Dr. Thomas Lang

Curriculum Vitae

Personal Information

Born **20th April 1993**, *Schärding*
Citizenship **Austria**
Confession **Roman catholic**

Education

PhD

04/01/2018 – 04/14/2021 **University of Passau**, *Computer Science*, Final grade 1.0 (*summa cum laude*)
07/09/2021 Thesis defence

Study

Term 2016/17–Term 2017/18 **University of Passau**, *Master Computer Science*, Final grade 1.1 (with distinction)
Term 2013/14–Term 2016 **University of Passau**, *Bachelor Computer Science*, Final grade 1.8 (good)

School

2012 **Matura**, *Average grade* 1.2 *(with distinction)*
2007–2012 **Höhere Technische Lehranstalt Innviertel-Nord in Andorf**
2003–2007 **Hauptschule Münzkirchen**
1999–2003 **Volksschule Münzkirchen**

PhD Thesis

Title **AI-Supported Interactive Segmentation of 3D Volumes**
Description Development of novel and general methods for interactive segmentation of very large 3D volumetric data using geometric information.
Download https://nbn-resolving.org/urn:nbn:de:bvb:739-opus4-9221

Masters Thesis

Title **Improving the Efficiency of Code Generation Based on Cylindrical Algebraic Decomposition**
Description Implementation and optimization of code generation for arbitrary loop bounds based on a cylindrical algebraic decomposition.
Download http://www.infosun.fim.uni-passau.de/cl/arbeiten/lang-m.pdf

Bachelors Thesis

Title **An Intel®Xeon Phi™ Backend for the ExaStencils Code Generator**
Description Extension of the ExaStencils code generator to support the Intel®Xeon Phi™ co-processor.
Download http://www.infosun.fim.uni-passau.de/cl/arbeiten/lang-b.pdf

Language Skills

German Native
English Fluent
Russian Fundamental

Presentations

C++ course Presenter of a C++ course at the University of Passau, Winter terms 2018/19 and 2019/20
PhD Several presentations throughout the doctorate
Rigorosum PhD thesis defence presentation, 07/09/2021

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Experience

Professional

09/01/2021 – **Post-Doc**, *Fraunhofer IIS, Division EZRT/CTMT, Passau*
04/01/2018 – 08/31/2021 **Researcher**, *Institute FORWISS, University of Passau*
08/01/2016 – 03/31/2018 **Student researcher**, *Institute FORWISS, University of Passau*
2015/2016 **Student researcher**, *University of Passau, several chairs*
07–08 / {2011,2013} **Summer job**, *GST Global Sports Technologies GmbH*

Additional Qualifications

- Extensive experience with programming in `C/C++`, `Python`, `Haskell`
- Extensive experience with parallel programming (`OpenMP, MPI, GPU`)
- Extensive experience with LaTeX
- Extensive experience with machine learning techniques and their usage
- Experience with version control software (`git, svn`)

Projects

Acquired projects

09/01/2021 – 05/31/2022 **OntoSeg**, *Efficient ontology-based segmentation of large volumes*, Budget: 90k€

Project work

01/01/2022 – **BayQS**, *Research with applications of Quantum Computing*
03/01/2021 – 07/30/2021 **BM18**, *High resolution industrial tomography beamline for large objects*
04/01/2018 – 02/28/2021 **Big Picture**, *de.: Digitalisierung, Verarbeitung und Analyse kultureller und industrieller Objekte: Wertschöpfung aus großen Daten*

Awards and Certificates

10/01/2019 iSAQB ® Certified Professional for Software Architecture - Foundation Level
05/22/2018 Professional Scrum Master I
01/26/2018 msg Price for exceptional study work

Military Service

Type Community Service
Institution Lebenshilfe Münzkirchen
Field of Work Aiding the care of care-dependent persons
Duration 08/01/2012 to 04/30/2013

Hobbys and Interests

Computer Science Interest in software development with focus on machine learning, programming languages and image processing
Genealogy Creation of a genealogy of my family
Origami Creation of complex origami figures
Calligraphy Calligraphic writing, mostly in Kurrent

Publikationen

T. Lang and T. Sauer, “Geometric Active Learning for Segmentation of Large 3D Volumes,” *IEEE Trans. Pattern Anal. Mach. Intell. (TPAMI)*, 2022. submitted for publication.

T. Lang and T. Sauer, “Feature-Adaptive Interactive Thresholding of Large 3D Volumes,” *J. Math. Imaging Vis.*, 2022. submitted for publication.

R. Fischer, E. Hufnagel, T. Lang, J. Claußen, S. Gerth, and T. Sauer, “A Demonstrator for Threat Detection in Volumetric CT Scans,” *Appl. AI Lett.*, 2022. submitted for publication.

T. Lang and T. Sauer, “AI-Supported Segmentation of Industrial CT Data,” in *Proceedings of the 11th Conference on Industrial Computed Tomography*, vol. 27, 2022.

T. Lang, “Clustering large 3D Volumes: A sampling-based approach,” in *Proceedings of the 59th Annual British Conference on Non-Destructive Testing*, 2022. accepted for publication.

Scientific Activities

2022 Co-organizer of the 12th international conference on industrial computed tomography (iCT 2023)

Münzkirchen, 13. Mai 2022