

CURRICULUM VITAE

ESRA ERDEM

CONTACT INFORMATION

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RESEARCH INTERESTS

Artificial intelligence. In particular, the mathematical foundations of knowledge representation, reasoning about actions and change, planning, and answer set programming, and their applications.

EDUCATION

Ph.D. (Computer Sciences), The University of Texas at Austin, 2002.
Dissertation: *Theory and applications of answer set programming*.
Advisor: Vladimir Lifschitz.
Thesis committee: Chitta Baral, J. Strother Moore, Tandy Warnow, Martin D. F. Wong.

M.S. (Computer Sciences), The University of Texas at Austin, 1998.

B.S. (Computer Sciences), Bilkent University, 1996, with high honors.

EMPLOYMENT HISTORY

9/2006–present Sabancı University.
Assistant professor, Faculty of Engineering and Natural Sciences.

9/2003–8/2006 Vienna University of Technology.
Post-doctoral researcher, Knowledge-Based Systems Group (Thomas Eiter).
Monitoring of plan execution, and updates of action domain descriptions.

8/2002–8/2003 University of Toronto.
Post-doctoral fellow, Cognitive Robotics Group (Hector Levesque and Ray Reiter).
The situation calculus and cognitive robotics.

1/1999–8/2002 University of Texas at Austin.
Research assistant, Department of Computer Sciences (Vladimir Lifschitz).
The mathematical theory of logic programming, knowledge representation, reasoning about actions and change, planning, and answer set programming.

6/2001–8/2001 IBM, Austin Research Lab.
Intern, Formal Verification Group (Warren Hunt and Jun Sawada).
The design and the implementation of a program to be used for hardware verification.

8/1996–12/2001 University of Texas at Austin.
Teaching assistant, Department of Computer Sciences.

AWARDS AND HONORS

NATO Science Fellowship, 1996–2002.

Travel Award, The University of Texas at Austin, The Department of Computer Sciences, 1999 and 2001.

GTE Corporation Fellowship, 1997.

TA-Service Commendation, The University of Texas at Austin, The Department of Computer Sciences, 1997.

Full Scholarship, Bilkent University, 1992–1996.

COURSES TAUGHT

ASSISTANT PROFESSOR (Sabancı University)

CS400/500, Logic in Computer Science	(Spring 2007, Spring 2008)
CS404, Artificial Intelligence	(Fall 2008)
CS504, Knowledge Representation and Reasoning	(Fall 2007, Fall 2008)
CS581, Special Topics in CS	(Fall 2006)
CS502, Automated Reasoning	(Spring 2007)
CS611, Advanced Topics in Artificial Intelligence	(Spring 2008)
CS551, Graduate Seminar I	(Fall 2006, Fall 2007, Fall 2008)
CS552, Graduate Seminar II	(Spring 2007, Spring 2008)
PROJ 102	(Fall 2007)
ENS 491/2	(Fall 2007, Spring 2008, Fall 2008)

TEACHING ASSISTANT (University of Texas at Austin)

CS388L, Introduction to Mathematical Logic	(Fall 1999, Fall 2001)
CS307, Foundations of Computer Science	(Fall 1997, Spring 1998, Fall 1998)
CS315, Computer Science II	(Spring 1997)
CS373, Software Engineering	(Fall 1996)

THESIS COMMITTEES

MASTERS COMMITTEE SUPERVISOR

Duygu Çakmak (Fall 2008–present, Sabancı University)

DOCTORAL COMMITTEE MEMBER

Elisabetta De Maria (University of Udine), Supervisor: Angelo Montanari

MASTERS COMMITTEE MEMBER

Ferah Gülaçtı (Summer 2008, Sabancı University), Supervisor: Devrim Gözüaçık
Search for Atg5 Interacting Proteins by Using Yeast Two Hybrid System

Ferhan Türe (Summer 2008, Sabancı University), Supervisor: Kemal Oflazer
A Hybrid Machine Translation System from Turkish to English

Önsel Armağan (Fall 2007, Sabancı University), Supervisor: Kemal Oflazer
LingBrowser – A NLP Based Browser For Linguistic Information

Müge Erdoğan (Summer 2007, Sabancı University), Supervisor: Uğur Sezerman
Application of automatic mutation-gene pair extraction to diseases

SENIOR PROJECT SUPERVISOR

Selen Başol, Sinan Eğılmez (Fall 2008–present, Sabancı University)
Semantic web and life sciences

