950 North Pleasant St.
Amherst, MA 01002, USA
+1-413-230-4708
+1-413-545-3616
sebastian.riedel@gmail.com
http://riedelcastro.github.com

Sebastian Riedel

Curriculum Vitae

Education

2004–2009 **Ph.D. in Informatics**, *University of Edinburgh*, Edinburgh, UK.
Natural Language Processing and Machine Learning.

2003–2004 **M.Sc. in Informatics** , *University of Edinburgh*, Edinburgh, UK.
Learning From Data, awarded with distinction.

1997–2003 **Dipl. Ing. Computer Science and Engineering**, *Technical University Hamburg-Harburg*, Hamburg, Germany.
Information Systems, Grade: 1.5 (equivalent to first class honors).

1987–1996 **Abitur**, *Albert-Schweitzer-Gymnasium*, Hamburg, Germany.
Grade: 1.7.

Doctoral Thesis

Title *Efficient Prediction of Relational Structure in Natural Language Processing*

Supervisors Ewan Klein, Miles Osborne.

Committee Pedro Domingos, Mirella Lapata, Ewan Klein.

Description Used Cutting Plane methods and first-order query processing to improve memory and CPU efficiency of MAP Inference for Markov Logic by several orders of magnitude.

Experience

June 2011–current **Research Scientist**, *University of Massachusetts Amherst*, Amherst, USA.
Continuation of my work on information extraction and inference; co-lecturing a class with Andrew McCallum.

2009–2011 **Postdoctoral Research Associate**, *University of Massachusetts Amherst*, Amherst, USA.
Supervised students in Andrew McCallum's absence; work on weakly-supervised information extraction and efficient inference; lead team to rank first in BioNLP Shared Task 2011. Lead UMass Machine Reading team in DARPA project.

2008–2009 **Researcher**, *University of Tokyo*, Tokyo, Japan.
Event Extraction from biomedical literature; lead a team to create an event extraction system based on Markov Logic. This system achieved the best results in the BioNLP Shared Task 2009 (Track 2).

2006 **Visiting Scholar**, *Stanford University*, Palo Alto, USA.
Studied Natural Language Processing in Chris Manning's NLP group.

2001–2002 **Research Intern**, *Siemens Corporate Research*, Princeton, USA.
"Towards marker-less tracking", developed camera pose estimation algorithms in an Augmented Reality scenario.

2000–2001 **Software Engineer**, *infoAsset AG*, Hamburg, Germany.
Design and implementation of a Java web-based assessment software providing support for online design and evaluation of recruitment tests.

1999–2000 **Project Leader**, *Technical University Hamburg-Harburg*, Hamburg, Germany.
Design and implementation of the university's online lecture evaluation system.

1999 **Research Intern**, *Germanischer Lloyd*, Hamburg, Germany.
Developed an object-oriented "pipes and filter" framework and basic components for processing GPS data using Java.

1998 **Research Assistant**, *STS / Technical University Hamburg-Harburg*, Hamburg, Germany.
Developed the graphical user interface of a multimedia information system for Political Iconography in an interdisciplinary project with the Art History department.

Achievements

Fellowships

2008 Conference on Uncertainty in Artificial Intelligence 2008 Student Grant.

2004-2007 Edinburgh-Stanford-Link Studentship.

2004-2007 ESRC PhD. +3 Competition Studentship.

2003-2004 EPSRC MSc. Studentship.

Competitions and Awards

2011 1st place in three BioNLP 2011 shared tasks: "Genia Event Extraction Task 1", "Genia Event Extraction Task 2" and "Infectious Diseases Task."

2010 EMNLP 2010 Best Reviewer Award.

2009 1st place in the BioNLP shared task 2009 (Track 2), and 4th place (Track 1).

2008 2nd place in CoNLL Semantic Role Labeling and Dependency Parsing task 2008, Open Track (Selected for Oral Presentation).

2006 4th place in CoNLL Multilingual Parsing shared task 2006.

2005 1st place in the Learning Language in Logic Competition at ICML 2005, Relation Extraction.

2004 IGK Summer School Best Student Project.

Service

Area Chair

2012 EACL 2012.

Senior Program Committee

2011 IJCAI 2011, AAAI 2011.

Program Committee

2011 ACL, CoNLL, ICML, EMNLP, RELMS, NIPS.

2010 ICML, ACL, CoNLL, Coling, AAAI, EMNLP.

2009 EACL, ICML, EMNLP, CoNLL.

2008 EACL.

2007 EMNLP.

2006 NAACL.

Guest Editor

2012 IEEE Transactions on Pattern Analysis and Machine Intelligence.

2011 Special Issue on Statistical Learning of Natural Language Structured Input and Output at Natural Language Engineering journal (2010-2011).

