

Curriculum Vitae Marc Denecker

General

Citizenship: Belgium

Date of birth: 6 may, 1961

Work address:

Departement Computerwetenschappen

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Current Research Interests

Research topics are:

- Logics: classical logic, extensions with inductive definitions (id-logic), nonmonotonic logics (default logic, autoepistemic logic), logic programming, answer set programming, abductive logic programming
- Epistemological and semantical foundations and theory of these logics
- Knowledge representation in logic: theory, methodology, application to temporal reasoning
- Inference in logic: deduction, abduction, model generation and model expansion, SAT and extensions of SAT with inductive definitions
- Logical knowledge bases: declarative problem solving, theory of ontology, knowledge and data integration in distributed data bases and semantic web, data bases with incomplete knowledge (Local Closed world assumption), paraconsistent reasoning and consistency repair in inconsistent data bases
- Epistemic logics and its application to nonmonotonic inference in natural language: implicatures

Education

- PhD in Informatics, "*Knowledge Representation in Incomplete Logic Programming*", summa cum laude, Sept. 1993
- Aanvullende licentie Informatica (Additional Degree in Informatics) K.U.Leuven, magna cum laude, Sept. 1987
- Licentiaat Wiskunde (Master Mathematics), K.U.Leuven, magna cum laude, July 1983.

Professional Experience

- 1/10/2002-present: Hoofddocent (Assistant Professor), Department of Computer Science, K.U.Leuven.
- 1/10/2002 - 31/8/2003: Chargé de cours à temps partiel (Part-time Assistant Professor), Department d'Informatique, Université Libre de Bruxelles (ULB).
- 1/3/2002 - 1/10/2002: Chargé de cours (Assistant Professor), Department d'Informatique, Université Libre de Bruxelles (ULB).
- 1/10/2000 - 28/2/2002: Part-time Assistant Professor, Department of Computer Science, K.U.Leuven,
- 1994 - 1/3/2002: Research Scientist, Department of Computer Science, K.U.Leuven
- 1987 - 1993: Doctoral student, Department of Computer Science, K.U.Leuven

Professional Activities

Teaching

- 2007-now: G0B23A : Modelling van complexe systemen, Master of Informatics.
- 2006-2007: H05N0A Capita Selecta Programmatuur: Formeel modelleren van complexe systemen, Master in Computer Science.
- 2003-now: H02C3A Knowledge Representation, Master of Artificial Intelligence, K.U.Leuven.
- 2001-2003: INFO139 Génie logiciel (Software Engineering) Master Informatics, Master Computer Science, U.L.Bruxelles.
- 2001-2003: INFO152 Développement de Systèmes Distribués (Development of Distributed Systems) (software Engineering) Master Informatics, Master Computer Science, U.L.Bruxelles.
- 2000-2002: HD348 Capita Selecta programmatuur on AI-planning, Master informatics, Master Computer Science, K.U.Leuven.