Ozan Çaldıran, Abdullah Ok (Fall 2008–present, Sabancı University), Co-Supervisor: Volkan Patoğlu
Intelligent robots: low-level control meets high-level reasoning

Halit Erdoğan (Fall 2008–present, Sabancı University)
Comparing phylogenies: theory and applications

Kadir Haspalamutgil, Can Palaz (Fall 2008–present, Sabancı University), Co-Supervisor: Volkan Patoğlu
Intelligent robots: low-level control meets high-level reasoning

Şeyma Mutlu (Fall 2008–present, Sabancı University)
Commonsense reasoning for interactive applications

Fırat H. Tahaoğlu (Fall 2008–present, Sabancı University)
Semantic web and life sciences

Tansel Uras (Fall 2008–present, Sabancı University), Co-Supervisor: Uğur Sezerman
Genome rearrangement: theory and applications

Kadir Malak (Fall 2007–Spring 2008, Sabancı University), Co-Supervisor: Marco Aiello
Automating reasoning about web services

FRESHMAN PROJECT SUPERVISOR

Can Yıldız, Elif Özdoğan, Deniz Altunlu (Fall 2007, Sabancı University), Co-Supervisor: Ferhan Türe
Solving challenging grid puzzles with answer set programming

PROFESSIONAL ACTIVITIES

EVENT COORDINATION

Special Theme Chair, International Conference on Logic Programming and Nonmonotonic Reasoning (LP-NMR), 2009

Session Co-Chair, International Workshop on Non-Monotonic Reasoning (NMR), Session on Declarative Programming Paradigms and Systems for NMR, 2008

PROGRAM COMMITTEE MEMBER

International Joint Conference on Artificial Intelligence (IJCAI), 2009

National Conference on Artificial Intelligence (AAAI), 2004, 2005, 2006, 2007, 2008

European Conference on Artificial Intelligence (ECAI), 2006, 2008

Australasian Joint Conference on Artificial Intelligence (AI), 2008

International Colloquium on Theoretical Aspects of Computing (ICTAC), 2008

International Symposium on Computer and Information Sciences (ISCIS), 2008

International Workshop on Non-Monotonic Reasoning (NMR), 2004, 2008
International Workshop on Constraint Modelling and Reformulation (ModRef), 2008
International Conference on Logic Programming (ICLP), 2007, 2009
International Conference on Logic Programming and Nonmonotonic Reasoning (LPNMR), 2003, 2009
International Symposium on Logical Formalizations of Commonsense Reasoning (CommonSense), 2005, 2007, 2009
Workshop on Dynamics of Knowledge and Belief Representation, Annual German Conference on Artificial Intelligence (KI), 2007

REVIEWER

Artificial Intelligence Journal (AIJ)
Journal of Logic and Computation (JLC)
ACM Transactions on Computational Logic (TOCL)
Theory and Practice of Logic Programming (TPLP)
Parallel Computing (PC)
IEEE/ACM Transactions on Computational Biology and Bioinformatics (TCBB)
BioMed Central
Logic Journal of the IGPL
Intelligent Techniques for Planning (edited by Ioannis Vlahavas and Dimitris Vrakas)

International Joint Conference on Artificial Intelligence (IJCAI), 2003, 2005, 2007
National Conference on Artificial Intelligence (AAAI), 2002, 2004, 2005, 2006, 2007, 2008
European Conference on Artificial Intelligence (ECAI), 2004, 2006, 2008
International Conference on Principles of Knowledge Representation and Reasoning (KR), 2006, 2008
European Conference on Logics in Artificial Intelligence (JELIA), 2002, 2006
International Conference on Logic Programming (ICLP), 2006, 2007, 2008
International Conference on Principles and Practice of Constraint Programming (CP), 2007
International Conference on Computational Logic (CL), 2000
International Conference on Logic for Programming Artificial Intelligence and Reasoning (LPAR), 2005, 2006
International Conference on Logic Programming and Nonmonotonic Reasoning (LPNMR), 2001, 2003
International Conference on Autonomous Agents and Multiagent Systems (AAMAS), 2007
Australasian Joint Conference on Artificial Intelligence (AI), 2008
International Symposium on Artificial Intelligence and Mathematics (ISAIA), 2008
International Symposium on Logical Formalizations of Commonsense Reasoning (CommonSense), 2003, 2005, 2007
International Symposium on Foundations of Information and Knowledge Systems (FoIKS), 2006
International Symposium on Computer and Information Sciences (ISCIS), 2004, 2008
AAAI Spring Symposium, 2001
International Colloquium on Theoretical Aspects of Computing (ICTAC), 2008
International Workshop on Non-Monotonic Reasoning (NMR), 2004, 2008
International Workshop on Constraint Modelling and Reformulation (ModRef), 2008
Workshop on Dynamics of Knowledge and Belief Representation, Annual German Conference on Artificial Intelligence (KI), 2007