2011 ACM Transactions on Speech and Language Processing.

Workshop Organizer

2012 Co-organizer of the NAACL/HLT 2012 Automated Knowledgebase Construction (AKBC) workshop.

2011 Co-organizer of the Shonan Computational Thinking workshop.

2009 Co-organizer of the NAACL/HLT 2009 ILP for NLP workshop.

2007 Co-organizer of the CoNLL Shared Task 2007.

Other

2011 Panelist for the Relational Models of Semantics Workshop 2011 at ACL.

2008 Google Summer of Code mentor for the Natural Language Toolkit (NLTK) project.

2006–2008 Organizer for Machine Learning reading group at ICCS, University of Edinburgh.

2006 Student Representative in the Computing Committee of the School of Informatics.

Talks

2011 **Entity and Relation Discovery**, *Google*, New York, USA.
Invited talk at the Knowledge Discovery Workshop.

2011 **Fast and Robust Biomedical Event Extraction**, *University of Illinois Urbana-Champaign*, Urbana-Champaign, USA.
Invited talk at the Computer Science department.

2011 **Fast and Robust Biomedical Event Extraction**, *Nara Institute of Science and Technology*, Nara, Japan.
Invited talk at the Computer Science department.

2011 **Fast and Robust Biomedical Event Extraction**, *Wake Forrest University*, Winston-Salem, USA.
Invited talk at the Computer Science department.

2010 **Modeling Relations and their Mentions without annotated Text**, *University of Tokyo*, Tokyo, Japan.
Invited talk at the Tsujii-Lab.

2010 **Ignorant Inference**, *NTT Communication Science Laboratories*, Kyoto, Japan.
Invited talk at the Linguistic Intelligence Research Group.

2010 **Ignorant Inference**, *Nara Institute of Science and Technology*, Nara, Japan.
Invited talk at the annual Japanese NLP joint meeting.

2010 **Ignorant Inference**, *University of Washington*, Seattle, USA.
Invited talk at the Machine Learning Lunch.

2010 **Factorie**, *SRI International*, Menlo Park, USA.
Invited talk at DARPA ISAT workshop.

2009 **Cutting Plane Inference and Factorie**, *University of Wisconsin, Madison*, Madison, USA.
Invited talks at the Machine Learning group.

2009 **Markov Logic for Natural Language Processing**, *Gakushuin University*, Tokyo, Japan.
Invited talk at the Machine Learning and Natural Language Processing workshop of the SIG Fundamental Problems in AI.

2007 **The Cutting Plane Method for Inference in NLP**, *University of Edinburgh*, Edinburgh, United Kingdom.
Invited talk at the Edinburgh Research Group for Optimization (ERGO) at the School of Mathematics.

2006 **Scaling Up Inference in NLP: Just Relax**, *Stanford University*, Palo Alto, USA.
Invited talk at the NLPLunch at Computer Science department.

Teaching

2011 **Co-lecturer**, *University of Massachusetts Amherst*, Amherst, USA.
Automated Knowledge Base Construction.

2011 **Guest-lecturer**, *University of Massachusetts Amherst*, Amherst, USA.
Graphical Models.

2006 **Teaching Assistant**, *University of Edinburgh*, Edinburgh, UK.
Data Intensive Linguistics.

2005 **Teaching Assistant**, *University of Edinburgh*, Edinburgh, UK.
Introduction to Computational Linguistics.

2003 **Teaching Assistant**, *Technical University Hamburg-Harburg*, Hamburg, Germany.
Foundations and technologies of ECommerce.

2000 **Teaching Assistant**, *Technical University Hamburg-Harburg*, Hamburg, Germany.
Computer Science for Engineers; voted best TA in the department.

Languages

German **Native**

English **Fluent**

Japanese **Intermediate**

Open Source Software

markov thebeast — a Markov Logic interpreter tailored to NLP applications. The software has over 1400 downloads on googlecode, and several exciting research projects rely on it (such as work on temporal reasoning at the University of Rochester, or work on ontology alignment at the University of Mannheim).

What's Wrong with My NLP? — an extensive visualizer for various NLP problems. Used in several university courses on NLP (such as "Current Approaches to Dependency Parsing" at the University of Tuebingen, and "Language Technology" at Lund University).