Program Committee Member

- IJCAI 2011, Twenty-second International Joint Conference on Artificial Intelligence, Barcelona, July 16-22, 2011.
- LPNMR 2011, 11th International Conference on Logic Programming and Nonmonotonic Reasoning Logic Programming and Nonmonotonic Reasoning, Vancouver, May 16-19, 2011. Edinburgh, UK, July 16-19, 2011.
- AAAI 2011, San Francisco, August 7-11, 2011.
- ICLP 2011, 27th International Conference on Logic Programming, Lexington Kentucky, July 6-10, 2011.
- JELIA 2010, 12th European Conference on Logics in Artificial Intelligence, September 13-15, 2010, Helsinki, Finland.
- LaSh 2010, 3rd International Workshop on Logic and Search, A satellite workshop of FloC 2010, July 15, 2010, Edinburgh, UK, Co-Sponsored by SAT10 and ICLP10.
- LID 2009, International Workshop on Logic in Databases Roskilde University, Denmark, 29-30 October 2009.
- LPNMR-09, Logic Programming and Nonmonotonic Reasoning, Sept 14-18, 2009, Potsdam, Germany.
- IJCAI-09, International Joint Conference on Artificial Intelligence, July 11-17, 2009, Pasadena, California, USA.
- AAAI-08, Twenty-Third AAAI Conference on Artificial Intelligence, July 13-17, 2008, Chicago, Illinois.
- KR 2008, International Conference on Principles of Knowledge Representation and Reasoning KR 2008, Sept. 16-19, Sydney, Australia.
- AAAI-07, Twenty-Second AAAI Conference on Artificial Intelligence, July 22-26, 2007, Vancouver, Canada.
- BNAIC 2007, Belgian Netherland Conference on Artificial Intelligence, November, 5-6, Utrecht, the Netherlands.
- LPNMR 2007, Logic Programming and Nonmonotonic Reasoning, May 14-16, 2007, Tempe, US.
- AMAI, Special issue of Annals of Mathematics and Artificial Intelligence (AMAI) on Answer Set Programming, 2006.
- ECAI 2006, European conference on AI, August 28/8 - 1/9, 2006, Riva del Garda.
- BNAIC 2006, Belgian Netherland Conference on Artificial Intelligence, October 5-6, 2006, Namen, Belgium.
- NMR 2006, Answer Set Programming at Nonmonotonic Reasoning Workshop, May 30/5-1/6, 2006, Lake District, Great Britain.
- NMR 2006, Theory of NMR and Uncertainty at Nonmonotonic Reasoning Workshop, May 30/5-1/6, 2006, Lake District, Great Britain.
- WLP 2006, 20th Workshop on Logic Programming, Feb 22 - 24, 2006, Vienna, Austria.
- BNAIC 2005, Belgian Netherland Conference on Artificial Intelligence, Oct 17-18, 2005, Brussels, Belgium.
- IJCAI 2005, Nineteenth International Joint Conference on Artificial Intelligence, reviewer, July 31 - Aug 5, 2005 Edinburgh.

- BNAIC 2004, Belgian Netherland Conference on Artificial Intelligence, Oct 21-22, 2004, Groningen, The Netherlands.
- AAAI 2004, The Nineteenth National Conference on Artificial Intelligence, , July 25-29, 2004, San Jose, California.
- NMR 2004, The International Workshop on Non-Monotonic Reasoning , June 6-8, 2004, Whistler, Canada.
- BNAIC 2003, Belgian Netherland Conference on Artificial Intelligence, October 23-24, 2003, Nijmegen, The Netherlands.
- NMR 2002, 9th Intl. Workshop on Non-Monotonic Reasoning, special session on Answer Set Programming and Abductive Reasoning, April 19-21, 2002, Toulouse, France.
- LPNMR 2001, Sixth International Conference on Logic Programming and Non-Monotonic Reasoning, September 2001, Vienna.
- NMR 2000, 8th Nonmonotonic Reasoning Workshop, April 9-11, Breckenridge Resort, Colorado.
- TIME '2000, 7th International Workshop on Temporal Representation and Reasoning, Florida, USA, July 7-9 2000.
- TIME '99, 6th International Workshop on Temporal Representation and Reasoning, Florida, USA, 1999.
- TIME '98, 5th International Workshop on Temporal Representation and Reasoning, Florida, USA, 1998.
- International workshop "Reasoning about Actions and Planning in Complex Environments", an international workshop in collaboration met FAPR-96 ("International Conference on Formal and Applied Practical Reasoning"), 1996.
- TIME '96, 3rd International Workshop on Temporal Representation and Reasoning, Florida, USA.
- International ICLP95 Workshop on Abduction in Deductive Databases and Knowledge-based systems, Japan, June 1995.

