

Education

- 1999–2004 **Carnegie Mellon University**, Pittsburgh, Pennsylvania.
Doctor of Philosophy in Computer Science.
Master of Science in Computer Science (2002).
- 1993–1998 **The Royal Institute of Technology (KTH)**, Stockholm, Sweden.
Master of Science in Computer Science and Technology.
- 1997–1998 **University of California, Irvine.**
Visiting Scholar, Department of Information and Computer Science.

Work Experience

- 2006— Software Engineer, **Google, Inc.**, Pittsburgh, Pennsylvania.
- 2005–2006 Postdoctoral Fellow, Computer Science Department, **Carnegie Mellon University**, Pittsburgh, Pennsylvania.
Foundations of and applications for probabilistic verification and model checking.
- 1999–2004 Graduate Assistant, Computer Science Department, **Carnegie Mellon University**, Pittsburgh, Pennsylvania.
Probabilistic model checking, decision-theoretic and temporal planning, and robot exploration.
- Summer 2002 **Honeywell Laboratories**, Minneapolis, Minnesota.
Probabilistic and decision-theoretic planning in continuous-time stochastic domains.
- Summer 2001 **Honeywell Laboratories**, Minneapolis, Minnesota.
Probabilistic planning and verification using simulation and acceptance sampling.
- Summer 2000 **NASA Ames Research Center**, Mountain View, California.
Exploration planning in outdoor environments.
- 1999 Research Assistant, Department of Computer and Systems Sciences, **the Royal Institute of Technology (KTH)**, Stockholm, Sweden.
Decision analysis, intelligent agents, multi-agent systems, and RoboCup.

Teaching Experience

- Fall 2001 Teaching Assistant, Computer Science Department, **Carnegie Mellon University**, Pittsburgh, Pennsylvania.
Fundamentals of Artificial Intelligence.

- Spring 2001 Teaching Assistant, Computer Science Department, **Carnegie Mellon University**, Pittsburgh, Pennsylvania.
Foundations of Programming Languages.
- Fall 1998 Teaching Assistant, Department of Numerical Analysis and Computer Science, **the Royal Institute of Technology (KTH)**, Stockholm, Sweden.
Computer Science I.
- 1996–1997 Teaching Assistant, Department of Numerical Analysis and Computer Science, **the Royal Institute of Technology (KTH)**, Stockholm, Sweden.
Introduction to Computer Science.

Scholarships and Achievements

- 2002, 2003 The Hans Werthén Fund, **the Royal Swedish Academy of Engineering Sciences (IVA)**.
For graduate studies in the U.S. during the academic years 2002/2003 and 2003/2004.
- 2002 Best Newcomer, **3rd International Planning Competition**.
Participating with VHPOP in the fully automated track.
- 2000 3rd place, **ACM East Central North America Programming Contest**.
Advancing to the World Finals competing in a team of three students from Carnegie Mellon.
- 2000 **The Sweden-America Foundation**.
For graduate studies in the U.S. during the academic year 2000/2001.
- 1999 **The Foundation BLANCEFLOR Boncompagni-Ludovisi, née Bildt**.
For graduate studies in the U.S. during the academic year 1999/2000.
- 1999 **Swedish Fulbright Commission**.
1999/2000 Fulbright Fellow.

Professional Activities

Membership in Professional Organizations: Association for Computing Machinery (since 1997); Institute of Electrical and Electronics Engineers and IEEE Computer Society (since 1998); American Association for Artificial Intelligence (since 1999); Sigma Xi (since 2004).

Organizational Duties: Co-chair, probabilistic track of the 4th International Planning Competition (2004); Seminar organizer, Specification and Verification Center, Carnegie Mellon University (2005–2006).

Program Committee Member: International Conference on Automated Planning and Scheduling (2004 and 2006); 20th National Conference on Artificial Intelligence (AAAI'05); FLAIRS Special Track on Uncertain Reasoning (2001–2003).

