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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

COURSEWORK

POSTGRADUATE

Knowledge Discovery and Data Mining
Principles of Brain Computation (NN)
General Management and Organization
Security Aspects in Software Development
Industrial Management and Innovation
Stress & Time Management
Career & Life Planning
Verification & Testing
Web Technology (HTML5)
IT Security
Neural Networks
Machine Learning

UNDERGRADUATE

Data Structures & Algorithms
Software Maintenance
Computational Intelligence
Computer Vision & Graphics
Operating Systems
Information Security & Networking
Intercultural Social Competence
Industrial Sociology
Business Administration

WORKING EXPERIENCE

JOANNEUM RESEARCH | Master's Degree Candidate
Oct 2020 – now | Graz, Austria

- Darknet open source Neural Network framework
- Real-time object detection using You Only Look Once (YOLO)
- Development on embedded vision and multi-camera setup
- Fit the computational complexity of algorithms to the NVIDIA Jetson TX2 embedded AI computing device
- Build AI applications with NVIDIA JetPack on top of L4T with LTS Linux kernel
- Use libraries and tools of the Robot Operating System (ROS)

BYTEPOETS GMBH | Junior Developer
Aug 2018 – April 2019 | Graz, Austria

- Native iOS and Android development
- Spring and Bootstrap frameworks for Web development
- RESTful web services
- Couchbase NoSQL cloud database
- Agile project management methodology style

IAIK | Intern
Institute of Applied Information Processing and Communications
Aug 2017 – Oct 2017 | Graz, Austria

- Encrypt system memory of a System-on-a-Chip (SoC) emulation using QEMU
- Build own Linux distribution from scratch using yocto
- Extensive work on a Linux system for the ARM based Xilinx Zynq7 SoC

LAM RESEARCH | Electrical Engineer
Sep 2012 – Sept 2014 | Fremont, California & Villach, Austria

- Assistance with assembly of a LAM platform prototype design and electrical environment in Fremont, California
- Support engineering activities such as design, test, modification, fabrication and assembly of prototype electro mechanical systems and experimental design circuitry
- Feasibility studies and testing on new and modified designs
- Structured diagnostic and troubleshooting in a wide spectrum of hardware, software and networking requirements

SKILLS

Languages:
C • C++ • Java
Javascript • Python • Bash
Kotlin • Swift • LaTeX

Operating Systems:
Ubuntu Linux x86-64/32
Ubuntu Linux ARM64
Arch Linux x86-64
Debian GNU/Linux x86-64
MacOS x86-64/32

Tools:
Git repositories • Apache Subversion
Bitbucket • GitHub • GitLab
Git-cli • Sourcetree • Jira
Docker • VIM • Sublime Text
TMUX • Various Unix tools

Conventions:
Git-flow • YOLO
RESTful • MVC • MVVM

Libraries & Frameworks:
Spring • Bootstrap • Node.js • gulp.js
Numpy • sciPy • NEST Simulator
Tensorflow • Keras • Darknet • CUDA
Boost • Robot Operating System (ROS)
OpenCV • Matplotlib • Pandas • Pickle

Databases:
SQL • Couchbase NoSQL

Communication:
English (C2-level) • German (native)

LAM RESEARCH | Electrical Engineer
Oct 2010 – Aug 2012 | Villach, Austria

- Electrical assembly of LAM platforms
- Understand and contribute improvements to configuration and documentation such as mechanical drawings, wiring diagrams and internal test records
- Electrical assembly of special customer requests
- Flash, configure and test amplifier systems

SEZ & LAM RESEARCH | Test Engineer
Sep 2006 – Sept 2010 | Villach, Austria

- Electrical assembly of LAM platforms
- Understand configuration and documentation such as mechanical drawings, wiring diagrams and internal test records
- 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

RECENT EXPERIENCE

2020: Neural Networks
Discuss Feed-forward, Convolutional and Recurrent Neural Networks, weight-space symmetries, network training, error backpropagation, various training algorithms and regularization in Neural Networks. Use Tensorflow and Keras for assignments.

2020: Security Aspects in Software Development
Elective course with new insights about the ability to recognize and classify bugs, (efficiently) find bugs, exploit bugs, fix bugs, and prevent bugs in the first place. Study and exploit various memory corruption vulnerabilities including countermeasures and learn how to use different analysis, sanitizers or fuzzing to find bugs. Prevent bugs performing defensive programming in C and C++.

2019: Machine Learning
Learn about the basic theory of inference and decision, information theory, probability and distribution. Acquire understanding in the field of convex optimization problems, linear models for regression and classification as well as Kernel Methods and Support Vector Machines and partly implement those in assignments.

2019: IT Security
Learn about the TLS protocol basics. Implement the TLS protocol with a pre-shared key handshake using Ascon and AES-GCM as authenticated encryption schemes with all its primitives. Understand the importance of random number generators when generating a cryptographic key as well as basic key management techniques. Further implemented an own blockchain based secure crypto currency.

INTERESTS

PROFESSIONAL

Machine Learning • Intelligent Systems
Data Mining • Knowledge Discovery
IT-Security • Cryptography
Embedded Systems • Virtualization
Operating Systems • Linux Distributions

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.

LINKS

Github://
github.com/theuema

LinkedIn://
at.linkedin.com/in/theuema

Xing://
xing.to/theuema

Matrix://
@theuema:mozilla.org

keys.openpgp://
m.theuermann@protonmail.com

2018: Principles of Brain Computation

Learn about levels of organization in the brain, neurons in biological systems and computation neuroscience. Use 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, different synapse and neural models to develop a recurrent spiking neural network are the main course essentials.

2018: BSc Thesis

Simulating a modern last level CPU-cache behavior using QEMU. It is possible to customize the cache in terms of cache line replacement policy, cache size and timing. The developed tool can be used to quickly and efficiently simulate side channel attacks on emulated hardware.

2017: Introduction to Information Security

Complete a challenge called *C Security Challenge*. Exploit pre-written code (C & C++) and change its behavior to capture a flag, which is placed in an area that should be protected from not permitted access (CTF Challenges).

2017: Distributed Systems

Gain experience in client/server logic, Websocket technology and Javascript. Implement a distributed system that uses message channels and message queues to perform distributed calculations.

2016: Operating Systems

A group-project to realize a small operating system called *SWEB*.
Main parts: Use and implement syscalls nearly similar to POSIX standard such as mmap and malloc. Implement virtual memory management, swapping and multi-threading.