



# Mario Theuermann

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## EDUCATION

### UNIVERSITY OF TECHNOLOGY

#### MSC IN SOFTWARE DEVELOPMENT

Graz, Austria

MSc degree program:

Software Engineering & Business

Management (F 066 924)

Expected grad. in 2021

#### BSC IN SOFTWARE DEVELOPMENT

Graz, Austria

BSc degree program:

Software Engineering & Business

Management (F 033 524)

Grad. April 2018

### WIMO

#### UNIVERSITY ENTRANCE EXAM

Klagenfurt, Austria

Grad. July 2014

## SKILLS

#### Languages:

C • C++ • Java • Javascript  
Python • Kotlin • Swift

#### Tools:

Git • Svn • z3 • Docker  
Sourcetree • Jira • Bitbucket  
Spring Boot • RESTful API  
various Unix Tools

#### Libraries / Frameworks:

numpy • sciPy • NEST Simulator  
Tensorflow • Keras

#### Databases:

SQL

#### Communication:

english (C1-level) • german (native)

## WORKING EXPERIENCE

### BYTEPOETS GMBH | JUNIOR DEVELOPER

Aug 2018 – Mai 2019 | Graz, Austria

- Acquired expertise in mobile application development on iOS and Android.
- First time working in agile project management methodology style.

### IAIK | INTERN

Institute of Applied Information Processing and Communications

Aug 2017 – Oct 2017 | Graz, Austria

- The goal of my internship was to fully encrypt the system memory of a SoC emulation using QEMU.
- Used yocto to create my own linux distribution from scratch.
- Customised linux system for the ARM based Xilinx Zynq7 SoC.

### LAM RESEARCH | ELECTRICAL ENGINEER

Sep 2012 – Sept 2014 | Fremont, CA & Villach, Austria

- Gave assistance in assembly of a complete new LAM platform prototype design and electrical environment in pilot clean department in Fremont, California.
- Support engineering activities such as design, test, modification, fabrication and assembly of prototype electro mechanical systems and experimental design circuitry.
- Attendee in feasibility studies and testing on new and modified designs.
- Structured diagnostic and troubleshooting in a wide spectrum of hardware, software and networking needs.

### LAM RESEARCH | ELECTRICAL ENGINEER

Oct 2010 – Aug 2012 | Villach, Austria

- Electrical assembly of LAM platforms. Basis was the configuration and documentation (e.g. production schedule, mechanical drawings, wiring diagrams, internal test record).
- Electrical assembly of special customer requests.
- Involved with setting up motion devices and therefore executing software tasks.

### SEZ & LAM RESEARCH | TEST ENGINEER

Sep 2006 – Sept 2010 | Villach, Austria

- Basically: acquired the basics for further challenges within this company.
- Worked as temporary worker (different companies for provision of personnel).

### SEZ AG | APPRENTICESHIP MECHATRONICS ENGINEER

Sep 2002 – Mar 2006 | Villach, Austria

- Apprenticeship in Mechatronics.
- Combination of electrical, mechanical and computer science skills.
- Graduate with good success.

## COURSEWORK

### UNDERGRADUATE

Data Structures & Algorithms  
Object-oriented Analysis & Design  
Software Maintenance  
Computational Intelligence  
Computer Vision & Graphics  
Systems Programming  
Operating Systems  
Information Security & Networking  
Industrial Sociology  
Business Administration

### POSTGRADUATE

Verification & Testing  
Principles of Brain Computation (NN)  
General Management and Organization  
Security Aspects in Software Development  
Industrial Management and Innovation  
Web Technology (HTML5)  
Change Management  
IT Security  
Neural Networks  
Machine Learning

## INTERESTS

### PROFESSIONAL

IT-security • cryptography  
embedded systems • virtualization  
operating systems • different distributions  
emulation • various package managers  
intelligent systems

### PERSONAL

Music:

Expressing my love to music through extravagant and overly priced headphones while actively blocking out the remaining world around me.

### Sports and Health

Thanks to my mostly sedentary profession I enjoy keeping my body energetic and dynamic through strength training.

Nature:

Coming straight from a mountain in Carinthia, I get a kick out of fresh air in a quiet and natural environment.

## HANDLES

Telegram:// [theuema](#)

Xing:// [xing.to/theuema](#)

LinkedIn:// [at.linkedin.com/in/theuema](#)

Github:// [github.com/theuema](#)

Twitter:// [@mariosellus](#)

## RECENT EXPERIENCE

### 2020: Neural Networks

This lecture discussed Feed-forward, Convolutional and Recurrent Neural Networks, weight-space symmetries, network training, error backpropagation, various training algorithms and regularization in Neural Networks. We most commonly used Tensorflow and Keras for our assignments.

### 2020 Security Aspects in Software Development

In this elective course i had the opportunity for new insights about the ability to recognize and classify bugs, (efficiently) find bugs, exploit bugs, fix bugs, and prevent bugs in the first place. We studied and exploited various memory corruption vulnerabilities including countermeasures, learned how to use different analysis, sanitizers or fuzzing to find bugs and how to prevent these performing defensive programming in C and C++.

### 2019: IT Security

The main focus of *IT Security* was to implement the TLS protocol with a pre-shared key handshake and Ascon and AES-GCM as authenticated encryption schemes with all its primitives, where we learned the importance of random number generators when generating a cryptographic key as well as basic key management techniques. Additionally, we implemented our own blockchain based secure crypto currency.

### 2019: Machine Learning

We learned about the basic theory of inference and decision, information theory, probability and distributions. We acquired understanding in the field of convex optimization problems, linear models for regression and classification as well as Kernel Methods up to our last assignment that required to implement a Support Vector Machine.

### 2018: Principles of Brain Computation

Course contents can be summarized in: Levels of organization in the brain, neurons in biological systems and computation neuroscience. In fact, we used a simulator for spiking neural network models called *NEST*, that focuses on the dynamics, size and structure of neural systems. Principles of plasticity and learning, using different synapse and neural models to develop a recurrent spiking neural network happen to be the main course essentials.

### 2018: Verification & Testing

In this course we used *Static Analysis* and *Hoare Logic* to find possible bugs in a specific source code. We also had to automate identification of deadlocks running two threads continuously. Heard about BFS & DFS in context of the *Java Path Finder*.

### 2017 / 2018: BSc Thesis

My thesis and practical work is about simulating a modern last level CPU-cache behaviour using QEMU. It will be possible to customize the cache in terms of cache line replacement policy, cache size and timing. The goal is to quickly and efficiently simulate side channel attacks on emulated hardware.

### 2017: Introduction to Information Security

By taking this course I completed a challenge called *C Security Challenge*. The goal was to exploit pre-written code (C & C++) changing its behavior to get a flag placed in an area that should be protected from not permitted access (CTF).

### 2017: Distributed Systems

Implemented a distributed system that uses message channels and message queues to perform distributed calculations. Therefore, gained experience in client/server logic, websocket technology and javascript.

### 2016: Operating Systems

A group-project to realize a small operating system called *SWEB*.

Main parts: Use and implement functions nearly similar to POSIX standard; Implement multi-threading compatibility; Implement memory management;