FACULTY SERVICES

Diploma Area Advisor (Fall 2007–present, Sabancı University)

OTHER

Panelist, “Applications of Nonmonotonic Reasoning”, Workshop on Nonmonotonic Reasoning (NMR), 2006
Coordinator, Cognitive Robotics Reading Group, University of Toronto, 2002–2003
Coordinator, Texas Action Group at Austin, 2000–2002
Coordinator, Logic-Based AI Reading Group, University of Texas at Austin, 2001–2002
Mentor, Doctoral Consortium, Int’l Conf. on Principles of Knowledge Representation and Reasoning (KR), 2004

INVITED TALKS

“Computational Cladistics with Answer Set Programming”, Sabancı University, 9/2008.
“Efficient Haplotype Inference with Answer Set Programming”, Vienna University of Technology, 9/2008.
“A New Approach to Integrating Biomedical Ontologies and Answering Complex Queries related to Drug Discovery”, National Institutes of Health, 7/2008.
“Efficient Haplotype Inference with Answer Set Programming”, National Institutes of Health, 7/2008.
“Inferring Phylogenetic Trees using Answer Set Programming”, University of Groningen, 6/2008.
“A New Approach to Integrating Biomedical Ontologies and Answering Complex Queries related to Drug Discovery”, AI Day at Sabancı University, 5/2008.
“Inferring Phylogenetic Trees using Answer Set Programming”, Boğaziçi University, 5/2008.
“Inferring Phylogenetic Trees using Answer Set Programming”, Middle East Technical University, 4/2008.
“Inferring Phylogenetic Trees using Answer Set Programming”, Simon Fraser University, 7/2007.
“Logic-Based Artificial Intelligence and the Genome Rearrangement Problem”, Sabancı University, 6/2006.
“Character-Based Cladistics and Answer Set Programming”, University of Texas at Austin, 1/2005.
“Evolutionary History of Languages and Answer Set Programming”, University of Waterloo, 3/2003.
“Reconstructing the Evolutionary History of Indo-European Languages using Answer Set Programming”, University of Texas at Austin, 1/2003.
“Reconstructing the Evolutionary History of Indo-European Languages using Answer Set Programming”, University of Toronto, 12/2002.
“Reconstructing the Evolutionary History of Indo-European Languages using Answer Set Programming”, Schloss Dagstuhl, 9/2002.
“SAT Solvers”, IBM, Austin Research Labs, 8/2001.
“Missionaries and Cannibals in the Causal Calculator”, University of Texas at Austin, 2/2000.

PUBLICATIONS

JOURNAL ARTICLES

7. Thomas Eiter, Esra Erdem, and Wolfgang Faber. Undoing the Effects of Action Sequences. In *Journal of Applied Logic (JAL)*, 6(3):380–415, 2008.

6. Daniel R. Brooks, Esra Erdem, Selim T. Erdoğan, James W. Minett, and Don Ringe. Inferring Phylogenetic Trees using Answer Set Programming. In *Journal of Automated Reasoning (JAR)*, 39(4):471–511, 2007.
5. Thomas Eiter, Esra Erdem, Michael Fink, and Ján Senko. Comparing Action Descriptions Based on Semantic Preferences. In *Annals of Mathematics and Artificial Intelligence (AMAI)*, 50(3-4):273-304, 2007.
4. Thomas Eiter, Esra Erdem, Wolfgang Faber, and Ján Senko. A Logic-Based Approach to Finding Explanations for Discrepancies in Optimistic Plan Execution. In *Fundamenta Informaticae (FI)*, 79(1-2):25–69, 2007.
3. Esra Erdem, Vladimir Lifschitz, and Don Ringe. Temporal Phylogenetic Networks and Logic Programming. In *Theory and Practice of Logic Programming (TPLP)*, 6(5):539–558, 2006.
2. Esra Erdem and Vladimir Lifschitz. Tight Logic Programs. In *Theory and Practice of Logic Programming (TPLP)*, 3(4–5):499–518, 2003.
1. Esra Erdem and Pierre Flener. Completing Open Logic Programs by Constructive Induction. In *International Journal of Intelligent Systems (IJIS)*, 14(10):995–1020, 1999.