References

Professor Ewan Klein
School of Informatics
University of Edinburgh
10 Crichton St., Edinburgh EH8 9AB, UK
Phone: +44 131 650 2705
Fax: +44 131 650 6899
Email: ewan@inf.ed.ac.uk

Professor Andrew McCallum
Dept. of Computer Science
University of Massachusetts Amherst
140 Governors Drive, MA 01003, USA
Phone: +1 413 545 1323
Fax: +1 413 545 1789
Email: mccallum@cs.umass.edu

Professor Michael Collins
Dept. of Computer Science
Columbia University
1214 Amsterdam Av., NY 10027, USA
Phone: +1 212 939 7074
Fax: +1 212 666 0140
Email: mcollins@cs.columbia.edu

Professor Dan Roth
Dept. of Computer Science
Univ. of Illinois at Urbana-Champaign
201 N. Goodwin Av., IL 61801, USA
Phone: +1 217 244 7068
Fax: +1 217 333 8183
Email: danr@illinois.edu

Publications

[1] Sebastian Riedel, Rune Saetre, Hong-Woo Chun, Toshihisa Takagi, and Jun'ichi Tsujii. Bio-molecular event extraction with markov logic. *Computational Intelligence*, 27(4), November 2011.

[2] Roman Klinger, Sebastian Riedel, and Andrew McCallum. Inter-event dependencies support event extraction from biomedical literature. In *Mining Complex Entities from Network and Biomedical Data (MIND), Proceedings of the European Conference on Machine Learning and Knowledge Discovery in Databases (ECML PKDD '11)*, September 2011.

[3] Sebastian Riedel and Andrew McCallum. Fast and robust joint models for biomedical event extraction. In *Proceedings of the Conference on Empirical methods in natural language processing (EMNLP '11)*, July 2011.

[4] Sebastian Riedel and Andrew McCallum. Robust biomedical event extraction with dual decomposition and minimal domain adaptation. In *Proceedings of the Natural Language Processing in Biomedicine NAACL 2011 Workshop (BioNLP '11)*, June 2011.

[5] Sebastian Riedel, David McClosky, Mihai Surdeanu, Christopher D. Manning, and Andrew McCallum. Model combination for event extraction in BioNLP 2011. In *Proceedings of the Natural Language Processing in Biomedicine NAACL 2011 Workshop (BioNLP '11)*, June 2011.

[6] Limin Yao, Aria Haghighi, Sebastian Riedel, and Andrew McCallum. Structured relation discovery using generative models. In *Proceedings of the Conference on Empirical methods in natural language processing (EMNLP '11)*, 7 2011.

[7] Sebastian Riedel and David A. Smith. Relaxed marginal inference and its application to dependency parsing. In *Joint Human Language Technology Conference/Annual Meeting of the North American Chapter of the Association for Computational Linguistics (HLT-NAACL '10)*, pages 760–768, Los Angeles, California, June 2010. Association for Computational Linguistics.

[8] Sameer Singh, Limin Yao, Sebastian Riedel, and Andrew McCallum. Constraint-driven rank-based learning for information extraction. In *Joint Human Language Technology Conference/Annual Meeting of the North American Chapter of the Association for Computational Linguistics (HLT-NAACL '10)*, pages 729–732, Los Angeles, California, June 2010. Association for Computational Linguistics.

[9] Sebastian Riedel. Declarative probabilistic programming for undirected models: Open up to scale up. In *Statistical Relational AI workshop at AAAI '10 (starAI '10)*, 2010.

[10] Sebastian Riedel, David Smith, and Andrew McCallum. Inference by minimizing size, divergence, or their sum. In *Proceedings of the 26th Annual Conference on Uncertainty in AI (UAI '10)*, 2010.

[11] Sebastian Riedel, Limin Yao, and Andrew McCallum. Modeling relations and their mentions without labeled text. In *Proceedings of the European Conference*

on Machine Learning and Knowledge Discovery in Databases (ECML PKDD '10), 2010.

[12] Limin Yao, Sebastian Riedel, and Andrew McCallum. Collective cross-document relation extraction without labelled data. In *Proceedings of the Conference on Empirical methods in natural language processing (EMNLP '10)*, 2010.

[13] Katsumasa Yoshikawa, Sebastian Riedel, Tsutomu Hirao, Masayuki Asahara, and Yuji Matsumoto. Coreference based event-argument relation extraction on biomedical text. In *Proceedings of the Fourth International Symposium on Semantic Mining in Biomedicine (SMBM' 10)*, 2010.

[14] Katsumasa Yoshikawa, Sebastian Riedel, Masayuki Asahara, and Yuji Matsumoto. Jointly identifying temporal relations with markov logic. In *Proceedings of the Joint Conference of the 47th Annual Meeting of the ACL and the 4th International Joint Conference on Natural Language Processing of the AFNLP (ACL '09)*, pages 405–413, Suntec, Singapore, August 2009. Association for Computational Linguistics.

