curriculum vitæ

Peter LORENZ, MSc.

Nationality	Austrian
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Driving License	A (motorcycle), B (car)
Languages	German (native), English (C1), Chinese (A2), French (A2)
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Education

10|2016-05|2019 Computer Science, MSc (Dipl.-Ing.), totally in English, GPA: 3.86
Educational Institution: University of Technology, Graz
Focus: Computer Vision (major) and Pervasive Computing (minor) and Mathematical Foundations
Topic: "A Deep Learning Approach to learn Occlusions in regard to Stereo Images". *(Pattern Recognition, Classification, Python, Tensorflow, CUDA, C++, Supervised Learning, Disparities from Stereo Images)*
Courses: *IT-Security, Computer Organization and Networks,Compiler Construction, Robot Vision, Image Processing, Seminar Pattern Recognition, Selected Topics in Deep Learning, Neural Networks, Signal Processing, Image Processing, Numerical Optimization, Convex Optimization (excercise), Discrete Stochastic, Context Aware Computing, Chinese A1-A2.*

10|2013-10|2016 Computer Science, BSc, with distinction, GPA: 3.77
Educational Institution: University of Technology, Graz
Topic: Evaluation and Improvement of the Current Vision System of a Robot. *(ROS, CMake, C++, Python)* Supervisor: Prof. Steinbauer.
Socities: TEDUSAR - TU Graz Robotic Club

02|2012-10|2013 Architecture, BSc (discontinued)
Educational Institution: University of Technology, Graz
Focus: I could learn a lot about geometry and 2D reconstruction from images, as well as the influence of architecture on society.

09|2007-07|2011 Matura (A-levels)
Educational Institution: BORG Bad Radkersburg, Bad Radkersburg
Focus: Mathematics, Natural Sciences

09|2007-07|2011 IT Professional, Diplom, with distinction
Educational Institution: WIFI, Bad Radkersburg
Topic: "Reuse of Computer Hardware Components!". Published on vff-marenostrum.org, where 4000 IT Technicians assigned 9.2 of 10 points.
Courses: *Operating Systems (Admin.), Network Technologies, Controlling (Foundation), Payroll.*

University Experience

07|2018-08|2018 **Research Scholarship**, Wayne State University, Detroit, USA
Focus: Validation of a Gene Database. Hypergeometric distribution models.

03|2018-07|2018 **Tutor Position**, Computational Intelligence at Franz Pernkopf
Tasks: *Bayes Classifier, Hidden Markov Chain, GMM, K-Means, PCA&LDA.* Providing and correct assignments in python. Help students by their assignments.
Institution: Institute of Signal Processing and Speech Communication

10|2017-01|2018	**Tutor Position**, IT-Security at Christian Rechberger, TU Graz Tasks: *C++, CMake, Gitlab Testing, Blockchain, TLS, ASCON*; grading practical parts, interviews Institution: Institute of Applied Information Processing and Communications
10|2017-01|2018	**Tutor Position**, Numerical Calculation and Linear Algebra at Christian Elsholtz, TU Graz Tasks: Correcting exams and assignments as well inspections of examinations. *(Vector paces, linear transformations, eigenvalues and eigenvectors, gram-schmidt, gauss-newton)* Institution: Institute of Analysis and Numerical Theory
10|2016-01|2017	**Tutor Position**, Numerical Calculation and Linear Algebra at Peter Berglez, TU Graz Institution: Institute of Analysis and Numerical Theory