Reviewer: Annals of Pure and Applied Logic; Artificial Intelligence; IEE Proceedings Software; IEEE Transactions on Software Engineering; Journal of Artificial Intelligence Research; 17th International Conference on Computer Aided Verification (CAV'05); 19th International Joint Conference on Artificial Intelligence (IJCAI'05); 11th International Conference on Tools and Algorithms for the Construc-

tion and Analysis of Systems (TACAS'05); 1st International Conference on Quantitative Evaluation of Systems (QEST'04); 16th European Conference on Artificial Intelligence (ECAI'04); 9th European Workshop on Modelling Autonomous Agents in a Multi-Agent World (MAAMAW'99).

Publications

Journal Articles

1. Håkan L. S. Younes and Reid G. Simmons. Statistical probabilistic model checking with a focus on time-bounded properties. *Information and Computation*. Forthcoming.
2. Håkan L. S. Younes, Marta Kwiatkowska, Gethin Norman, and David Parker. 2006. Numerical vs. statistical probabilistic model checking. *International Journal on Software Tools for Technology Transfer* 8, no. 3: 216–228.
3. Håkan L. S. Younes, Michael L. Littman, David Weissman, and John Asmuth. 2005. The first probabilistic track of the international planning competition. *Journal of Artificial Intelligence Research* 24: 851–887.
4. Håkan L. S. Younes and Reid G. Simmons. 2003. VHPOP: Versatile heuristic partial order planner. *Journal of Artificial Intelligence Research* 20: 405–430.

Conference Papers

1. Håkan L. S. Younes. 2006. Error control for probabilistic model checking. In *Proceedings of the 7th International Conference on Verification, Model Checking, and Abstract Interpretation*, edited by E. Allen Emerson and Kedar S. Namjoshi, vol. 3855 of *Lecture Notes in Computer Science*, 142–156, Charleston, South Carolina. Springer. (Acceptance ratio: 28/58 \approx 48%)
2. Håkan L. S. Younes. 2005. Planning and execution with phase transitions. In *Proceedings of the Twentieth National Conference on Artificial Intelligence*, 1030–1035, Pittsburgh, Pennsylvania. AAAI Press. (Acceptance ratio: 229/803 \approx 29%)
3. Håkan L. S. Younes. 2005. Probabilistic verification for “black-box” systems. In *Proceedings of the 17th International Conference on Computer Aided Verification*, edited by Kousha Etessami and Sriram K. Rajamani, vol. 3576 of *Lecture Notes in Computer Science*, 235–265, Edinburgh, United Kingdom. Springer. (Acceptance ratio: 32/125 \approx 26%)
4. Håkan L. S. Younes. 2005. Ymer: A statistical model checker. In *Proceedings of the 17th International Conference on Computer Aided Verification*, edited by Kousha Etessami and Sriram K. Rajamani, vol. 3576 of *Lecture Notes in Computer Science*, 429–433, Edinburgh, United Kingdom. Springer. (Acceptance ratio for tool papers: 16/30 \approx 53%)
5. Håkan L. S. Younes and Reid G. Simmons. 2004. Solving generalized semi-Markov decision processes using continuous phase-type distributions. In *Proceedings of the Nineteenth National Conference on Artificial Intelligence*, 742–747, San Jose, California. AAAI Press. (Acceptance ratio: 121/453 \approx 27%)

