MarioTheuermann

Engineering Professional | Software Engineering • Data Science • Teamwork

mario@theuermann.dev key.pub theuermann.dev theuema theuema

+43 - censored - | Graz/Villach, Austria

"Engineering is the practice of learning."

RECENT ROLES

SKYSPECS

Graz, Austria & Ann Arbor, MI

Innovation Engineer

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

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 • Searborn • 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

PRIOR EXPERIENCE

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 troubleshot 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.