

# Herbert Lange

DOCTOR OF PHILOSOPHY · COMPUTER SCIENCE

Munich, Germany

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## University Degrees

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**University of Gothenburg**

Gothenburg, Sweden

PHD IN COMPUTER SCIENCE

March 2021

Thesis: “Learning Language (with) Grammars: From Teaching Latin to Learning Domain-Specific Grammars”



**University of Gothenburg**

Gothenburg, Sweden

LICENTIATE IN COMPUTER SCIENCE

November 2018

Thesis: “Computer-Assisted Language Learning with Grammars. A Case Study on Latin Learning”



**Ludwig-Maximilians-University**

Munich, Germany

MASTER'S IN COMPUTATIONAL LINGUISTICS

July 2014

Thesis: “Implementierung einer Lateingrammatik im Grammatical Framework”

## University Education

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**University of Gothenburg**

Gothenburg, Sweden

PHD STUDIES IN COMPUTER SCIENCE

August 2015 – September 2020

- Supervisor: Peter Ljunglöf
- Co-supervisor: Koen Claessen
- Internal examiner: Aarne Ranta



**Trinity College Dublin**

Dublin, Ireland

ERASMUS STAY

September 2010 – May 2011



**Ludwig-Maximilians-University**

Munich, Germany

MASTER'S IN COMPUTATIONAL LINGUISTICS

October 2008 – September 2014

- Supervisor: Hans Leiss

## Job Experience

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**University of Hamburg**

Hamburg, Germany

RESEARCHER

June 2021 – now

Development of quality assurance solutions for audio-visual corpora



**University of Gothenburg**

Gothenburg, Sweden

RESEARCHER

August 2015 – September 2020

PhD studies in computer science with research focus on computational linguistics

## self-employed

SOFTWARE DEVELOPER AND SYSTEM ADMINISTRATOR

Munich, Germany

April 2015 – May 2015

Development of a monitoring solution of a segment of the university network at Ludwig-Maximilians-University, Munich



**Glanos GmbH**

Munich, Germany

SOFTWARE ENGINEER

November 2014 – January 2015

Java backend development handling XML/JSON data and manual data annotation and analysis for Named Entity Recognition



**Institute for German Philology, Ludwig-Maximilians-University**

Munich, Germany

STUDENT ASSISTANT

November 2011 – December

2011

Data annotation for online publication of the "Deutschen Verfasserlexikons der Frühen Neuzeit"



**IT-Zentrum der Sprach- und Literaturwissenschaften,**

Munich, Germany

**Ludwig-Maximilians-University**

STUDENT ASSISTANT

February 2009 – October 2014

System administration for a segment of the university network consisting of Linux/Mac/Windows servers and Windows/Mac clients

## Publications

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Herbert Lange and Peter Ljunglöf (2021): "Learning Domain-Specific Grammars From a Small Number of Examples", *Natural Language Processing in Artificial Intelligence, Studies in Computational Intelligence (SCI)* (939), 105-138, Springer International Publishing, Cham, Switzerland, [https://doi.org/10.1007/978-3-030-63787-3\\_4](https://doi.org/10.1007/978-3-030-63787-3_4), Published.

*Proceedings of the 9th Workshop on Natural Language Processing for Computer Assisted Language Learning* (2020); David Alfter, Elena Volodina, Ildikó Pilán, Herbert Lange and Lars Borin (eds.), Linköping University Electronic Press, Linköping, Sweden, Linköping Electronic Conference Proceedings (175), 45 pages, <https://doi.org/10.3384/ecp20175>, Published. Herbert Lange (2020): "Learning Language (with) Grammars: From Teaching Latin to Learning Domain-Specific Grammars", PhD thesis, Department of Computer Science and Engineering, University of Gothenburg, Gothenburg, Sweden, <http://hdl.handle.net/2077/65453>, Published.

Herbert Lange and Peter Ljunglöf (2020): "Learning Domain-specific Grammars from a Small Number of Examples", *Proceedings of the 12th International Conference on Agents and Artificial Intelligence - Volume 1: NLPinAI*, Valetta, Malta, INSTICC. SciTePress, 422-430, <https://doi.org/10.5220/0009371304220430>, Published.

*Proceedings of the 8th Workshop on Natural Language Processing for Computer Assisted Language Learning* (2019); David Alfter, Elena Volodina, Lars Borin, Ildikó Pilán and Herbert Lange (eds.), Linköping University Electronic Press, Linköping, Sweden, NEALT Proceedings Series (39), 99 pages, Published. Herbert Lange (2019): "An Open-Source Computational Latin Grammar: Overview and Evaluation", *Proceedings of the 20th International Colloquium on Latin Linguistics (ICLL 2019)*, Las Palmas de Gran Canaria, Canary Islands, Forthcoming.

