

Mathias Niepert

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Education

Ph.D. Computer Science, Indiana University Bloomington, USA, 2009 (expected)
Minors: Mathematics and Artificial Intelligence
Advisor: Professor Dirk Van Gucht

Graduate Studies in Computer and Cognitive Science, University of Freiburg, Germany, 2002–2004

Vordiplom (B.S. equiv.) Computer Science, Clausthal University of Technology, Germany, 2002
(*“Sehr Gut”, best possible grade*)

Research Interests

Artificial Intelligence, Data Mining, Machine Learning, Reasoning under Uncertainty, Formal Ontologies, Ontology Learning and Population, Answer Set Programming, Database Theory.

Research and Professional Experience

Visitor

Professor Marc Gyssens

Visit of the Theoretical Computer Science Group at Hasselt University & Transnational University of Limburg in Belgium to work on my research project with Professor Marc Gyssens.

September–October 2008

Hasselt University, Belgium

Visitor

Dr. Edward N. Zalta

Worked on the Indiana Philosophy Ontology project and the introduction of some of its components to the Stanford Encyclopedia of Philosophy management system. Implemented cross-referencing engine and developed the InPhO taxonomy search interface.

July 2008

CSLI, Stanford University

Research Assistant

Professor Colin Allen

Developed the Indiana Philosophy Ontology project in collaboration with philosophers and cognitive scientists, had responsibility for most computer science related aspects of the system, wrote research papers, and participated in writing grant applications for funding agencies NEH and NSF.

2006–2008

Cognitive Science Program, Indiana University

Graduate Student Researcher

Professor Dirk Van Gucht

Under the supervision of Professor Dirk Van Gucht, I developed a theoretical framework that unifies several implication problems occurring in data mining, uncertain reasoning, and game theory. It involves methods from mathematical logic, probability theory, and lattice theory.

2005–2008

Dept. of Computer Science, Indiana University

Software Developer

Professor Katy Börner

Designed and implemented user interfaces and databases for a novel lab management system with visualization capabilities at the Cyberinfrastructure for Network Science Center, Indiana University, under the supervision of Associate Professor Katy Börner.

Summer 2007

Cyberinfrastructure for Network Science Center

Undergraduate Research Assistant 2003–2004
Fraunhofer Institute for Solid-State Physics Freiburg, Germany
Programmed lab equipment for experiments, employed AI algorithms to optimize the mounting of optical fibers to network hardware components, and gathered, stored, and explored experiment data in collaboration with a team of physicists.

Software Developer 2000–2008
Friedrichstift Leimen Heidelberg, Germany
I had the responsibility for the IT infrastructure of the institution with 40 employees. Installed and maintained the intranet and developed software for the company’s website and its management.

Emergency Medical Technician 1999–2000
Red Cross Heidelberg Heidelberg, Germany

Teaching Experience

Associate Instructor, Theory of Computation, Indiana University Fall 2005
Associate Instructor, Algorithm Design and Analysis, Indiana University Spring 2006
Associate Instructor, Advanced Database Concepts, Indiana University Fall 2007
Associate Instructor, Discrete Mathematics for Computer Science, Indiana University Spring 2008
Guest Lecturer for classes *Computer Structures* and *Data Mining*, Indiana University 2008

Selected Publications

REFEREED CONFERENCE & WORKSHOP PUBLICATIONS

6. Mathias Niepert, Dirk Van Gucht, and Marc Gyssens. **On Implication Problems for Disjunctive Statements.** *submitted.*
5. Mathias Niepert and Dirk Van Gucht. **Logical Properties of Stable Conditional Independence.** In *Proceedings of the 4th European Workshop on Probabilistic Graphical Models*, Hirtshals, Denmark, pages 225–232, 2008. (selected for plenary presentation)
4. Mathias Niepert, Dirk Van Gucht, and Marc Gyssens. **On the Conditional Independence Implication Problem: A Lattice-Theoretic Approach.** In *Proceedings of the 24th Conference on Uncertainty in Artificial Intelligence*, Helsinki, Finland, pages 435–443, AUA Press, 2008. (**best student paper runner-up award**; extended version will be submitted to the journal *Artificial Intelligence* following an invitation)
3. Mathias Niepert, Cameron Buckner, Jaimie Murdock, and Colin Allen. **InPhO: A System for Collaboratively Populating and Extending a Dynamic Ontology.** (*demo abstract*). In *Proceedings of the 8th IEEE/ACM Joint Conference on Digital Libraries*, 2008, Pittsburgh, Pennsylvania, 429, ACM Press, 2008.
2. Mathias Niepert, Cameron Buckner, and Colin Allen. **Answer Set Programming on Expert Feedback to Populate and Extend Dynamic Ontologies.** In *Proceedings of the 21st International FLAIRS Conference*, Coconut Grove, Florida, pages 500–505, AAAI Press, 2008.
1. Mathias Niepert, Cameron Buckner, and Colin Allen. **A Dynamic Ontology for a Dynamic Reference Work.** In *Proceedings of the 7th IEEE/ACM Joint Conference on Digital Libraries*, Vancouver, British Columbia, pages 288–297, ACM Press, 2007.

