

George Konidaris

gdk@cs.umass.edu
<http://www-all.cs.umass.edu/~gdk>

Education

- **Doctor of Philosophy** (in progress)
Department of Computer Science, University of Massachusetts Amherst, September 2004 — present.
Advisor: Prof. Andrew G. Barto.
Graduate GPA: 3.925.
- **Master of Science**, Artificial Intelligence (with distinction)
School of Informatics, University of Edinburgh, September 2002 – September 2003.
Dissertation: *Behaviour-Based Reinforcement Learning*, supervisor: Dr. Gillian Hayes.
- **Bachelor of Science with Honours**, Computer Science (with distinction)
School of Computer Science, University of the Witwatersrand, January — December 2001.
Research Report: *Axial Line Placement in Deformed Urban Grids*, supervisor: Prof. Ian Sanders.
- **Bachelor of Science**, Computer Science and Computational & Applied Mathematics (with distinction)
University of the Witwatersrand, January 1998 — December 2000.

Work Experience

- **Research Assistant** September 2005 — July 2006, June 2007 — present.
Department of Computer Science, University of Massachusetts Amherst.
- **Teaching Assistant** September 2004 — May 2005, September 2006 — May 2007
Department of Computer Science, University of Massachusetts Amherst.
- **Research Associate** November 2003 — August 2004
Institute for Perception, Action and Behaviour, School of Informatics, University of Edinburgh.
Systems development and research for the Hydra Project on self-assembling and reconfigurable robots.
- **Teaching Assistant** February — July 2002
School of Computer Science, University of the Witwatersrand, Johannesburg. Co-lectured Basic Computer Organisation and tutored Fundamental Algorithmic Concepts.
- **Tutor** January – November 2001
School of Computer Science, University of the Witwatersrand, Johannesburg. Tutored and marked tests and assignments for first-year undergraduate courses.
- **Internet Game Developer** November 1998 — February 2003
Developed Java-based web games for gAL.co.za (Get a Life), a student content website.
- **Partner and Software Developer** September 1998 — September 2002
Founding partner and software developer for Silver Dragon Digital Creations, a software and web development company. Designed web pages and developed custom applications for various clients, ranging from batch update systems to financial modelling software.

Research Interests

Artificial Intelligence (situated learning, layered and hierarchical learning, highly adaptive control), Reinforcement Learning, Artificial Life and Computer Science Education.

Honours and Awards

- The Rank Xerox Prize for the best Artificial Intelligence MSc dissertation, University of Edinburgh, 2003.
- Commonwealth Scholarship (ref. ZACS-2002-344), Association of Commonwealth Universities, for study at the University of Edinburgh, 2002 — 2003.
- The Liberty Life Gold Medal for outstanding performance in Computer Science Honours, University of the Witwatersrand, 2001.
- The Altech Systems Prize for the best Computer Science Honours Research Report, University of the Witwatersrand, 2001.
- The Colin James Young Award for the best project in any area of the Mathematical Sciences, University of the Witwatersrand, 2001.
- The Computer Science Alumni Medal for the Best Student Tutor, University of the Witwatersrand, 2001.
- Wits Interactive Computing Group (ICG): President (2001), Head of Programming (1999 and 2000), Programming Champion (2000 and 2001).

Academic Service and Memberships

- Journal Reviewing:
 - IEEE Transactions on Robotics (2005).
 - Journal of Artificial Intelligence Research (2006, 2007).
 - Journal of Machine Learning Research (2006, 2007, 2008).
- Conference Reviewing:
 - North East Student Colloquium on Artificial Intelligence (2006, 2007, 2008).
 - AAAI Spring Symposium (2008).
- Membership of Professional Societies:
 - South African Institute for Computer Scientists and Information Technologists (since 2001).
 - International Society for Adaptive Behavior (2004—2007).
 - Association for the Advancement of Artificial Intelligence (since 2006).
- Departmental Service: Graduate Student Representative (September 2007—December 2008).

Publications

1. G.D. Konidakis and A.G. Barto. Sensorimotor Abstraction Selection for Efficient, Autonomous Robot Skill Acquisition. *Proceedings of the 7th IEEE International Conference on Development and Learning*, August 2008.
2. G.D. Konidakis and A.G. Barto. *Skill Discovery in Continuous Reinforcement Learning Domains using Skill Chaining*. Technical Report UM-CS-2008-24, Department of Computer Science, University of Massachusetts Amherst, July 2008.
3. G.D. Konidakis. *Autonomous Robot Skill Acquisition (thesis summary)* Doctoral Symposium, 23rd National Conference on Artificial Intelligence (AAAI 2008), July 2008.

