



# MarioTheuermann

Engineering Professional | Software Engineering • Data Science • Teamwork

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📞 +43 - censored - | 📍 Graz/Villach, Austria

"Engineering is the practice of learning."

## SUMMARY

I'm a passionate engineer who enjoys building software systems that integrate and automate data sources. My interests consist of both the technical aspects of software development and the process of extracting meaningful insights from data through statistical and machine learning methods. In addition to developing innovative solutions, I'm eager to improve, extend, and automate processes for existing systems in order to solve problems, elevate code quality, and enhance efficiency. What motivates me is to advance further in software development and engineering practices while also expanding my expertise in data analytics, machine learning, and data visualization. Next to my technical abilities, I'm interested to hone project planning and management skills within collaborative, agile team environments.

With over a decade in the semiconductor industry as a mechatronics engineer and years in diverse roles like software engineer, academic research assistant, and data scientist, I bring a robust background complemented by a Master's degree in Software Engineering and Management from Graz University of Technology. My career includes contributions in academia and industry, emphasizing initiative, meticulous documentation, and the clear communication of complex ideas.

## RECENT ROLES

### SKYSPECS

📍 Graz, Austria & Ann Arbor, MI

#### Data Scientist | Innovation

📅 Oct 2024 - present

- Developing a machine learning application to detect unusually high rotor blade imbalance in wind turbines by analyzing high-frequency time-series data. Leveraging predictive models such as Random Forest, Gradient Boosting, and Ridge Regression, incorporating feature engineering, and hyperparameter optimization to enhance prediction accuracy.
- Building an LLM-based knowledge base, enabling clients to interact with their specific data analysis results. Currently evaluating low-code solutions, libraries like Langflow, and various vector storage and embedding technologies as part of a comprehensive RAG (Retrieval-Augmented Generation) pipeline.
- Engineered and deployed a FastAPI-driven Python microservice architecture that delivers RESTful APIs for custom data processing, analytics, and machine learning tasks.

### SKYSPECS

📍 Graz, Austria & Ann Arbor, MI

#### Data Scientist | Product Improvement

📅 July 2023 - Oct 2024

- Performed data manipulation, analysis, and visualization of large-scale time-series data, including SCADA (Supervisory Control and Data Acquisition) data from individual wind turbines, integrating additional sources such as meteorological data, error logs, and maintenance records. Applied statistical and machine learning methods to classify, cluster, and interpret data, identifying performance anomalies and enhancing operational efficiency. Utilized Python with libraries such as pandas, Matplotlib, Seaborn, Plotly, scikit-learn, NumPy, and SciPy.
- Developed algorithms to address critical challenges in the wind industry, such as production loss assessment, pitch misalignment detection, and performance analysis, ensuring efficiency and applicability for monthly execution across more than 6,000 client wind turbines.
- Introduced processes for coding standards, version control, and documentation, ensuring high-quality, maintainable, and scalable codebases, and facilitating collaboration among team members.

## JOANNEUM RESEARCH

📍 Graz, Austria

### Research Assistant

📅 Oct 2020 - June 2022

- Engineered computer vision applications to enhance real-time object detection and pose estimation capabilities of a drone, using only single 2D imagery from its calibrated camera system.
- Constructed a robust data acquisition pipeline from a highly accurate infrared-based tracking system, utilizing the Robot Operating System (ROS), to generate a suitable dataset for algorithm development and testing.
- Developed and deployed Docker-based containerized services optimized for NVIDIA Jetson embedded computing platforms.
- Prepared and delivered detailed interim reports and presentations for the FFG (Austrian research funding agency), highlighting project progress, key findings, and strategic recommendations to ensure stakeholder alignment and continued project funding.

### Publications:

- Automated Data Annotation for 6-DoF AI-Based Navigation Algorithm Development. *Journal of Imaging* **2021**, 7, 236.
- Protocol Design Issues for Object Density Estimation and Counting in Remote Sensing. *IGARSS* **2021**, pp. 2771-2774.