Herbert Lange and Peter Ljunglöf (2020): "Demonstrating the MUSTE Language Learning Environment", *Proceedings of the 7th Workshop on NLP for Computer Assisted Language Learning (NLP4CALL 2018)* at SLTC, 7th November 2018, Stockholm, Sweden, Linköping University Electronic Press, 41-46, <https://www.aclweb.org/anthology/W18-7105>, Published.

Herbert Lange (2018): "Computer-Assisted Language Learning with Grammars. A Case Study on Latin Learning", Licentiate thesis, Department of Computer Science and Engineering, University of Gothenburg, Gothenburg, Sweden, <https://gup.ub.gu.se/file/207536>, Published.

Herbert Lange and Peter Ljunglöf (2018): "Putting Control into Language Learning", *Proceedings of the Sixth International Workshop on Controlled Natural Languages*, Maynooth, Ireland, IOS Press, *Frontiers in Artificial Intelligence and Applications* (304), 61-70, <https://doi.org/10.3233/978-1-61499-904-1-61>, Published.

Herbert Lange and Peter Ljunglöf (2018): "MULLE: A Grammar-based Latin Language Learning Tool to Supplement the Classroom Setting", *Proceedings of the 5th Workshop on Natural Language Processing Techniques for Educational Applications (NLPTEA '18)* at ACL, Melbourne, Australia, Association for Computational Linguistics, 108-112, <http://aclweb.org/anthology/W18-3715>, Published.

Herbert Lange (2017): “Implementation of a Latin Grammar in Grammatical Framework”, Proceedings of the 2nd International Conference on Digital Access to Textual Cultural Heritage (DATECH2017), Göttingen, Germany, Association for Computing Machinery, 97-102, <https://doi.org/10.1145/3078081.3078108>, Published.

Herbert Lange (2013): “Erstellen einer Grammatik für das Lateinische im ”Grammatical Framework””, Master’s thesis, Centrum für Informations- und Sprachverarbeitung, Ludwig-Maximilians-University, Munich, Germany, Published.

## Presentations

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Herbert Lange (2020): “Type theory and meaning in linguistics”, rC3 - remote Chaos Experience, Online, Talk: [https://media.ccc.de/v/rc3-232856-type\\_theory\\_and\\_meaning\\_in\\_linguistics](https://media.ccc.de/v/rc3-232856-type_theory_and_meaning_in_linguistics)

Herbert Lange (2020): “A Type-Theoretic Approach to Generating Pictures and Descriptions”, 8th Swedish Language Technology Conference, Gothenburg, Sweden, Conference talk

Herbert Lange (2020): “Learning Domain-specific Grammars from Examples”, CLASP Seminar, University of Gothenburg, Gothenburg, Sweden, Seminar Talk

Herbert Lange (2020): “Learning Domain-specific Grammars from a Small Number of Examples”, Special Session NLPinAI, 12th International Conference on Agents and Artificial Intelligence, Valetta, Malta, Conference talk

Herbert Lange (2020): “Using Dependent Types in GF”, Functional Programming Winter Meeting, Chalmers University of Technology, Gothenburg, Sweden, Seminar Talk

Herbert Lange (2019): “Empirical Evaluation of a Computational Latin Grammar”, 20th International Colloquium on Latin Linguistics, Las Palmas de Gran Canaria, Canary Islands, Conference talk

Herbert Lange (2019): “A short history of end-user programming”, Update mini conference, Uppsala, Sweden, Talk

Herbert Lange (2019): “Computer-Assisted Language Learning for Latin”, Latin Seminar, Uppsala University, Uppsala, Sweden, Seminar Talk

Herbert Lange (2019): “Restricting Grammars to Reduce Ambiguity”, Functional Programming Seminar, Chalmers University of Technology, Gothenburg, Sweden, Seminar Talk

Herbert Lange (2019): “MULLE for Latin: Computer-Generated Translation Exercises for Latin”, Workshop on Digital Approaches to Teaching Historical Languages, Berlin, Germany, Conference talk: <https://www.projekte.hu-berlin.de/en/callidus-en/DATeL-workshop/digital-approaches-to-teaching-historical-languages-dattel>

Herbert Lange and Peter Ljunglöf (2018): “Demonstrating the MUSTE Language Learning Environment”, 7th Workshop on Natural Language Processing for Computer-Assisted Language Learning at the Swedish Language Technology Conference (SLTC), Stockholm, Sweden, Poster

Herbert Lange (2018): “MULLE: A grammar-based Latin language learning tool to supplement the classroom setting”, 5th Workshop on Natural Language Processing Techniques for Educational Applications, Melbourne, Australia, Poster

Herbert Lange (2018): “Computational Linguistics vs. Natural Language Processing - A bit of a rant”, Free Society Conference and Nordic Summit (FSCONS), Oslo, Norway, Lightning Talk: <https://youtu.be/Xrb3ULik1vc?t=3127>

