



education

phd | computer science

graz university of technology | 2018 - present

- research: real-time rendering for virtual reality
- advisor: Dieter Schmalstieg
- co-advisor: Markus Steinberger

ms | information and computer engineering

graz university of technology | 2018

- thesis: data augmentation in deep learning using generative adversarial networks
- gpa: 3.82
- major: signal processing
- minor: computer graphics & vision
- graduated with high distinction
- 2016 scholarship for academic excellence

bs | information and computer engineering

graz university of technology | 2015

- thesis: bugtracer: a buffer overflow and memory access logging tool
- gpa: 3.62
- graduated with high distinction
- 2013 scholarship for academic excellence
- 2015 scholarship for academic excellence

coursework

computer graphics & vision

machine learning

computer vision

computer graphics

real-time graphics

virtual reality

augmented reality

deep learning

medical image analysis

signal processing

adaptive filters

digital audio engineering

signal processors

cognitive neuroscience

brain-computer interfaces

signal analysis

speech communication

experience

graz university of technology - phd | graphics researcher

2018 - present

- investigating methods for real-time object space shading to improve real-time vr rendering

graz university of technology - ms | medical image analysis & deep learning

summer 2016 - spring 2018

- explored generative adversarial networks and their use for data augmentation in master's thesis
- several publications using deep learning methods for medical image analysis, using caffe and tensorflow
- research internship in summer 2016

graz university of technology | study assistant

fall 2013 - spring 2018

- study assistant responsible for reference solutions of exercises, grading of exercises and holding tutorials for various bs- and ms-level courses, with 20-100 students
- introduction to programming, software development practicals, signal processors lab, medical image analysis

teaching

graz university of technology | university assistant

2019 - present

- computer graphics 1 (600+ students), computer graphics 2 (200+ students), virtual reality (20+ students), real-time graphics (20+ students), introduction to scientific work (15+ students)
- management of practicals, supervising study assistants, submission system, reference solutions, exams, grading

graz university of technology | research assistant

fall 2018 - spring 2019

- introduction to scientific work, 6 students
- grading seminar papers and presentation for topics in machine learning in graphics

graz university of technology | study assistant

fall 2013 - 2018

- introduction to programming, software development practicals (80+ students)
- reference solutions, assignment creation, grading and tutorial lectures

graz university of technology | study assistant

2017

- medical image analysis (15+ students)
- reference solutions, assignment creation, tutorial sessions

graz university of technology | study assistant

2017

- signal processors lab (15+ students)
- lab sessions, grading

skills

programming

experienced

c++ • c • c# •

proficient

python

familiar

cuda • objective-c • lua • java

• matlab

computer graphics

apis

vulkan • opengl

engines

unity • unreal engine 4

machine learning

frameworks

tensorflow • caffe

methods

cnns • generative models •

segmentation

general

languages

german • english • japanese

(basics)

software

L^AT_EX • photoshop

os

windows • linux

ides

visual studio • intellij

projects (non-research)

greeney's run (pebble timeline challenge 2015 winner) </>

vision-based real-time load detection tools for "Crash Bandicoot: N. Sane Trilogy", "Crash Team Racing: Nitro Fueled" </> </>

reverse engineering of "Megaman Battle Network 3" and modifying the game into a roguelite experience </>

reverse engineering of "Dragon Ball Z: Legendary Super Warriors" and modifying the game to randomize certain aspects </>

reverse engineering of "Yu-Gi-Oh: Legacy of the Duelist" to implement custom card sets for the game's draft mode </>

development of several smaller games in unity/c#/objective-c </>

publications

2019 Mueller, Joerg H., **Neff, Thomas**, Philip Voglreiter, Mina Makar, Markus Steinberger, and Dieter Schmalstieg. "Shading Atlas Streaming Demonstration". In: *ACM SIGGRAPH 2019 Emerging Technologies*. SIGGRAPH '19. Los Angeles, California: ACM, 22:1–22:2. isbn: 978-1-4503-6308-2. doi: [10.1145/3305367.3327981](https://doi.org/10.1145/3305367.3327981). url: <http://doi.acm.org/10.1145/3305367.3327981>.

2018 Mueller, Joerg H., Philip Voglreiter, Mark Dokter, **Neff, Thomas**, Mina Makar, Markus Steinberger, and Dieter Schmalstieg. "Shading Atlas Streaming". In: *ACM Transactions on Graphics* 37.6. doi: [10.1145/3272127.3275087](https://doi.org/10.1145/3272127.3275087).

Mueller, Joerg H., Philip Voglreiter, Mark Dokter, **Neff, Thomas**, Mina Makar, Markus Steinberger, and Dieter Schmalstieg. "Shading Atlas Streaming Demonstration". In: *Adjunct Proceedings of the IEEE International Symposium for Mixed and Augmented Reality 2018*.

Payer, Christian, Darko Štern, **Neff, Thomas**, Horst Bischof, and Martin Urschler. "Instance segmentation and tracking with cosine embeddings and recurrent hourglass networks". In: *Medical Image Computing and Computer Assisted Intervention – MICCAI 2018 - 21st International Conference, 2018, Proceedings*. Lecture Notes in Computer Science. Springer Verlag Heidelberg, pp. 3–11. isbn: 9783030009335. doi: [10.1007/978-3-030-00934-2_1](https://doi.org/10.1007/978-3-030-00934-2_1).

Neff, Thomas, Christian Payer, Darko Stern, and Martin Urschler. "Generative Adversarial Networks to Synthetically Augment Data for Deep Learning based Image Segmentation". In: *Proceedings of the OAGM Workshop 2018*. Ed. by Martin Welk, Peter M. Roth, and Martin Urschler. Verlag der Technischen Universität Graz, pp. 22–29. doi: [10.3217/978-3-85125-603-1-07](https://doi.org/10.3217/978-3-85125-603-1-07). url: <https://diglib.tugraz.at/download.php?id=5b3619809d758&location=browse>.

2017 Payer, Christian, **Neff, Thomas**, Horst Bischof, Martin Urschler, and Darko Stern. "Simultaneous Multi-Person Detection and Single-Person Pose Estimation With a Single Heatmap Regression Network". In: *ICCV 2017 PoseTrack Challenge: Human Pose Estimation and Tracking in the Wild*. Venice, Italy. url: <https://posetrack.net/workshops/iccv2017/pdfs/ICG.pdf>.

* **Neff, Thomas**, Christian Payer, Darko Stern, and Martin Urschler. "Generative Adversarial Network based Synthesis for Supervised Medical Image Segmentation". In: *Proceedings of the OAGM&ARW Joint Workshop*, pp. 140–145. doi: [10.3217/978-3-85125-524-9-30](https://doi.org/10.3217/978-3-85125-524-9-30). url: http://castor.tugraz.at/doku/OAGM-ARWorkshop2017/oagm-arw-17_paper_30.pdf.

* Best Paper Award

awards

- oagm best paper award 2017
- pebble timeline challenge winner 2015
- 3rd place invent a chip challenge 2011