Organisation of scientific events

- Symposium "PhDs in Logic III", Brussels, February 17 – 18, 2011 (with Lorenz Demey, Jonas De Vuyst, Jean Paul Van Bendegem), <http://www.vub.ac.be/phdsinlogic2011/>
- Workshop Declarative Programming and Systems, subworkshop of 13th international workshop on Non-Monotonic Reasoning, May 14-16, 2010, Sutton Place, Toronto, Canada, http://www.cs.sfu.ca/NMR2010/NMR_2010/Declarative_Programming_for_NMR.html.
- ASP competition 2009, an international model and solving competition for Answer Set Programming solvers, linked to LPNMR-09, <http://www.cs.kuleuven.be/~dtai/events/ASP-competition>.
- Workshop "LaSh08: Search and Logic: Computing Structures from Specifications", November 6-7, 2008, Leuven, <http://www.cs.kuleuven.be/~dtai/LaSh08>.
- Workshop "Foundations of Non-Monotonic Reasoning", collocated with NMR2004 (with Jim Delgrande, Simon Fraser University).
- Belgian Netherland Conference on Artificial Intelligence (BNAIC2002), Leuven, October 21-22, 2002 (with Hendrik Blockeel, KUL).
- Workshop "Issues in Knowledge Representation: Logic Programming and Nonmonotonic reasoning with Applications", Leuven, Belgium, September 3, 2002.
- NMR2000, special session on Abduction, Breckenridge, April 2000.
- ECAI96 workshop "Abduction and Induction", Budapest, Augustus 1996.

Invited talks

- Answer Set Programming's Contributions to Classical Logic – An analysis of ASP methodology, invited contribution and talk for the Symposium on Constructive Mathematics in Computer Science, in honor of Michael Gelfond's 65th anniversary, October 25-26, 2010, Lexington, VS.
- On the informal and formal semantics of Default and Autoepistemic logic – Default logic is not a logic of defaults , invited talk at "Nonmonotonic Reasoning at 30", conference to celebrate the 30th anniversary of the field of Nonmonotonic Reasoning, October 22-25, 2010, Lexington, VS.
- Integrating autoepistemic and default logic, invited talk at 13th international workshop on Non-Monotonic Reasoning, May 14-16, 2010, Sutton Place, Toronto, Canada.

- Using lightweight inference to solve lightweight problems , with Joost Vennekens, short invited position talk at LPNMR for the application session, September 14-18, 2009, Potsdam.
- The Second Answer Set Programming Competition, invited talk at LPNMR, September 14-18, 2009, Potsdam.
- A Knowledge Base System project for FO(.) , invited position talk at ICLP'09, June 14-17, 2009, Passadena.
- Building a Knowledge Base System for an integration of Logic Programming and Classical Logic , with Joost Vennekens, invited position talk at ICLP'08, 2008, Udine.
- Unifying Abductive Logic Programming and Stable Logic Programming, Special Session on Answer Set Programming and Abductive Reasoning, 9th Intl. Workshop on Non-Monotonic Reasoning NMR'2002, April 19-21, 2002, Toulouse, France.
- Panel Future Directions for Answer Set Programming, *Nonmonotonic Reasoning, Answer Set Programming and Constraints*, Dagstuhl Seminar Nr. 05171, 24.04.-29.04.05, Dagstuhl.

The following invited talks presented research results that were obtained in collaboration with me.

- A fixpoint theory of nonmonotone operators, presented by Victor Marek at the Symposium to the honor of Prof. Melvin Fitting, April 6-7, 2002, City University of New York.
- Tarski, Semantics for Logic Programming and Commonsense Reasonings, presented by Victor Marek at The Centennial Tarski Conference, May 28-31, 2001, International Mathematical Banach Center, Warsaw, Poland.
- Logic programming revisited: logic programs as inductive definitions, presented by Maurice Bruynooghe at the Joint Conference on Declarative Programming, December 4–6, 2000, La Habana, Cuba.

Reviewing for Journals

- Theoretical Computer Science, Journal of Logic and Computation, Information Processing Letters, Journal of Applied Non-Classical Logics (JANCL), Theory and Practice of Logic Programming, Fundamenta Informatica, Annals of Mathematics and Artificial Intelligence, ACM Transactions on Computational Logic.

Editor

- Journal of Logic Programming, special issue on Abductive Logic Programming, Vol 44(1-3) July/August 2000, together with Prof. Antonis Kakas.

Tutorials

- “Knowledge representation and reasoning in ID-logic”, ACAI 2007 summerschool “ Logic for Artificial Intelligence”, August 20-28, Leuven.
- Course “AI-planning”, BEST Summer School on Artificial Intelligence, August 2001, Leuven.