Herbert Lange (2018): “Let’s talk about Old Computer; Or: Why old computers are cool, why we should care, and stuff I discovered”, Free Society Conference and Nordic Summit (FSCONS), Oslo, Norway, Lightning Talk: [https://youtu.be/\\_C5QUuU2vic?t=1386](https://youtu.be/_C5QUuU2vic?t=1386)

Herbert Lange (2017): “Implementation of a Latin Grammar in Grammatical Framework”, 2nd International Conference on Digital Access to Textual Cultural Heritage, Göttingen, Germany, Conference talk

Herbert Lange (2017): “A Latin Language Learning Application”, Latin Seminar, University of Gothenburg, Gothenburg, Sweden, Seminar Talk

Herbert Lange (2017): “From Word-based text editing to language learning”, Dublin Computational Linguistics Research Seminar, Trinity College Dublin, Dublin, Ireland, Seminar Talk

Herbert Lange (2017): “From Word-based text editing to language learning”, Postgraduate Seminar in Computer Science, National University of Ireland, Maynooth, Ireland, Seminar Talk

Herbert Lange (2017): “MUSTE - Behind the scenes”, REMU Research Seminar, University of Gothenburg, Gothenburg, Sweden, Seminar Talk

Herbert Lange (2016): “Implementation of a Latin Grammar in Grammatical Framework”, 6th Swedish Language Technology Conference (SLTC), Umeå, Sweden, Poster

Herbert Lange (2016): “SHRDLU - Ein Programm das natürliche Sprache versteht”, Vintage Computing Festival Berlin (VCFB), Berlin, Germany, Talk: [https://media.ccc.de/v/vcfb2016\\_-\\_52\\_-\\_en\\_-\\_medientheater\\_-\\_201610031530\\_-\\_shrdlu\\_-\\_herbert\\_lange](https://media.ccc.de/v/vcfb2016_-_52_-_en_-_medientheater_-_201610031530_-_shrdlu_-_herbert_lange)

Herbert Lange (2015): “Vintage Computing”, Free Society Conference and Nordic Summit (FSCONS), Gothenburg, Sweden, Lightning Talk: <https://youtu.be/8mSVMY74s0Y?t=660>

Herbert Lange (2013): “Grammatical Framework”, Mehrvortrögewagen, muCCC Munich Hackerspace, Munich, Germany, Talk

## Teaching Experience

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### Introduction to concurrent programming

*Teaching Assistant*

CHALMERS UNIVERSITY OF TECHNOLOGY AND UNIVERSITY OF GOTHENBURG  
Spring 2019

### Artificial Intelligence

*Teaching Assistant*

CHALMERS UNIVERSITY OF TECHNOLOGY AND UNIVERSITY OF GOTHENBURG  
Spring 2018, Spring 2019

### Computational Syntax

*Teaching Assistant*

UNIVERSITY OF GOTHENBURG  
Spring 2017, Spring 2018, Spring 2019, Spring 2020

### Tutorial: GF for Python programmers

*Tutor*

GRAMMATICAL FRAMEWORK SUMMER SCHOOL, RĪGA, LATVIA  
August 2017

### Functional Programming

*Teaching Assistant*

CHALMERS UNIVERSITY OF TECHNOLOGY AND UNIVERSITY OF GOTHENBURG  
Autumn 2016, Autumn 2017, Autumn 2018, Autumn 2019

### Databases

*Teaching Assistant*

CHALMERS UNIVERSITY OF TECHNOLOGY AND UNIVERSITY OF GOTHENBURG  
Autumn 2015, Spring 2016, Autumn 2016, Spring 2017, Autumn 2017, Autumn 2018

### Tutorial: Introduction to Grammatical Framework

*Tutor*

TACoS, GERMAN STUDENT CONFERENCE FOR COMPUTATIONAL LINGUISTICS), MUNICH, GERMANY  
May 2015

### Seminar: Scientific writing in LaTeX

*Tutor*

IT-ZENTRUM DER SPRACH- UND LITERATURWISSENSCHAFTEN, LUDWIG-MAXIMILIANS-UNIVERSITY  
February 2014

### Logic and model-theoretic Semantics

*Teaching Assistant*

CENTRE FOR INFORMATION AND LANGUAGE PROCESSING, LUDWIG-MAXIMILIANS-UNIVERSITY  
MUNICH  
Summer 2012

### Corpus and Unix tools

*Teaching Assistant*

CENTRE FOR INFORMATION AND LANGUAGE PROCESSING, LUDWIG-MAXIMILIANS-UNIVERSITY  
MUNICH  
Summer 2011

## Grants

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- 2015 **Grammatical Framework Summer School, Gozo, Malta,**  
Travel grant, Centre for Language Technology, University of Gothenburg
- 2013 **Grammatical Framework Summer School, Frauenchiemsee, Germany,**  
Travel grant, Volkswagenstiftung
- 2010 **Trinity College, Dublin, Ireland,**  
Erasmus grant, European Union