REFEREED CONFERENCE AND WORKSHOP PAPERS

25. Olivier Bodenreider, Zeynep H. Çoban, Mahir C. Doğanay, Esra Erdem and Hilal Koşucu. A Preliminary Report on Answering Complex Queries related to Drug Discovery using Answer Set Programming. To appear in *Proceedings of the Third International Workshop on Applications of Logic Programming to the (Semantic) Web and Web Services (ALPSWS'08)*, 2008.
24. Elvin Çoban, Esra Erdem and Ferhan Türe. Comparing ASP, CP, ILP on two Challenging Applications: Wire Routing and Haplotype Inference. To appear in *Proceedings of the Second International Workshop on Logic and Search (LaSh'08)*, 2008.
23. Esra Erdem and Ferhan Türe. Efficient Haplotype Inference with Answer Set Programming. In *Proceedings of the Twenty-Third AAI Conference on Artificial Intelligence (AAAI'08)*, pages 436–441, 2008.
22. Merve Çaylı, Ayşe Gül Karatop, Emrah Kavlak, Hakan Kaynar, Ferhan Türe and Esra Erdem. Solving Challenging Grid Puzzles with Answer Set Programming. In *Proceedings of the Fourth International Workshop on Answer Set Programming (ASP'07)*, pages 175–190, 2007.
21. Esra Erdem and Paolo Ferraris. Forgetting Actions in Domain Descriptions. In *Proceedings of the Twenty-Second AAI Conference on Artificial Intelligence (AAAI'07)*, pages 409–414, 2007.
20. Thomas Eiter, Esra Erdem, Wolfgang Faber. On Reversing Actions: Algorithms and Complexity. In *Proceedings of the Twentieth International Joint Conference on Artificial Intelligence (IJCAI'07)*, 2007.
19. Thomas Eiter, Esra Erdem, Michael Fink, and Ján Senko. Comparing Action Descriptions based on Semantic Preferences. In *Proceedings of the Tenth European Conference on Logics in Artificial Intelligence (JELIA'06)*, pages 124–137, 2006.
18. Esra Erdem and Alfredo Gabaldon. Representing Action Domains with Numeric-Valued Fluents. In *Proceedings of the Tenth European Conference on Logics in Artificial Intelligence (JELIA'06)*, pages 151–163, 2006.

17. Thomas Eiter, Esra Erdem, Michael Fink, and Ján Senko. Resolving Conflicts in Action Descriptions. In *Proceedings of the Seventeenth European Conference on Artificial Intelligence (ECAI'06)*, pages 424–433, 2006.
16. Thomas Eiter, Esra Erdem, Michael Fink, and Ján Senko. Comparing Action Descriptions based on Semantic Preferences. In *Proceedings of ECAI'06 Multidisciplinary Workshop on Advances in Preference Handling*, 2006.
15. Thomas Eiter, Esra Erdem, Michael Fink, and Ján Senko. Resolving Conflicts in Action Descriptions. In *Proceedings of the Eleventh Workshop on Nonmonotonic Reasoning (NMR'06), Action and Change Track*, pages 353–361, 2006.
14. Esra Erdem and Elisabeth Tillier. Genome Rearrangement and Planning. In *Proceedings of the Twentieth National Conference on Artificial Intelligence (AAAI'05)*, pages 1139–1144, 2005.
13. Esra Erdem and Alfredo Gabaldon. Cumulative Effects of Concurrent Actions on Numeric-Valued Fluents. In *Proceedings of the Twentieth National Conference on Artificial Intelligence (AAAI'05)*, pages 627–632, 2005.
12. Thomas Eiter, Esra Erdem, Michael Fink, and Ján Senko. Updating Action Domain Descriptions. In *Proceedings of the Nineteenth International Joint Conference on Artificial Intelligence (IJCAI'05)*, pages 418–423, 2005.
11. Esra Erdem and Alfredo Gabaldon. Cumulative Effects of Concurrent Actions on Numeric-Valued Fluents. In *Working Notes of the Sixth Workshop on Nonmonotonic Reasoning, Action, and Change (NRAC'05)*, pages 28–33, 2005.
10. Daniel R. Brooks, Esra Erdem, James W. Minett, and Don Ringe. Character-Based Cladistics and Answer Set Programming. In *Proceedings of the Seventh International Symposium on Practical Aspects of Declarative Languages (PADL'05)*, pages 37–51, 2005.
9. Esra Erdem and Martin Wong. Rectilinear Steiner Tree Construction using Answer Set Programming. In *Proceedings of the Twentieth International Conference on Logic Programming (ICLP'04)*, pages 386–399, 2004.
8. Thomas Eiter, Esra Erdem, and Wolfgang Faber. Plan Reversals for Recovery in Execution Monitoring. In *Proceedings of the Tenth Workshop on Nonmonotonic Reasoning (NMR'04), Action and Causality Track*, pages 147–154, 2004.
7. Esra Erdem, Vladimir Lifschitz, Luay Nakhleh and Don Ringe. Reconstructing the Evolutionary History of Indo-European Languages using Answer Set Programming. In *Proceedings of the Fifth International Symposium on Practical Aspects of Declarative Languages (PADL'03)*, pages 160–176, 2003.
6. Esra Erdem and Vladimir Lifschitz. Fages' Theorem for Programs with Nested Expressions. In *Proceedings of the Seventeenth International Conference on Logic Programming (ICLP'01)*, pages 242–254, 2001.
5. Esra Erdem and Vladimir Lifschitz. Transitive Closure, Answer Sets and Predicate Completion. In *Proceedings of American Association for Artificial Intelligence (AAAI) Spring Symposium*, pages 60–65, 2001.
4. Esra Erdem and Pierre Flener. A New Declarative Bias for ILP: Construction Modes. In *Work-in-Progress Reports of the Tenth International Conference on Inductive Logic Programming (ILP'00)*, pages 60–78, 2000.