Research Visits

- 22/10/2010 - 31/10/2010: Prof. Mirek Truszczyński, Prof. Victor Marek, University of Kentucky, Lexington. Goal: Foundational issues of nonmonotonic reasoning.
- 18/1/2010 - 22/1/2010: Prof. Ilkka Niemela, Helsinki University of Technology. Goal: a study of algorithms, systems and applications of nested induction/coinduction.
- 28/10/2009 - 7/11/2009: Prof. Mirek Truszczyński, University of Kentucky, Lexington. Goal: Model generation techniques for extensions of FO(.) and ASP.
- 28/1/2009 - 1/10/2009: Prof. Thomas Eiter, Technical University Vienna. Goal: Relationship FO(.) and ASP.
- 22/8/2006 - 6/9/2006: Prof. Eugenia Ternovska, Prof. David Mitchell, Simon Fraser University, Vancouver. Helsinki University of Technology. Design of a model expansion techniques language based on ID-logic.
- 16/10/2005 - 22/10/2005: Prof. Ilkka Niemela, Helsinki University of Technology. Goal: a study of model generation techniques in smodels and midl. Result: new algorithms for our model generator.

- 2/8/2005 - 16/8/2005: Prof. Eugenia Ternovska and Prof. David Mitchel, Simon Fraser University, Vancouver. Goal: finishing two journal papers on ID-logic, study of model generation and applications of ID-logic.
- 27/6/2005 - 3/7/2005: with Alvaro Cortés, Prof. Ofer Arieli, The Academic College of Tel Aviv/Yaffo, Israel.
- 31/10/2004 - 10/11/2004: Prof. Mirek Truszczyński, University of Kentucky, Lexington. Goal: preparation of a book on approximation theory, summarizing results of the past years.
- 31/5/2004 - 16/6/2004: Prof. Eugenia Ternovska, Simon Fraser University, Vancouver. Goal:
- 2/8/2004 - 14/8/2004: Research visit to Dr. Nikolay Pelov, Sofia, Bulgaria. Goal: to make a journal article on aggregates, based on the phd of Dr. Pelov obtained here in Leuven.
- 9/11/2003 - 22/11/2003: Prof. Mirek Truszczyński and Prof. Victor Marek, University of Kentucky, Lexington. Goal: journal article on Ultimate approximations.
- 23/8/2003 - 8/9/2003: Prof. Eugenia Ternovska, Simon Fraser University, Vancouver. Goal: writing a conference paper on the application of ID-logic for Situation calculus.
- 3/3/2003 - 22/3/2003: Prof. Mirek Truszczyński and Prof. Victor Marek, University of Kentucky, Lexington. Goal: journal article on Ultimate approximations.
- 22/10/2001 - 15/11/2001: Prof. Eugenia Ternovska, Simon Fraser University, Vancouver. Goal: definition of ID-logic, study of its knowledge representation properties and modularity properties; preparation of
- 30/7/2001 - 10/8/2001: Prof. Mirek Truszczyński, University of Kentucky, Lexington. Goal: application of approximation theory to logic programming, default logic and auto-epistemic logic.
- 28/10/2000 - 19/11/2000: Prof. Melvin Fitting, City University of New York, Prof. Michael Gelfond van de University of Texas, Lubbock, Prof. Mirek Truszczyński and Prof. Victor Marek, University of Kentucky and Prof. Eugenia Ternovska, Simon Fraser University, Vancouver.
- 27/10/1999 - 13/11/1999: Prof. Mirek Truszczyński and Prof. Victor Marek, University of Kentucky
- 25/10/1998 - 21/11/1998: Prof. Mirek Truszczyński and Prof. Victor Marek, University of Kentucky
- 30/11/1997 - 15/12/1997: Prof. Mirek Truszczyński and Prof. Victor Marek, University of Kentucky
- 28/10/1996 - 9/11/1996: Prof. Mirek Truszczyński and Prof. Victor Marek, University of Kentucky
- 1/11/1995 - 30/11/1995: Prof. Vladimir Lifschitz, departement Computer Science, University of Texas at Austin.
- 15/7/1994 - 1/9/1994: Prof. Raymond Reiter, at the department Cognitive Robotics, University of Toronto.

