

## Dr. Jan W. Amtrup

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### PROFILE

Principal scientist and research manager with over 15 years of experience in research and development in computational linguistics with focus in the areas of **machine translation**, **spoken language processing**, and **machine learning approaches**. Expertise includes system architecture, algorithms design and implementation, formalisms, prototyping, and technology transfer. Experienced research manager in organizational and operational aspects. Expert in technology transfer to turn new scientific approaches into products.

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### EMPLOYMENT HISTORY

June 2005 to present	<b><i>Research Operations Manager, Senior Advisory Engineer</i></b> Kofax Image Products Responsible for the day-to-day operations of the research group at Kofax, including staffing, research planning, internal and external outreach. Successfully led and participated in various research projects in the areas of statistical classification and information extraction. Led technology transfer projects that resulted in substantial cost savings and products yielding multi-million dollar sales. Participated as product owner in the commercial exploitation of research efforts. Co-author of two patent applications.	<b>Kofax</b>
June 2004 to May 2005	<b><i>Senior Principal Software Engineer</i></b> Kofax Image Products Participated in various research projects for Kofax in the areas of statistical classification, data visualization, and information extraction. Demonstrated research results within the company. Participated in the establishment of a dedicated research group for Kofax.	<b>Kofax</b>
August 2000 to May 2004	<b><i>Principal Software Engineer</i></b> Bowne Global Solutions Participated in the design and development of a new generation machine translation system. Led research and engineering projects for the development of new products and incremental improvement of existing products. Published research findings in scientific publications. Led projects to improve software engineering processes.	<b><i>Bowne Global</i></b>
April 1998 to July 2000	<b><i>Computer Specialist</i></b> Computing Research Laboratory (CRL), New Mexico State University, Las Cruces, NM Participated in the design and development of a Persian-English Machine Translation System. Responsible for the software architecture and large portions of the scientific code. Participated in other active projects, e.g. for the rapid development of morphological analysis systems. Published research findings in scientific publications.	<b><i>CRL</i></b>
July 1993 to March 1998	<b><i>Staff Scientist and Lecturer</i></b> Computer Science Department, University of Hamburg, Germany Participated in a large, federally funded research project for a translation system for spoken language. Responsible for the architecture of an advanced translation prototype. Responsible for the communication architecture and communication software of the main demonstrator that integrated more than 30 modules. Led lab courses for students of Computer Science. Taught seminars for Computer Science students. Supervised diploma theses. Published research findings in scientific publications.	<b><i>Hamburg University</i></b>
1985 to 1998	<b><i>Self-employed consultant</i></b> Hamburg, Germany	

Provided consulting and development services to small to mid-sized companies in the areas of bookkeeping, logistics, and administration.

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## EDUCATION

- 1998      **Dr. rer nat (Ph.D.) in Computer Science**      University of Hamburg, Germany  
Specialization: Machine Translation of spoken language, linguistics formalisms, architecture and parallel processing, graph theory.  
**Dissertation title:** *Maschinelles Dolmetschen mit Mehr-Ebenen Charts*.  
Published as *Incremental Machine Translation* by Springer in the LNAI series.  
Grade: Excellent (Summa cum laude), nominated for the dissertation award of the German Computer Science Association (GI).
- 1993      **Diplom (M.Sc.) in Computer Science**      University of Hamburg, Germany  
Specialization: Parallel Parsing, Transputers.  
**Thesis title:** *Parallele Strukturanalyse Natürlicher Sprache mit Transputern (Parallel Parsing of Natural Language with Transputers)*  
Grade: Excellent

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## LANGUAGES

Native speaker of German. Fluent in English.

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## SKILLS

- Expertise in all areas of Computational Linguistics. Expert in linguistics formalisms, system architecture, graph-theoretic approaches to Natural Language Processing.
- Expert in C++, C#, Java, Perl. Expertise in other major programming languages, databases, system administration.
- Experience in Agile Software Development (e.g. Scrum)
- Expert in Prototyping, in particular for the demonstration of new technologies.
- Expertise in software development and research management.
- Experience in computational linguistics applied to low density languages, e.g. Persian.

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## PROFESSIONAL ACTIVITIES AND MEMBERSHIPS

- Member of the Association for Computational Linguistics (ACL).
- Occasional reviewer for conferences and journals.
- Organized and led a reading group on computational linguistics at UCSD.

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## PUBLICATIONS

### Book

Jan W. Amtrup (1999)  
*Incremental Speech Translation*. Springer Verlag, Berlin, Heidelberg, New York. Number 1735 in Lecture Notes in Artificial Intelligence. 1999

### PhD Thesis

Jan W. Amtrup (1998)  
*Maschinelles Dolmetschen mit Mehr-Ebenen-Charts* (Machine Interpreting with Multi-Layered Charts). PhD thesis. Universität Hamburg. 1998.