## SKILLS

Operating Systems:	🍏 macOS x86-64/ARM64 🐧 GNU/Linux x86-32/64/ARM64
Linux Distributions:	Debian • Fedora • RHEL • Arch
Paradigms & Practices:	Agile (DevOps, XP, Scrum) • Git-flow • OOP • RESTful
Languages:	C • C++ • Bash • Python • Java • Kotlin • JavaScript • AsciiDoc • $\LaTeX$
Databases:	SQL • Couchbase NoSQL
Libraries & Frameworks:	Pandas • NumPy • SciPy • Scikit-learn • Matplotlib • Seaborn • Plotly TensorFlow (Keras) • PyTorch • OpenCV • ROS
Tools:	Docker • VirtualBox • KVM/QEMU • Vagrant • Conda • Pyenv(-virtualenv) • Poetry Git • Jira • Gitlab CI/CD • Vim • Tmux • POSIX commands and terminal utilities
Communication:	English (C1+/C2-level) • German (native)

## EDUCATION

### GRAZ UNIVERSITY OF TECHNOLOGY

📍 Graz, Austria

#### Diplom-Ingenieur (M.Sc.) in Software Engineering & Management

📅 April 2018 - June 2022

- Grade: Graduated with distinction
- Major: Intelligent Systems | Minor: Management & Strategy
- Thesis: Embedded Image-based Localization For Assessment Of Critical Infrastructure

#### Bachelor of Science in Software Engineering & Management

📅 Oct 2014 - April 2018

- Thesis: Modeling And Evaluating CPU Caches In Software (QEMU)

## COURSEWORK

M.Sc. degree program:	Knowledge Discovery & Data Mining • Machine Learning • Deep Learning Security Aspects in Software Development • Verification & Testing Web Technology • Expert Systems General Management & Organization • Change Management The Art of Feedback • Intercultural Social Competence
B.Sc. degree program:	Data Structures & Algorithms • Statistics & Probability Linear Algebra & Analysis • Software Maintenance • IT Security & Networking Operating Systems • Computer Vision & Graphics • Computational Intelligence

## BYTEPOETS

📍 Graz, Austria

Junior Developer

📅 Aug 2018 – April 2019

- Built and maintained responsive websites and user interfaces using HTML and modern frameworks like Spring and Bootstrap, ensuring scalability, cross-platform compatibility, and optimal user experience.
- Designed and developed native mobile applications for iOS and Android platforms, focusing on seamless integration and robust functionality.
- Implemented RESTful web services interfacing with various databases such as Couchbase NoSQL and SQL, ensuring efficient data retrieval and storage.
- Facilitated continuous integration and continuous delivery (CI/CD) processes using Jenkins, enhancing development workflows and deployment efficiency.
- Employed Agile project management methodologies to streamline project execution and enhance team collaboration and productivity.

## IAIK

📍 Graz, Austria

Institute of Applied Information Processing and Communications | Intern

📅 Aug 2017 – Nov 2017

- Developed and optimized a custom Linux distribution tailored for specific applications using the Yocto Project.
- Implemented encryption protocols to secure large parts of the system memory in a QEMU emulation environment, aiming to enhance data protection and security.
- Deployed custom Linux distribution images to ARM-based Xilinx Zynq7 Systems on Chip (SoC) and tested system operations.

## LAM RESEARCH

📍 Villach, Austria & Fremont, CA

Electrical Engineer

📅 Sept 2012 – Sept 2014

- Participated in the electrical assembly and prototyping of novel Lam-platform designs in Fremont, California.
- Supported engineering activities such as design, test, modification, fabrication, and assembly of prototype electromechanical systems and experimental design circuitry.
- Conducted structured diagnostics and troubleshooted a broad range of hardware, software, and networking issues, ensuring system integrity and performance.

## SEZ & LAM RESEARCH

📍 Villach, Austria

Electrical/Test Engineer

📅 Sep 2006 – Sept 2012

- Performed, evaluated, and supervised electrical assembly of SEZ and Lam Research etch platforms as well as special customer requests.
- Contributed improvements to the configuration and documentation of mechanical drawings, wiring diagrams, and internal test records.

## SEZ

📍 Villach, Austria

Apprenticeship Mechatronics Engineer

📅 Sep 2002 – Mar 2006

- Successfully completed the mechatronics technician apprenticeship.
- Acquired basic electrical, mechanical, and computer science skills.