Promotor or member of Ph.D. committee of:

- PhD-Jury Dimiter Milushev, Dept. Computer Science, K.U.Leuven.
- Promotor of Hanne Vlamincx, "Knowledge-based problem solving using formal logic", start PhD 1/9/2007.
- PhD-Jury Davy Preuveneers, Dept. Computer Science, K.U.Leuven, Ph.D. July 1, 2009.
- PhD-Jury Koenraad Mertens, Dept. Computer Science, K.U.Leuven, december 2006.
- PhD-Jury Joaquin Vanschoren, Dept. Computer Science, K.U.Leuven.
- Promotor of Johan Wittcockx, "Model expansion and Grounding in ID-logic", start PhD 1/9/2005.
- Promotor of Stephen Bond, "Propagation and model generation in FO(.)", start PhD 1/9/2005.
- Promotor of Hou Ping, "An Investigation of Reasoning in Inductive Definition Logic", start PhD 1/9/2004.
- Promotor of Maarten Mariën, PhD in Informatics, obtained on 19/12/2008:
Model Generation for ID-logic
- Promotor of Alvaro Cortes, PhD in Informatics, obtained on 19/12/2008:
Towards a Logical Reconstruction of a Theory for Locally Complete Databases
- Promotor of Joost Vennekens, PhD in Informatics, obtained on 11/5/2007:
Algebraic and logical study of constructive processes in Knowledge Representation
- Promotor of Dr. Nikolay Pelov, PhD in Informatics, obtained on 1/4/2004:
Semantics of Logic Programs with Aggregates

- Promotor of Dr. Bert Van Nuffelen, PhD in Informatics obtained on 28/6/2004:
Abductive Constraint Logic Programming: Implementation and Applications
- Supervisor of Dr. Sofie Verbaeten. PhD in Science, obtained on 1/6/2000:
Static verification of compositionality and termination for logic programming languages.
- Supervisor of Dr. Kristof Van Belleghem, PhD in Informatics, obtained on 21/12/97:
Open Logic Programming as a Knowledge Representation Language for dynamic problem domains.

Projects

(Co-)Promotor of Research projects:

- *Theory and Implementation of Knowledge based Systems for FO(.)*
Sponsored by FWO-VL, the Flemish Fund for Scientific Research, under contract number G.0489.10N
Budget: 4 x 60.000 + 4 x 7.450 Euro
Period: 01/01/2010 - 31/12/2013
promotor: Marc Denecker, Department of Computer Science, K.U.Leuven
partners: DTAI of the K.U.Leuven, Universiteit Hasselt, University of Kentucky, Simon Fraser University
- *Development, implementation and applications of model generation techniques for ID-logic*
Sponsored by FWO-VL, the Flemish Fund for Scientific Research, under contract number G.0357.06
Budget: 4 x 53.800 + 4 x 7000 Euro
Period: 01/01/2006 - 31/12/2009
promotor: Marc Denecker, Department of Computer Science, K.U.Leuven
partners: DTAI of the K.U.Leuven, University of Kentucky, Helsinki University of Technologie
- *Reliable common-sense reasoning. Cognitive psychological and pragmalinguistic research into non-monotonic reasoning and its logical-computational modelling.*
Interdisciplinair Onderzoeksprogramma IDO 03/001 K.U.Leuven,
Period 01.10.2004 - 30.09.2007
Promotor: Van Belle William,
Co-Promotor: Denecker Marc, Horsten Leon, Schaeken Walter, Smessaert Hans
- *Théorie des définitions inductives non-monotoniques et l'application pour des systèmes de représentation de la connaissance.*
FNRS (Fonds National de la Recherche Scientifique), Crédit aux chercheurs, ref. S 2/5-DD-E 97
Budget: 2000 Euros
Period: 1/1/2003 - 31/12/2003
promotor: Marc Denecker, Département d'Informatiques, U.L.Bruxelles
- *Theory of nonmonotone Inductive Definitions and its use for building Knowledge-based systems*
Sponsored by FWO-VL
Budget 14 000 000 Bfr (350 000 Ecu)
Period: 1/1/2002 - 31/12/2005
promotors: Maurice Bruynooghe, Marc Denecker, Danny De Schreye
partners: DTAI of the K.U.Leuven, University of Kentucky, University of Cyprus

I was copromotor of the following GOA projects of the research group *Declarative languages and Artificial Intelligence* (DTAI) at the K.U.Leuven.