## Peer Review

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- 2021 **7th International Workshop on Controlled Natural Languages,**
- 2021 **10th Workshop on Natural Language Processing for Computer-Assisted Language Learning,**
- 2021 **8th Swedish Language Technology Conference post-proceedings,**
- 2020 **10th Workshop on Natural Language Processing for Computer-Assisted Language Learning,**
- 2019 **8th Workshop on Natural Language Processing for Computer-Assisted Language Learning,**
- 2018 **5th Workshop on Natural Language Processing Techniques for Educational Applications,**

## Conference Involvement

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|------|--|---------------------------|
| 2020 | <b>9th Workshop on Natural Language Processing for Computer-Assisted Language Learning, Co-Organizer</b>           | <i>Gothenburg, Sweden</i> |
| 2019 | <b>8th Workshop on Natural Language Processing for Computer-Assisted Language Learning, Co-Organizer</b>           | <i>Turku, Finland</i>     |
| 2017 | <b>European Summerschool in Logic, Language and Information Student Session, Co-Chair</b><br>Logic and Computation | <i>Toulouse, France</i>   |

## Other Involvement

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- 2018 – 2020 **Graduate Students' Council, University of Gothenburg,**
- 2016 – 2020 **PhD Council, Department for Computer Science and Engineering, Chalmers University of Technology and University of Gothenburg,**
- 2012 – 2013 **Student Council, Centre for Information and Language Processing, Ludwig-Maximilians-University Munich,**

## Skills

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Five levels: Basic knowledge (1), Basic experience (2), Professional experience (3), Expert (4), Guru (5)

### PROGRAMMING LANGUAGE

**Agda**, Basic knowledge  
**Basic**, Basic experience  
**C/C++**, Basic experience  
**Coq**, Basic knowledge  
**Erlang**, Basic knowledge  
**Grammatical Framework**, Expert  
**Haskell**, Expert  
**HTML/CSS**, Professional Experience  
**Java**, Professional Experience  
**JavaScript**, Professional Experience  
**LISP**, Basic experience  
**Pascal**, Basic experience  
**Perl**, Basic experience  
**Prolog**, Basic experience  
**Python**, Professional Experience  
**Ruby**, Basic knowledge  
**SML**, Basic experience

## OPERATING SYSTEMS

**Atari TOS**, Basic knowledge  
**Gentoo Linux**, Expert  
**BeOS/Haiku**, Basic knowledge  
**FreeBSD/NetBSD**, Basic experience  
**IRIX**, Basic experience  
**MacOS Classic**, Basic experience  
**MacOS X**, Basic experience  
**MS-DOS**, Basic experience  
**OpenVMS**, Basic knowledge  
**OS/2**, Basic knowledge  
**RISC OS**, Basic knowledge  
**Windows**, Professional Experience

## OTHER IT SKILLS

**Constraint Programming**, Basic experience  
**Formal languages**, Professional Experience  
**GNU make**, Basic experience  
**Icinga/Nagios**, Basic experience  
**LaTeX**, Professional Experience  
**Machine Learning**, Basic knowledge  
**MS Office**, Professional Experience  
**Parser combinators**, Professional Experience  
**Property-based Testing**, Professional Experience  
**Software-defined Radio**, Basic experience  
**Databases**, Professional Experience  
**Version control systems**, Professional Experience

## LANGUAGE

**English**, Expert  
**Esperanto**, Basic experience  
**French**, Basic knowledge  
**German**, Expert  
**Irish**, Basic knowledge  
**Italian**, Basic knowledge  
**Latin**, Basic experience  
**Medieval German**, Basic knowledge  
**Spanish**, Basic knowledge  
**Swedisch**, Professional Experience

## COMPUTATIONAL LINGUISTICS

**Controlled Natural Languages**, Expert  
**Discourse Representation Theory**, Basic experience  
**Formal syntax**, Expert  
**Lexikal semantics**, Basic experience  
**Montague grammars**, Professional Experience  
**Resource grammar development**, Guru  
**Universal Dependencies**, Basic experience  
**Typ-theoretic semantics**, Basic experience

## RESEARCH AND GENERIC SKILLS

**Data analysis**, Professional Experience  
**Experimental design in social sciences**, Basic experience  
**Independent work**, Expert  
**Problem solving**, Expert  
**Project management**, Professional Experience  
**Public presentation**, Professional Experience  
**Research**, Expert  
**Research ethics**, Professional Experience  
**Scientific writing**, Expert  
**Teaching**, Professional Experience  
**Team work**, Professional Experience