REFEREED JOURNAL PUBLICATIONS

4. Mathias Niepert, Dirk Van Gucht, and Marc Gyssens. **On the Conditional Independence Implication Problem: A Lattice-Theoretic Approach.** (in preparation)
3. Mathias Niepert, Dirk Van Gucht, and Marc Gyssens. **Logical and Algorithmic Properties of Stable Conditional Independence.** *International Journal of Approximate Reasoning*, Elsevier, 2009. (best papers from the European Workshop on Probabilistic Graphical Models, forthcoming).
2. Cameron Buckner, Mathias Niepert, and Colin Allen. **Taxonomizing Ideas: A Dynamic Ontology for the Discipline of Philosophy.** In a special issue of *Synthese*, Springer-Verlag, 2009 (forthcoming)
1. Colin Allen, Cameron Buckner, and Mathias Niepert. **The World is Not Flat: Expertise and InPhO.** Selected papers from the Ninth Annual WebWise Conference. *First Monday*, Volume 13, Number 8, 2008.

MISCELLANEOUS PUBLICATIONS

1. Cameron Buckner, Mathias Niepert, and Colin Allen. **InPhO: The Indiana Philosophy Ontology.** *APA Newsletter on Philosophy and Computers*, Volume 7, Number 1, 26-28, 2007.

SOFTWARE

1. **TCEJ – Text Classification Environment in Java.** A graphical environment for conducting text classification experiments. Users can load several different text corpora, weighting functions, dimensionality reduction policies, and classifiers. 2005. <http://tcej.matlog.net>

Awards and Honors

Best student paper runner-up award, Conference on Uncertainty in AI	2008
Indiana University Office of International Services Scholarship	2008
Travel Grant from the Association for Uncertainty in Artificial Intelligence	2008
School of Informatics Paul W. Purdom Fellowship (awarded annually to one student)	2008–2009
NEH Digital Humanities Start-Up Grant, with Colin Allen (PI)	2007–2008
Funding for Conference Travel, Computer Science Department	2008
Funding for Conference Travel, Cognitive Science Program	2007
IU New Frontiers in the Arts and Humanities Grant, with Colin Allen (PI)	2006–2007
Indiana University Graduate Fellowship	2004–2005

Conference Presentations & Invited Talks

Logical Properties of Stable Conditional Independence. Data and Search Institute Seminar, Indiana University, November 19th, 2008.

Logical Properties of Stable Conditional Independence. Workshop on Probabilistic Graphical Models, Hirtshals, Denmark, September 17th, 2008.

On the Conditional Independence Implication Problem: A Lattice-Theoretic Approach. Conference on Uncertainty in Artificial Intelligence, Helsinki, Finland, July 12th, 2008.

Answer Set Programming on Expert Feedback to Populate and Extend Dynamic Ontologies. International FLAIRS Conference, Coconut Grove, Florida, May 17th, 2008.

The Implication Problem for Disjunctive Statements. Research Seminar in Databases and Data Mining, Indiana University, September 24, 2007.

A Dynamic Ontology for a Dynamic Reference Work. *North American Computers and Philosophy (NA-CAP) Conference*, Loyola University, Chicago, July 28, 2007.

A Dynamic Ontology for a Dynamic Reference Work. *IEEE/ACM Joint Conference on Digital Libraries*, Vancouver, Canada, June 22, 2007.

Combining Statistical Language Processing and Defeasible Reasoning for Collaborative Ontology Learning. *Research Seminar in Databases and Datamining*, Indiana University, March 5, 2007.

Ontology Learning and Population from Text. *Research Seminar in Databases and Datamining*, Indiana University, February 13, 2006.

Professional Service and Associations

Member of the Association for Computing Machinery	2007, 2008
Reviewer, Symposium on Principles of Database Systems (PODS)	2009
Reviewer, Foundations of Information and Knowledge Systems (FoIKS)	2008
Conference Volunteer, ACM/IEEE Joint Conference on Digital Libraries	2008
Moderator and organizer, Informatics/Computer Science Graduate Poster Session	2008
Volunteer Tutor, University of Freiburg, Germany	2003, 2004
Volunteer Tutor, Clausthal University of Technology, Germany (<i>Volunteered to tutor international students in Mathematics and Computer Science</i>)	2001, 2002

References

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Colin Allen

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Marc Gyssens

Professor
Dept. Wiskunde, Natuurkunde en Informatica
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Transnational University of Limburg
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