Work Experience

from 02|2021	**Ph.D. Applicant**, Fraunhofer - HPC Department, Kaiserslautern, Germany Focus: *(Adversarial Machine Learning, Pytorch, Python)*.
09|2020 - 01|2021	**Deep Learning / Computer Vision Applied Scientist**, MBDA GmbH - Optronic Department, Ingolstadt (Schrobenhausen), Germany Focus: Algorithms, Tensorflow/Pythorch, Observer drone is equipped with non-commericial sensors. Deep learnning (LSTM, Recurrent) approaches are needed and will be adapted/evaluated to track objects on the ground. *(Pattern Recognition, Tracking, Classification, Tensorflow, Python, C++)*.
05|2019-08|2020	**Autonomous Driving Researcher**, Virtual Vehicle Research GmbH - Embedded Systems Group, Graz Focus: Integration of lattice and EM planer from Baidu Apollo project. OpenSCENARIO scenarios creation for the CARLA simulator. Priority calculation for junctions. YOLOv2 neural network implementation. Lidar and radar sensors simulation. *(C++, CMake, Python, ROS, Scrum, Docker, CARLA, Conan)*.
07|2016-09|2016	**C++ Programmer**, Airbus GmbH, Munich Focus: Writing a protocol adapter for a middleware in the field of aviation *(C++, Make, Eclipse, DDS, MQTT, Scrum)*.
07|2015-08|2015	**C++ Programmer** (Internship), ECS Magna PowerTrain, Linz Focus: Extending the FEMFAT software. This software is used to improve reliability and robustness of components in automotive and machinery industry. Tasks: *Visual C++, Woehler-Curve, Bridge-Circuit*
07|2014-08|2014	**IT Consultant** (Internship), PBSolution, Shanghai (China) I was trying to understand the IT market in the city Shanghai and could finally acquire some new European company-clients for my company.
07|2012-12|2013	**Study Assistant**, Working Group Sustainability, TU Graz Institution: Institute of Material Testing and Sustainability Focus: organizational and preparational work for the conference sb13 and support during the conference. This conference was awarded pressearchiv.tugraz.at with the Congress Award 2014 of the city Graz for the internationality (400 participants from 30 countries).
07|2011-01|2012	**Scout** - Military Service

Special Interests (Expert → Beginner)

Project Mngmt	Scrum
OS	Ubuntu, ROS
Programming	Python, C++, PyTorch, CUDA

Awards

2020	**Styrian Master in Kickboxing** (Discipline: Light-Contact)
2019	**Intel - Udacity Computer Vision AI Edge** (Online Scholarship)

2018	**Bertelsmann - Udacity Data Sciene** (Online Scholarship)
2016 - 2018	**E-Fellows** (Online Scholarship)
2016	**Jungheinrich Scholarship** (Scholarship 3rd Place)
2012, 2017	**Merit Scholarship** (Graz University of Technology)

Publication

| 2018 | Lorenz, Peter and Steinbauer, Gerald. The RoboCup Rescue Victim Dataset. *IEEE International Symposium on Safety, Security and Rescue Robots.* 2018. |
| 2021 | Lorenz, Peter and Harder, Pauler etal. Detecting AutoAttack Perturbations in the Frequency Domain. *ICML Workshop for Adversarial Machine Learning.* 2021. |

Projects

2018	Seminar paper: "Deep learning approaches for estimating optical flow" github.com/computeVision/optical_flow/raw/master/optical_flow.pdf
2018	Evaluation of a deep convolutional generative adversarial network: github.com/computeVision/dcgan_evaluation.
2017	Point Cloud 3D Reconstruction: github.com/computeVision/pcl_stereoimages. Together with I. Jambrecic (CRO), we programmed a robust algorithm resulting in a very fine point cloud. *(Python)*
2016	Evaluation and Improvement of the Current Victim Detection System of a Rescue Robot: github.com/computeVision/evaluation_wowbaggers_vision_system. I decomposed for the first time a huge vision system and could find some methods to significantly show the problems and also eliminated some weaknesses. *(Pattern Recognition, Classification, C++, CMake, GoogleTest, Python, ROS, OpenCV, Binary Classification)*
2013	RC4 and AES cryptography. Lecturer: K. C. Posch. github.com/technicalinformatics/RC4/blob/master/rc4.pdf

Extracurricular Engagement

Mentor	Dr. Juergen Winkelhake, Robert Bosch Gmbh, Lead of Advanced Driver-Assistance Systems (ADAS).
English School	Attending Glasgow School of English 15 hours per week for one month in 2012. Living at a host family.
Udacity	Deep Learning Course, Chinese for Beginners, Chinese for Advanced, Secure & Private AI
Coursera	Cryptography I - Dan Boneh (Stanford), Applied Cryptography Specialization (4 courses)
Hash Code	Participated on Google Hash Code with some friends at the hub in Graz.
Let's Cluster	24 hours hackathon with Infineon time-of-flight sensor.
1st Term Tutor	Accompany a group of 1st semester students over the first term. Team building activities were planned to ease those students to feel comfortable at our university.

| **Hobbies** | Travelling, Hiking, Learning Chinese |
| | Kickboxing (since 2009. in past on competitions - Link to "Landesmeisterschaft im Kickboxen") |

References	Prof. Dr. Christian Rechberger (Institute of Applied Cryptography and Communications)
	Prof. Dr. Gerald Steinbauer (Institute of Software Technology)
	Prof. Dr. Thomas Pock (Institute of Computer Vision)