[15] Ivan Meza-Ruiz and Sebastian Riedel. Jointly identifying predicates, arguments and senses using markov logic. In *Joint Human Language Technology Conference/Annual Meeting of the North American Chapter of the Association for Computational Linguistics (HLT-NAACL '09)*, 2009.

[16] Sebastian Riedel. Cutting plane map inference for markov logic. In *SRL 2009*, 2009.

[17] Sebastian Riedel. *Efficient Prediction of Relational Structure and its Application to Natural Language Processing*. PhD thesis, University of Edinburgh, 2009.

[18] Sebastian Riedel, Hong-Woo Chun, Toshihisa Takagi, and Jun'ichi Tsujii. A markov logic approach to bio-molecular event extraction. In *Proceedings of the Natural Language Processing in Biomedicine NAACL 2009 Workshop (BioNLP '09)*, pages 41–49, 2009.

[19] Sebastian Riedel and James Clarke. Revisiting optimal decoding for machine translation ibm model 4. In *Joint Human Language Technology Conference/Annual Meeting of the North American Chapter of the Association for Computational Linguistics (HLT-NAACL '09)*, pages 5–8, Morristown, NJ, USA, 2009. Association for Computational Linguistics.

[20] Ivan Meza-Ruiz, Sebastian Riedel, and Oliver Lemon. Spoken language understanding in dialogue systems, using a 2-layer markov logic network: improving semantic accuracy. Late Breaking Abstracts of Londial '08: Workshop on the semantics and pragmatics of dialogue, 2008.

[21] Ivan Vladimir Meza-Ruiz, Sebastian Riedel, and Oliver Lemon. Accurate statistical spoken language understanding from limited development resources. In *Proceedings of 2008 IEEE International Conference on Acoustics, Speech, and Signal Processing (ICASSP '08)*, pages 5021–5024, 2008.

[22] Sebastian Riedel. Improving the accuracy and efficiency of MAP inference for markov logic. In *Proceedings of the 24th Annual Conference on Uncertainty in AI (UAI '08)*, pages 468–475, 2008.

[23] Sebastian Riedel and Ivan Meza-Ruiz. Collective semantic role labelling with markov logic. In *Proceedings of the 12th Conference on Computational Natural Language Learning (CoNLL' 08)*, pages 193–197, 2008.

[24] J. Nivre, J. Hall, S. Kubler, R. McDonald, J. Nilsson, S. Riedel, and D. Yuret. The conll 2007 shared task on dependency parsing. In *Conference on Empirical Methods in Natural Language Processing and Natural Language Learning*, pages 915—932, 2007.

[25] Sebastian Riedel, Ruken Cakeci, and Ivan Meza-Ruiz. Multi-lingual dependency parsing with incremental integer linear programming. In *Proceedings of CoNLL-2006*, pages 226–230, 2006.

[26] Sebastian Riedel and James Clarke. Incremental integer linear programming for non-projective dependency parsing. In *Proceedings of the Conference on Empirical methods in natural language processing (EMNLP '06)*, pages 129–137, 2006.

[27] Sebastian Riedel and Ewan Klein. Genic interaction extraction with semantic and syntactic chains. In *Learning Language in Logic Workshop, ICML 2005*, pages 69–74, 2005.

[28] Claire Grover, Harry Halpin, Ewan Klein, Jochen L. Leidner, Stephen Potter, Sebastian Riedel, Sally Scrutchin, and Richard Tobin. A framework for text mining services. In Simon J. Cox, editor, *Proceedings of the UK e-Science Programme All Hands Meeting 2004 (AHM 2004)*, pages 878–885, Nottingham, UK, 2004.

[29] Vanda Lehel, Florian Matthes, and Sebastian Riedel. Linkage flooding: Ein algorithmus zur dateninhaltsorientierten fusion in vernetzten informationsbeständen. In *GI Jahrestagung (1)*, pages 346–350, 2004.

[30] Sebastian Riedel. Towards structural evolution of classification workflows. Master's thesis, University of Edinburgh, 2004.

[31] Sebastian Riedel. Entwicklung eines modells, verfahrens und softwaretechnischen rahmenwerks für record linkage in semantischen netzen. Master's thesis, Technische Universitaet Hamburg-Harburg, 2003.

[32] Y. Genc, S. Riedel, F. Souvannavong, C. Akinlar, and N. Navab. Marker-less tracking for ar: A learning-based approach. In *ISMAR '02: Proceedings of the International Symposium on Mixed and Augmented Reality (ISMAR'02)*, pages 295–304, Washington, DC, USA, 2002. IEEE Computer Society.