6. Håkan L. S. Younes and Reid G. Simmons. 2004. Policy generation for continuous-time stochastic domains with concurrency. In *Proceedings of the Fourteenth International Conference on Automated Planning and Scheduling*, edited by Shlomo Zilberstein, Jana Koehler, and Sven Koenig, 325–333, Whistler, Canada. AAAI Press. (Acceptance ratio: 37/119 \approx 31%)
7. Håkan L. S. Younes, Marta Kwiatkowska, Gethin Norman, and David Parker. 2004. Numerical vs. statistical probabilistic model checking: An empirical study. In *Proceedings of the 10th International Conference on Tools and Algorithms for the Construction and Analysis of Systems*, edited by Kurt Jensen and Andreas Podelski, vol. 2988 of *Lecture Notes in Computer Science*, 46–60, Barcelona, Spain. Springer. (Acceptance ratio: 37/145 \approx 26%)
8. Håkan L. S. Younes, David J. Musliner, and Reid G. Simmons. 2003. A framework for planning in continuous-time stochastic domains. In *Proceedings of the Thirteenth International Conference on Automated Planning and Scheduling*, edited by Enrico Giunchiglia, Nicola Muscettola, and Dana S. Nau, 195–204, Trento, Italy. AAAI Press. (Acceptance ratio: 30/98 \approx 31%)
9. Håkan L. S. Younes and Reid G. Simmons. 2002. Probabilistic verification of discrete event systems using acceptance sampling. In *Proceedings of the 14th International Conference on Computer Aided Verification*, edited by Ed Brinksma and Kim Guldstrand Larsen, vol. 2404 of *Lecture Notes in Computer Science*, 223–235, Copenhagen, Denmark. Springer. (Acceptance ratio: 35/94 \approx 37%)
10. Håkan L. S. Younes and Reid G. Simmons. 2002. On the role of ground actions in refinement planning. In *Proceedings of the Sixth International Conference on Artificial Intelligence Planning and Scheduling Systems*, edited by Malik Ghallab, Joachim Hertzberg, and Paolo Traverso, 54–61, Toulouse, France. AAAI Press. (Acceptance ratio: 32/92 \approx 35%)
11. Reid G. Simmons, David Apfelbaum, Wolfram Burgard, Dieter Fox, Mark Moors, Sebastian Thrun, and Håkan L. S. Younes. 2000. Coordination for multi-robot exploration and mapping. In *Proceedings of the Seventeenth National Conference on Artificial Intelligence*, 852–858, Austin, Texas. AAAI Press. (Acceptance ratio: 143/432 \approx 33%)
12. Håkan L. S. Younes and Love Ekenberg. 2000. A deterministic algorithm for solving imprecise decision problems. In *Proceedings of the Thirteenth International Florida Artificial Intelligence Research Society Conference*, edited by Jim Etheredge and Bill Manaris, 313–317, Orlando, Florida. AAAI Press.
13. Magnus Boman, Paul Davidsson, and Håkan L. S. Younes. 1999. Artificial decision making under uncertainty in intelligent buildings. In *Proceedings of the Fifteenth Conference on Uncertainty in Artificial Intelligence*, edited by Kathryn B. Laskey and Henri Prade, 65–70, Stockholm, Sweden. Morgan Kaufmann Publishers. (Acceptance ratio: 77/150 \approx 51%)

Workshop Papers

1. Håkan L. S. Younes and Reid G. Simmons. 2004. A formalism for stochastic decision processes with asynchronous events. In *Papers from the AAAI Workshop in Learning and Planning in Markov Processes—Advances and Challenges*, 107–110, San Jose, California. Technical Report WS-04-08.
2. Håkan L. S. Younes. 2004. Planning and verification for stochastic processes with asynchronous events. In *Proceedings of the Nineteenth National Conference on Artificial Intelligence*, 1001–1002,

San Jose, California. AAAI Press. Thesis summary for the Ninth AAAI/SIGART Doctoral Consortium.

3. Håkan L. S. Younes. 2003. Extending PDDL to model stochastic decision processes. In *Proceedings of the ICAPS-03 Workshop on PDDL*, 95–103, Trento, Italy.
4. Michael L. Littman and Håkan L. S. Younes. 2003. IPC 2004 probabilistic planning track: FAQ 0.1. In *Proceedings of the ICAPS-03 Workshop on the Competition: Impact, Organization, Evaluation, Benchmarks*, 7–12, Trento, Italy.
5. Håkan L. S. Younes and David J. Musliner. 2002. Probabilistic plan verification through acceptance sampling. In *Proceedings of the AIPS-02 Workshop on Planning via Model Checking*, edited Froduald Kabanza and Sylvie Thiébaux, 81–88, Toulouse, France.
6. Håkan L. S. Younes and Magnus Boman. 1999. Tools for artificial decision making. *MAAMAW'99 Poster Presentations*, published on CD-ROM, Universidad Politécnica de Valencia, Valencia, Spain.
7. Johan Kummeneje and Håkan L. S. Younes. 1999. The design of an object oriented agent system for robotic soccer. In *Workshop on Futures in Information Systems and Software Engineering Research*, edited by Bengt G. Lundberg, Stockholm, Sweden. Stockholm University and the Royal Institute of Technology.
8. Magnus Boman, Jens Andreasen, Mats Danielson, Carl-Gustaf Janson, Johan Kummeneje, Johan Sikström, Harko Verhagen, and Håkan L. S. Younes. 1998. UBU: Pronouncers in RoboCup teams. In *Proceedings of the PRICAI'98 RoboCup Workshop*, edited by Hiroaki Kitano, Gerald Seet, and K. Jagannathan, 117–122, Singapore. National University of Singapore.