### Book Contributions

Jan W. Amtrup (2009)  
Aspekte der Computerlinguistik. In K.-U. Carstensen, C. Ebert, C. Endriss, S Jekat, R Klabunde and H. Langer (eds.), *Computerlinguistik und Sprachtechnologie: Eine Einfuehrung, 3. Auflage*. Spektrum, Heidelberg, 2001.

Mauritius A.R. Schmidtler and Jan W. Amtrup (2007)  
Automatic Document Separation: A Combination of Probabilistic Classification and Finite-State Sequence Modeling. In A. Kao and S.R. Poteet (eds.), *Natural Language Processing and Text Mining*, pp. 123-144, Springer-Verlag London, 2007

Jan W. Amtrup (2003)  
Speech Recognition and Understanding. In Ali Farghaly (ed.), *A Handbook for Language Engineers*. Chapter 9, pp. 367-418. CSLI Publications, Stanford, CA, 2003.

Jan W. Amtrup (2001)  
Aspekte der Computerlinguistik. In K.-U. Carstensen, C. Ebert, C. Endriss, S Jekat, R Klabunde and H. Langer (eds.), *Computerlinguistik und Sprachtechnologie: Eine Einfuehrung*. pp. 10-23. Spektrum, Heidelberg, 2001.

Jan W. Amtrup (1999)  
Maschinelles Dolmetschen mit Mehr-Ebenen Charts. In *Ausgezeichnete Informatik-Dissertationen*. pp. 9-18. Teubner, Stuttgart, Leipzig, 1999.

Jan W. Amtrup (1997)  
Perspectives for Incremental MT with Charts. In C. Hauenschild and S. Heizmann (eds.), *Machine Translation and Translation Theory. Perspectives of Co-operation*. Text, Translation, Computational Processing (TTCP), number 1. Mouton de Gruyter, 1997.

### Journal Articles

Jan W. Amtrup (2003)  
"Morphology in Machine Translation Systems: Efficient Integration of Finite State Transducers and Feature Structure Descriptions." *Machine Translation* 18(3), pp. 217-238, 2003.

Hans H. Weber, Jan W. Amtrup and Jörg Spilker (1997)  
"Innovative Systemarchitekturen zur Inkrementellen Interaktiven Verarbeitung." *Künstliche Intelligenz* 11(4):26-30. December 1997

## Conference Proceedings

- Jan W. Amtrup (2003)  
"Feature Structures as Weights in Finite State Morphology." In Proceedings of the Workshop on Finite State Methods in Natural Language Processing. Budapest, Hungary. April 2003
- Daniel J. Walker, David E. Clements, Maki Darwin and Jan W. Amtrup (2001)  
"Sentence Boundary Detection: A Comparison of Paradigms For Improving MT Quality." In Proceedings MT Summit VIII. Santiago de Compostela, Spain. 2001
- Jan W. Amtrup (2000)  
"Hypergraph Unification-Based Parsing for Incremental Speech Processing." In Proc. Sixth International Workshop on Parsing Technologies. Trento, Italy. February 2000
- Remi Zajac and Jan W. Amtrup (2000)  
"Modular Unification-Based Parsers." In Proc. Sixth International Workshop on Parsing Technologies. Trento, Italy. February 2000
- Jan W. Amtrup, Karine Megerdoomian and Remi Zajac (2000)  
"Rapid Development of Translation Tools: Application to Persian and Turkish." In Proc. of the 18th COLING. Saarbruecken, Germany. 2000
- Jan W. Amtrup, Karine Megerdoomian and Remi Zajac (1999)  
"Rapid Development of Translation Tools" In Proceedings of the Machine Translation Summit VII. Singapore. September 1999
- Remi Zajac, Malek Boualem and Jan W. Amtrup (1999)  
"Specification and Implementation of Input Methods Using Finite-State Transducers." In Fourteenth International Unicode Conference. Boston, MA. March 1999
- Jan W. Amtrup (1998)  
"Incremental Speech Translation: A Layered Chart Approach." In 28. Jahrestagung der Gesellschaft für Informatik. Magdeburg. September 1998
- Jan W. Amtrup and Volker Weber (1998)  
"Time Mapping with Hypergraphs." In Proc. of the 17th COLING. Montreal, Canada. 1998
- Jan W. Amtrup, Henrik Heine and Uwe Jost (1997)  
"What's in a Word Graph --- Evaluation and Enhancement of Word Lattices." In Proc. of Eurospeech 1997. Rhodes, Greece. September 1997
- Jan W. Amtrup (1997)  
"ICE: A Communication Environment for Natural Language Processing." In Proceedings of the International Conference on Parallel and Distributed Processing Techniques and Applications (PDPTA97). Las Vegas, NV. July 1997
- Jan W. Amtrup (1997)  
"Layered Charts for Speech Translation." In Proceedings of the Seventh International Conference on Theoretical and Methodological Issues in Machine Translation, TMI '97. Santa Fe, NM. July 1997
- Walther v. Hahn and Jan W. Amtrup (1996)  
"Speech-to-Speech Translation: The Project Verbmobil." In Proceedings of SPECOM 96. pp. 51-56. St. Petersburg. October 1996

