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

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

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

Projects

Acquired projects

09/01/2021 – 08/31/2022	**OntoSeg**, *Efficient ontology-based segmentation of large volumes*, Budget: 90k€

Project work

01/01/2022 –	**QuaST**, *Quantum-enabling Services und Tools für industrielle Anwendungen*
01/01/2022 –	**QACI**, *Munich Quantum Valley - Quantum algorithms for application, cloud and industry*
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

11/11/2022	Dissertationspreis der Universität Passau - Dissertation price of the University of Passau
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

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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

Hobbies 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

Publications

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," in *Proceedings of the 12th Confernece on Industrial Computed Tomography*, 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.

T. Lang and A. M. Stock, "Interactive Denoising of 3D Volumes Using Wavelets," in *Proceedings of the 12th Confernce on Industrial Computed Tomography*, 2022. submitted for publication.

S. Zabler, N. Saeidnezhad, M. Diez, T. Lang, A. M. Stock, T. Sauer, and P. Tafforeau, "Multiscale Phase-Contrast Tomography at BM18," in *Proceedings of the 12th Confernece on Industrial Computed Tomography*, 2022. submitted for publication.

S. Semmler, D. Suth, K. Dremel, M. Basting, M. Firsching, T. Fuchs, S. Kasperl, T. Lang, D. Prjamkov, R. Schielein, and M. Weule, "N-Dimensional Image Encoding on Quantum Computers," in *Proceedings of the 12th Confernece on Industrial Computed Tomography*, 2022. submitted for publication.

T. Lang and T. Sauer, "Feature-Adaptive Interactive Thresholding." Poster, presented at 31st Rhein-Ruhr-Workshop, Bestwig, 2022.

T. Lang and T. Sauer, "AI-Supported Segmentation of Industrial CT Data." Poster, presented at 31st Rhein-Ruhr-Workshop, Bestwig, 2022.

Scientific Activities

2022   Co-organizer of the 12th Int. Conf. on Industrial Computed Tomography (iCT 2023)

Münzkirchen, 11. August 2022