



# Markus Gruber, MSc

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## Education

### University of Vienna

MASTER, SCIENTIFIC COMPUTING

Vienna, Austria

10/2013 - 06/2017

- Thesis: "Experimental Studies of the Influence of Silent Data Corruption on the FT-GMRES", <http://othes.univie.ac.at/46244/>, with good graduation.  
Supervisor: Prof. Dr. techn. Wilfried Gansterer

### University of Applied Sciences Sankt Pölten

BACHELOR, INDUSTRIAL SIMULATION

Sankt Pölten, Austria

09/2010 - 06/2013

- Thesis: "Simulation of nano composite materials", with good graduation.  
Supervisor: FH-Prof. Dr. techn. Thomas Schrefl

### Technical University of Vienna

DIPLOMA, MATHEMATICS

Vienna, Austria

10/2005 - 03/2006

- Without graduation.

### Higher Technical School

GENERAL QUALIFICATION FOR UNIVERSITY ENTRANCE

Sankt Pölten, Austria

09/1999 - 06/2004

- Electrical engineering and industrial power electronics (major).

## Work Experience

### Untis GmbH

SOFTWARE ENGINEER & C/C++ - PROGRAMMER

Stockerau, Austria

02/2022 - 06/2022

- Debugging and fixing of code for a school planer.
- The client is mainly written with MFC components.
- The codebasis has around 1,5 million lines of code.

### Logicals

SOFTWARE ENGINEER & C/C++ - PROGRAMMER

Sankt Pölten, Austria

02/2021 - 01/2022

- Programming of software for development of steering programm.
- Implementation of functional safety requirements.
- Development of software architectures.
- Writing of unit and integration tests.

### Eyyes

SOFTWARE ENGINEER & C/C++ - PROGRAMMER

Krems, Austria

04/2017 - 12/2020

- Projects related to road safety.
- Development of concepts for autonomous driving and computer vision.
- Application and adaptation of deep learning algorithms.
- Research work on image processing and its corresponding implementation.
- Experience with yolo (mainly used for object detection) and different tools like keras and tensorflow.
- Training, optimization with keras, tensorflow and other deep neural network libraries.

### Various Job Positions

ELECTRICAL ENGINEER

03/2006 - 06/2010

- Automation Technician
- Technical Drawer

- Medical corps.

## Projects

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### Logicals

St.Pölten, Austria

SOFTWARE ENGINEER &amp; C/C++ - PROGRAMMER

02/2021 - 01/2022

- Development of a library/software stack for the safety environment, which is used for writing programmes in the automation technology and has low possibility of a failure.

### Eyes

Krems, Austria

SOFTWARE ENGINEER &amp; C/C++ - PROGRAMMER

04/2017 - 12/2020

- Training and optimization of a deep learning classifier for the the company vöst which has really high precision up to 99 % and beyond.
- Development of a prototype(defect detection) for the company zkw which should detect failures on headlights like scratches and so on.
- Development of a demonstrator for showing the capabilities of object detection (mainly yolo) in traffic scenarios.
- Development of a decision tree for judging the quality of images from a camera stream.

## Software Engineering

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### Languages

PROGRAMMING &amp; SCRIPTING

- Excellent knowledge and work experience with c/c++, python and bash.
- Knowledge of java, c# and r.

### Programming

C++ 11/14/17 (AND BEYOND)

- Familiar with different editors and ides like qt, vim and visual studio.
- Safe handling of the standard template (stl) and boost-library.
- Experience with analysis and optimization of performance critical sections.
- Experience in functional programming (fup).
- Experience in object oriented programming (oop).
- Experience in template programming (tmp).
- Excellent knowledge of the gnu debugger (gdb).
- Experience in parallelization of software.

### Optimization of Code

COMPILER

- Experience with different compilers like gcc (gnu c compiler), icc (intel c compiler) and msvc (microsoft visual c compiler) as well as with code optimization through compiler flags and finding performance critical sections.

### Software Management

GIT, GERRIT, MERCURIAL, REDMINE

- Very safe handling of git and the code-review-system gerrit.
- Experience with mercurial for version control of software.
- Experience with the ticket system redmine.
- Experience with clean code and code reviews.

### Documentation

DOXYGEN &amp; MARKDOWN

- Familiar with different documentation tools like doxygen and markdown.
- Experience in uml (unified modeling language).

### Visualization

GUIs

- Excellent knowledge of qt5/qml for realization of user-interfaces from mobil devices and desktop systems.
- Development of rudimentary and advanced graphical interfaces.

## Databases

SQL

- Good knowledge of sql databases.
- Experienced in the creation of databases.

## Patterns

SOFTWARE ARCHITECTURES

- Good knowledge of software architectures.
- Application of patterns like the master-slave, pipe-filter and model-view-controller principle.

# Specializations

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## High Performance Computing (HPC)

DISTRIBUTED & SHARED MEMORY

- Familiar with different apis in high performance computing (hpc).
- Knowledge of mpi, openmp, tbb, cilk, opencl, cuda.
- SIMD programming up to sse/avx/avx2 and programming on gpus.

## Machine Learning

R & PYTHON

- Knowledge of data mining and pattern recognition methods (support vector machines, ensemble methods, dimension reduction, cluster analysis,..).
- Combinatorics and probability theory.
- A lot of work experience with opencv (open source computer vision library).

## Deep Learning

KERAS, TENSORFLOW, PYTORCH, CAFFEE, CNTK, YOLO

- Experience with different deep learning libraries for classification and object detection.
- Training and optimization of different deep neural networks (dnns).
- Experience with the export of dnns and as well further processing.
- Proficient in solving problems related to computer vision and deep learning.

## Numerics

MATLAB/OCTAVE

- Excellent knowledge of solving differential equation systems.
- Good knowledge of mpi and lapack/blas.
- Experienced in using different libraries like blas, cublas, magma.

## Platforms

OPERATING SYSTEMS

- Excellent knowledge of linux based systems (ubuntu).
- Good knowledge of microsoft windows.

## System Administration

APTITUDE/SYSTEMCTL

- Excellent knowledge of debian based systems, including package management.
- Command line usage (for the creation of scripts), updates & monitoring.

# Languages

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**German** Native language.

**English** Fluent (written & spoken).

# Organizational and managerial talent

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**Teamwork** Enjoy working in a team and interdisciplinary.

**Leadership qualities** Like allocation of employees and of different jobs.

**Way of working** Structured and clear.

**Resilience** Resistant to stress even in demanding situations.