Papers in Collections

1. Johan Kummeneje, David Lybäck, Håkan L. S. Younes, and Magnus Boman. 2000. UBU team. In *RoboCup-99: Robot Soccer World Cup III*, edited by Manuela Veloso, Enrico Pagello, and Hiroaki Kitano, vol. 1856 of *Lecture Notes in Computer Science*, 642–645. Springer, Berlin.

Theses

1. Håkan L. S. Younes. 2005. *Verification and Planning for Stochastic Processes with Asynchronous Events*. PhD thesis, Computer Science Department, Carnegie Mellon University, Pittsburgh, Pennsylvania. CMU-CS-05-105.
2. Håkan L. S. Younes. 1998. *Current Tools for Assisting Intelligent Agents in Real-time Decision Making*. Master's thesis, Department of Computer and Systems Sciences, Royal Institute of Technology and Stockholm University, Stockholm, Sweden. No. 98-x-073.

Technical Reports

1. Håkan L. S. Younes and Michael L. Littman. 2004. PPDDL1.0: An extension to PDDL for expressing planning domains. Technical Report CMU-CS-04-167, School of Computer Science, Carnegie Mellon University, Pittsburgh, Pennsylvania.

2. Håkan L. S. Younes. 2004. “Black-box” probabilistic verification. Technical Report CMU-CS-04-162, School of Computer Science, Carnegie Mellon University, Pittsburgh, Pennsylvania.

Miscellaneous

1. Magnus Boman, Johan Kummeneje, David Lybäck, and Håkan L. S. Younes. 1999. UBU team. In *RoboCup-99 Team Descriptions Simulation League*, edited by Silvia Coradeschi, Tucker Balch, Gerhard Kraetzschmar, and Peter Stone, 133–138, Stockholm Sweden. Linköping University Electronic Press.

Presentations

(excludes regular conference and workshop presentations)

- April 27, 2004. “Statistical Probabilistic Model Checking.” *Annual Research Review and Workshop on High-Confidence Embedded Systems*, Philadelphia, Pennsylvania.
- April 12, 2004. “Decision-Theoretic Planning with Asynchronous Events.” *Carnegie Mellon University Machine Learning Lunchtime Chats*, Pittsburgh, Pennsylvania.
- May 15, 2003. “Acceptance Sampling and its Use in Probabilistic Verification.” *Dagstuhl Seminar on Probabilistic Methods in Verification and Planning*, Dagstuhl, Germany.
- March 28, 2003. “Probabilistic Verification of Discrete Event Systems using Acceptance Sampling.” *Durham University Computer Science Departmental Research Seminar*, Durham, United Kingdom.
- March 19, 2003. “Heuristic POCL Planning.” *Durham Planning Group Seminar*, Durham, United Kingdom.
- March 15, 2002. “Probabilistic Verification of Discrete Event Systems.” *Carnegie Mellon University SCS Student Seminar Series*, Pittsburgh, Pennsylvania.

Software

VHPOP: Heuristic temporal partial-order causal-link planning.

Tempastic-DTP: Decision-theoretic planning with asynchronous stochastic events and actions.

MDPSim: Evaluation software for the probabilistic track of the 4th International Planning Competition (with John Asmuth and Michael L. Littman).

Ymer: Probabilistic model checking of discrete-event systems.