 Oct 2020

📍 Munich

7 semester program (210 ECTS)
avg. grade: 1.4

- Designed and implemented clean, responsive user interfaces using CSS and SVG
- Continuously broadened technical skills through Node.js, React, Flask, and FastAPI projects
- Developed multiple applications from concept and architecture through implementation and deployment

Software Development Student Assistant

TOPTICA Photonics AG

📅 Oct 2020

📍 Munich

- Developed Python-based test routines for a range of in-house laser operating functions using **pytest**
- Gained initial experience with collaborative version control using Bitbucket

Bachelor's Thesis (thesis on my website)

Infineon Technologies AG

Electromagnetic Compatibility Division

📅 Sep 2019 – Mar 2020

📍 Munich

- Developed two-dimensional FEM substrate models in Ansys HFSS
- Created a data-analysis pipeline to process FEM simulation results and derive simplified SPICE passive-circuit models across multiple frequency ranges
- Evaluated the physical consistency and accuracy of the resulting low-dimensional models
- Investigated an in-house substrate-parasitics extraction tool using related modelling and analysis methods

R&D Intern

Infineon Technologies AG

Electromagnetic Compatibility Division

📅 Feb 2019 – Aug 2019

📍 Munich

- Gained experience with circuit simulation tools, including SPICE, and electronic-design-automation software, including Cadence
- Performed high-frequency on-wafer measurements using a vector network analyser (VNA)
- Developed Python routines for probe-pad parasitic de-embedding and extraction of device parasitic inductances, capacitances, and resistances from measured and simulated S-parameters
- Built automated analysis workflows combining Python, Unix shell scripts, and multiple software tools
- Improved scripting practices through code refactoring, modular design, and more maintainable software architectures
- Gained initial experience with Git-based version control

UNIVERSITY COURSEWORK AND SERVICE

📄 Physics-Informed Neural Network Simulation Study

Conducted simulation studies using physics-informed neural networks with NVIDIA PhysicSNet and evaluated the results against conventional numerical methods.

🔬 Reaction Kinetics Simulation Study

Modelled the kinetics of a methanol reforming reaction using Cantera and Python.

🏛️ Tutor

Led tutorial sessions in physics and electrical engineering and marked optional homework assignments for first-year students.

✈️ Mentor

Mentored exchange students and participants in the university's in-house summer school programme.

WORDS I LIVE BY

"Open Source is my religion"

REFEREES

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Additional references available upon request