3. Esra Erdem, Vladimir Lifschitz, and Martin D. F. Wong. Wire Routing and Satisfiability Planning. In *Proceedings of the First International Conference on Computational Logic (CL'00)*, pages 822–836, 2000.
2. Yuliya Babovich, Esra Erdem and Vladimir Lifschitz. Fages' Theorem and Answer Set Programming. In *Proceedings of the Eighth International Workshop on Non-Monotonic Reasoning (NMR'00)*, 2000.
1. Esra Erdem and Vladimir Lifschitz. Transformations of Logic Programs Related to Causality and Planning. In *Proceedings of the Fifth International Conference on Logic Programming and Nonmonotonic Reasoning (LPNMR'99)*, pages 107–116, 1999.

ABSTRACTS AND POSTERS

4. Ferhan Türe and Esra Erdem. Efficient Haplotype Inference with Answer Set Programming. In *Proceedings of the Twenty-Third AAAI Conference on Artificial Intelligence (AAAI'08)*, pages 1834–1835, 2008.
3. Zeynep H. Çoban, Mahir C. Doğanay, Esra Erdem and Hilal Koşucu. A New Approach to Integrating Biomedical Ontologies and Answering Complex Queries related to Drug Discovery. In *Proceedings of the Third International Symposium on Health Informatics and Bioinformatics (HIBIT'08)*, 2008.
2. Esra Erdem and Ferhan Türe. Efficient Haplotype Inference with Answer Set Programming. In *Proceedings of the Third International Symposium on Health Informatics and Bioinformatics (HIBIT'08)*, 2008.
1. Esra Erdem and Feng Wang. Reconstructing the Evolutionary History of Chinese Dialects. Accepted for presentation at the *39th International Conference on Sino-Tibetan Languages and Linguistics (IC-STLL'06)*, 2006.

OTHER

6. Thomas Eiter, Esra Erdem, and Wolfgang Faber. Diagnosing Plan Execution Discrepancies in a Logic-Based Action Framework. Technical Report INFSYS RR-1843-04-03, Vienna University of Technology, 2004.
5. Thomas Eiter, Esra Erdem, and Wolfgang Faber. Undoing the Effects of Action Sequences. Technical Report INFSYS RR-1843-04-05, Vienna University of Technology, 2004.
4. Esra Erdem. Theory and Applications of Answer Set Programming. Ph.D. Thesis, Technical Report CS-TR-02-69, Department of Computer Sciences, University of Texas at Austin, 2002.
3. Esra Erdem. Applications of Logic Programming to Planning: Computational Experiments. At URL <http://people.sabanciuniv.edu/~esraerdem/experiments/experiments.html>, 1999.
2. Esra Erdem and Pierre Flener. A re-definition of least generalizations, and construction modes as a new declarative bias for ILP. Technical Report BU-CEIS-9718, Bilkent University, 1997.
1. Esra Erdem. An MSG Method and a Schema-Guided Logic Program Synthesis. Undergraduate thesis, Bilkent University, 1996.