4. G.D. Konidaris and S. Osentoski. *Value Function Approximation in Reinforcement Learning using the Fourier Basis*. Technical Report UM-CS-2008-19, Department of Computer Science, University of Massachusetts Amherst, June 2008.
5. E.L. Nelson, G.D. Konidaris and N.E. Berthier. *Using Real-Time Motion Capture to Measure Handedness in Infants*. Poster presentation to be given at the XVIth Biennial International Conference on Infant Studies, Vancouver, Canada, March 2008.
6. L. Georgopoulos, G.M. Hayes and G.D. Konidaris. A Forward Model of Optic Flow for Detecting External Forces. In, *Proceedings of the IEEE/RSJ 2007 International Conference on Intelligent Robots and Systems*, October 2007.
7. G.D. Konidaris and A.G. Barto. Building Portable Options: Skill Transfer in Reinforcement Learning. In *Proceedings of the Twentieth International Joint Conference on Artificial Intelligence*, pages 895-900, January 2007.

An earlier version appeared as G.D. Konidaris and A.G. Barto. *Building Portable Options: Skill Transfer in Reinforcement Learning*. Technical Report UM-CS-2006-17, Department of Computer Science, University of Massachusetts at Amherst, March 2006.
8. G.D. Konidaris and A.G. Barto. An Adaptive Robot Motivational System. In *From Animals to Animats 9: Proceedings of the 9th International Conference on the Simulation of Adaptive Behavior*, pages 346-356, September 2006.
9. G.D. Konidaris. A Framework for Transfer in Reinforcement Learning. In the *ICML-06 Workshop on Structural Knowledge Transfer for Machine Learning*, Pittsburgh PA, June 2006.
10. G.D. Konidaris and A.G. Barto. Autonomous Shaping: Knowledge Transfer in Reinforcement Learning. In *Proceedings of the Twenty Third International Conference on Machine Learning*, June 2006.

An earlier version appeared as: G.D. Konidaris and A.G. Barto. *Autonomous Shaping: Learning to Predict Reward for Novel States*. Technical Report UM-CS-2005-58, September 2005.
11. S. Rauchas, B. Rosman, G.D. Konidaris and I.D. Sanders. Language Performance at High School and Success in First Year Computer Science. In *Proceedings of the SIGCSE 2006 Technical Symposium on Computer Science Education*, March 2006.
12. F.J. Stewart, T. Taylor and G.D. Konidaris. METAMorph: Experimenting with Genetic Regulatory Networks for Artificial Development. In *Proceedings of the VIIIth European Conference on Artificial Life (ECAL 2005)*, September 2005.
13. A. Stout, G.D. Konidaris and A.G. Barto. Intrinsically Motivated Reinforcement Learning: A Promising Framework for Developmental Robot Learning. In *Proceedings of the 2005 AAAI Spring Symposium on Developmental Robotics*, March 2005.
14. G.D. Konidaris and G.M. Hayes. An Architecture for Behavior-Based Reinforcement Learning. *Adaptive Behavior* 13(1), 2005.
15. G.D. Konidaris and G.M. Hayes. Anticipatory Learning for Focusing Search in Reinforcement Learning Agents. In the *Second Workshop on Anticipatory Behavior in Adaptive Learning Systems*, Los Angeles CA, July 2004.
16. G.D. Konidaris and G.M. Hayes. Estimating Future Reward in Reinforcement Learning Animats using Associative Learning. In *From Animals to Animats 8: Proceedings of the 8th International Conference on the Simulation of Adaptive Behavior*, July 2004.
17. G.D. Konidaris, T. Taylor and J.C.T. Hallam. HydroGen: Automatically Generating Self-Assembly Code for Hydron Units. In *Proceedings of the Seventh International Symposium on Distributed Autonomous Robotic Systems*, June 2004.
18. G.D. Konidaris. *Behaviour-Based Reinforcement Learning*. Master's Thesis, School of Informatics, University of Edinburgh, 2003.
19. G.D. Konidaris, D.A. Shell and N. Oren. Evolving Neural Networks to Play the Capture Game. In *Proceedings of the SAICSIT 2002 Postgraduate Symposium*, September 2002.

20. G.D. Konidakis. *Axial Line Placement in Deformed Urban Grids*. Honours Dissertation, School of Computer Science, University of the Witwatersrand, 2001.

Also released as: G.D. Konidakis and I.D. Sanders, *Axial Line Placement in Deformed Urban Grids*. Technical Report TR-Wits-CS-2002-04, School of Computer Science, University of the Witwatersrand, April 2002.

21. J. Adler, G.D. Christelis, J.A. Deneys, G.D. Konidakis, G. Lewis, A.G. Lipson, R.L. Phillips, D.K. Scott-Dawkins, D.A. Shell, B.V. Strydom, W.M. Trakman and L.D. Van Gool. Finding Adjacencies in Non-Overlapping Polygons. Electronic Paper, *Proceedings of the 2001 SAICSIT Conference*, September 2001.