- Alexandra Klein, Susanne J. Jekat and Jan W. Amtrup (1996)  
 "Inkrementelle und erwartungsgesteuerte Verarbeitung beim Maschinellen Dolmetschen." In Proceedings der zweiten Fachtagung der Gesellschaft für Kognitionswissenschaft. pp. 68-70. Hamburg. March 1996
- Jan W. Amtrup and Jörg Benra (1996)  
 "Communication in Large Distributed AI Systems for Natural Language Processing." In Proc. of the 16th COLING. pp. 35-40. Center for Sprogteknologi. Copenhagen, Denmark. August 1996
- Jan W. Amtrup (1995)  
 "Parallel Parsing: Different Distribution Schemata for Charts." In Proceedings of the 4th International Workshop on Parsing Technologies (IWPT95). pp. 12-13. Charles University, Prague. September 1995
- Jan W. Amtrup and Susanne J. Jekat (1995)  
 "Segmentation of Spoken Language for NLP." In KI95-Activities: Workshops, Posters, Demos. pp. 298-299. Bielefeld. September 1995
- Jan W. Amtrup (1995)  
 "Chart-based Incremental Transfer in Machine Translation." In Proceedings of the Sixth International Conference on Theoretical and Methodological Issues in Machine Translation, TMI '95. pp. 188-195. Leuven, Belgium. July 1995
- Jan W. Amtrup (1994)  
 "Using Charts for Transfer in MT." In KI-94. p. 391. Saarbrücken. September 1994
- Jan W. Amtrup, Andreas Hauenstein, Claudius Pyka, Volker Weber and Stefan Wermter (1994)  
 "An Outline of the Verbmobil Project with Focus on the Work at the University of Hamburg." In P. McKeivitt (ed.), Proceedings of the AAI-94 Workshop on Integration of Natural Language and Speech Processing. Seattle, WA. 1994

### **Technical Reports**

- Jan W. Amtrup, Hamid Mansouri Rad, Karine Megerdoomian and Remi Zajac (2000)  
 "Persian-English Machine Translation: An Overview of the Shiraz Project." Memoranda in Computer and Cognitive Science MCCS-00-319. Computing Research Laboratory. New Mexico State University, Las Cruces, NM.
- Wolfgang Menzel and Jan W. Amtrup (1998)  
 "Werkzeuge, Modelle und Problemlösungen." Mitteilung 280. University of Hamburg. Hamburg, Germany.
- Jan W. Amtrup, Henrik Heine and Uwe Jost (1996)  
 "What's in a Word Graph --- Evaluation and Enhancement of Word Lattices." Verbmobil Report 186. Univ. of Hamburg. Hamburg.
- Jan W. Amtrup (1994)  
 "Transfer and Architecture: Views from Chart Parsing." Verbmobil Report 8. Univ. of Hamburg.
- Jan W. Amtrup (1992)  
 "Parallele Strukturanalyse Natürlicher Sprache mit Transputern." ASL-TR 44-92/UHH. Univ. of Hamburg.

## **Unpublished Papers and Manuscripts**

Jan W. Amtrup (1995)

"ICE--Intarc Communication Environment: User's Guide and Reference Manual. Version 1.4." Verbmobil Technical Document 14. Univ. of Hamburg.

Jan W. Amtrup (1994)

"ICE--Intarc Communication Environment: Design und Spezifikation." Verbmobil Memo 48. Univ. of Hamburg.

Marko Auerswald and Jan W. Amtrup (1994)

"Kommunikationsarchitektur für den Demonstrator." Verbmobil Technical Document 15. DFKI Kaiserslautern, Univ. of Hamburg.

Jan W. Amtrup (1990)

"POP: Ein Paralleler, Objekt-Orientierter Chart-Parser." Unveröff. Studienarbeit . Univ. of Hamburg.