- GOA: *Probabilistic Logic Learning*
Period: 2008-01-01 - 2012-12-31
- GOA: *Inductive Knowledge Bases*
Period: 2003-01-01 - 2007-12-31

Participation in research networks:

- *Working group on Answer Set Semantics (WASP)*, a thematic Network of the Information Societies Technology (IST) Programme of the EC. WASP is funded by the European commission, FET ("Forward Emerging Technologies") initiative under contract IST-FET-2001-37004. The network was from 15-09-2002 to 15-03-2005. Seventeen universities, in 8 european countries participate.
- WOG Declarative Methods in Computer Science (with DTAI)
Network supported by FWO-Vlaanderen
Period: 2006-01-01 - 2010-12-31
Partners : DTAI of K.U.Leuven, ADReM of UIA, "Theoretische Informatica" of LUC.
The network has also partners outside Flanders: TU Eindhoven, Université de Mons-Hainaut, University of Oxford, Indiana University, Universität Dortmund, Helsinki University of Technology, Jozef Stefan Institute Ljubljana, University of Wisconsin, University of Kentucky, Simon Frase University in Vancouver, University of Melbourne, and Ben Gurion University in Beer-Sheva.
- WOG Declarative Methods in Computer Science (with DTAI)
Network supported by FWO-Vlaanderen
Budget 2.500.000Bfr
Period: 2001-2006
Partners : DTAI of K.U.Leuven, ADReM of UIA, "Theoretische Informatica" of LUC.
Partners outside Flanders: University of Oxford, University of California at San Diego, Indiana University, CWI-Amsterdam, Albert-Ludwigs Universitt Freiburg, University of Melbourne, Uppsala University, University of Kentucky, Université de Liège and Université de Mons-Hainaut.
- WOG Declarative Methods in Computer Science (with DTAI)
Network supported by FWO-Vlaanderen
Budget: 2.500.000Bfr
Period: 1-1-1996 to 31-12-2000
Partners: "Databases" of UIA, "Theoretische Informatica" of LUC, "Electronica en Informatiesystemen" of RUG
Partners outside Flanders: UCL, Namur, Bristol, Melbourne, York, INRIA-Le Chesnay, Indiana University, Royal Holloway-University of London.

The following research projects of the research group *Declarative languages and Artificial Intelligence* at the K.U.Leuven, were based partly or completely on research topics that I have introduced in the DTAI research group. I contributed both to the project proposal and as a researcher.

- Keep-In-Touch Project nr. 962109,
Computational logic for flexible solutions to applications (CLFSA)
Sponsored by the European Community
Budget: 54 000 ECU;
Period: 1/10/1998 - 31/3/2002
Partners: The Imperial College of Science and Technology and Medicine (UK), Università Di Pisa – Dipartimento Di Informatica (Italy), Deutsches Forschungszentrum für Künstliche Intelligenz GmbH (Germany), University of Cyprus – Department of Computer Science
- GOA98/08
LP+: a second generation logic programming language.
Sponsored by K.U.Leuven
Budget: 54 000 000 Bfr (1 350 000 ECU)
Period: 1/1/1998 - 31/12/2002
Research project of the DTAI-group at the Dept. Computer Science, K.U.Leuven.
- FWO-VL nr. G.0157.97: LINGUADUCT
Contextual interpretation of natural language through abductive and inductive reasoning
Sponsored by FWO-VL
Budget: 4.300.000Bfr for DTAI, K.U.Leuven
Period: 1/1/1997 - 31/12/2001
Partners: departments of Computer Science and Linguistics of the universities of U.I.A. and K.U.Leuven.
- FWO-VL nr. G.0309.96
Knowledge representation and computation in open logic programming

Sponsored by FWO-VL
Budget: 5.700.000Bfr
Period: 1/1/1996 - 31/12/1999
Research project at the DTAI research group of the K.U.Leuven.

Publications - as of August 2008

23 international journal papers, 75 international conference papers, 15 workshop papers, editor of two books with proceedings, 5 contributions in collections.

Participation in commissions

Member of the board of the BNVKI (Belgian Netherlands Association for Artificial Intelligence), 2001-2006.