

George Konidakis

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Academic Employment

- **Brown University**
John E. Savage Assistant Professor of Computer Science July 2019–present.
Assistant Professor, Department of Computer Science Sept 2016–Jun 2019.
- **Duke University** Sep. 2014–Sept 2016.
Assistant Professor, Departments of Computer Science & Electrical and Computer Engineering.
- **MIT Computer Science and Artificial Intelligence Laboratory** Jan. 2011–Aug. 2014.
Postdoctoral research with Professors Leslie Kaelbling and Tomas Lozano-Perez.

Education

- **Doctor of Philosophy**, Computer Science. Sep. 2004–Dec. 2010.
Computer Science Department, University of Massachusetts Amherst.
Dissertation: *Autonomous Robot Skill Acquisition*, advisor: Prof. Andrew G. Barto.
- **Master of Science**, Artificial Intelligence (with distinction). Sep. 2002–Sep. 2003.
School of Informatics, University of Edinburgh.
Dissertation: *Behaviour-Based Reinforcement Learning*, supervisor: Dr. Gillian Hayes.
- **Bachelor of Science with Honours**, Computer Science (with distinction). Jan. 2001–Dec. 2001.
School of Computer Science, University of the Witwatersrand.
Research Report: *Axial Line Placement in Deformed Urban Grids*, supervisor: Prof. Ian Sanders.
- **Bachelor of Science**. Jan. 1998–Dec. 2000.
Computer Science and Computational & Applied Mathematics (with distinction).
University of the Witwatersrand.

Industrial Experience

- **Chief Roboticist, Realtime Robotics** March 2016–present.
Co-founded a startup to commercialize our invention of a specialized robot motion planning processor capable of sub-millisecond planning (see publications 30, 45, and 48).

Teaching Experience

- **Brown University**
 - Artificial Intelligence (CSCI 1410) Spring 2017, Fall 2017–2019.
 - Reintegrating AI (CSCI 2951X) Spring 2018, Spring 2020–2021.

- **Duke University**
 - Hierarchical Reinforcement Learning and Planning (CPS 590.2) Fall 2014.
 - Introduction to Artificial Intelligence (CPS 270) Spring 2015, 2016.
 - Decision Making for Robotics and Autonomous Systems (CPS 590.1) Fall 2015.
- **Guest Lectures**
 - *Robot Motion Planning on a Chip* December 3rd 2020.
Cornell University, course ECE 4960 (Fast Robots).
 - *Reinforcement Learning for Robotics* May 7th 2013.
Massachusetts Institute of Technology, course 6.S064 (Introduction to Machine Learning).
 - *Hierarchical Reinforcement Learning* Nov. 5th 2012.
Brown University, course CSCI2951-F (Learning and Sequential Decision Making).
 - *Reinforcement Learning* Dec. 1st 2011,
Nov. 27th 2012.
Massachusetts Institute of Technology, course 6.867 (Machine Learning).
- **External Author and Examiner** Jun. 2008–Jul. 2014
University of London, International Programmes. Developed subject guide and accompanying CD for undergraduate Artificial Intelligence (2910310/CO3310) course, and set and marked projects and final exams. This course is taken by approximately 40 correspondence students every year from around the world, who obtain credit toward a University of London degree.
- **Curriculum Design** Jun. 2011–August 2011
MIT-Singapore Alliance. Collaborated with the MIT Mechanical Engineering department to design an introductory course (and associated course notes) on numerical programming in Python. A Matlab version is now being used to teach Numerical Computation for Mechanical Engineers (2.086) at MIT.
- **Teaching Assistant** (7 semesters) Sep. 2004–Dec. 2010
Department of Computer Science, University of Massachusetts Amherst. Graded written and programming assignments, conducted discussion sections and held office consultations for courses ranging from introductory Java programming to graduate-level algorithms.
- **Teaching Assistant** Jan.– Jul. 2002
School of Computer Science, University of the Witwatersrand, Johannesburg. Co-lectured Basic Computer Organisation (first semester, first year of Computer Science) to approximately 180 students, and tutored Fundamental Algorithmic Concepts (second semester, first year) to a class of approximately 120 students.
- **Tutor** Jan.–Nov. 2001
School of Computer Science, University of the Witwatersrand, Johannesburg. Tutored and marked tests and assignments for first-year undergraduate courses.

Postgraduate Research Student Supervision

At Brown University:

ScM Projects

- Seungchan Kim, *Adaptive Tuning of Temperature in Mellowmax using Meta-Gradients.* May 2020
- Josh Roy, *Visual Transfer for Reinforcement Learning via Wasserstein Domain Confusion.* May 2020
- Matt Slivinski. *Robust Deep Skill Chaining.* May 2020

At Duke University:

PhD Dissertations

- Benjamin Burchfiel, *3D Object Representations for Robot Perception.* Sep 2019

At the University of the Witwatersrand:*PhD Dissertations*

- Michael Mitchley, *Adaptive Value Function Approximation in Reinforcement Learning using Wavelets*. (Co-advised with Prof. Ebrahim Momoniat) Dec 2015
- Dean Wookey, *Representation Discovery Using a Fixed Basis in Reinforcement Learning*. (Co-advised with Prof Clint van Alten) Aug 2016
- Pravesh Ranchod, *Skill Discovery From Multiple Related Demonstrators*. (Co-advised with Prof Clint van Alten and Dr. Benjamin Rosman) Dec 2017

MSc Dissertations

- Warwick Masson, *Reinforcement Learning with Parameterized Actions*. (Co-supervised with Dr. Pravesh Ranchod) Aug 2016
- Steven James, *The Effect of Simulation Bias on Action Selection in Monte Carlo Tree Search*. (Co-supervised with Dr. Pravesh Ranchod and Dr. Benjamin Rosman) Aug 2016
- Craig Bester, *Multi-Pass Deep Q-Networks for Reinforcement Learning with Parameterised Action Spaces*. (Co-advised with Mr. Steven James and Dr. Pravesh Ranchod.) March 2019

Invited Talks**Conferences**

- *Signal to Symbol (via Skills)*. Third Conference on Robot Learning, Osaka, Japan, November 18th 2019.
- *Robot Skill Acquisition*. Third EUCogIII (European Network for the Advancement of Artificial Cognitive Systems, Interaction and Robotics) Members Conference, Palma de Mallorca, April 10th 2013.

Workshops

- *Signal to Symbols (via Skills)*. NeurIPS 2020 Workshop on Biological and Artificial Reinforcement Learning, December 12th 2020.
- *Learning Portable Skills and Symbols*. AAAI 2020 Workshop on Generalization in Planning, New York City, February 7th 2020.
- *Learning Abstract Models for Symbolic High-Level Planning*. Third International Workshop on Intrinsically-Motivated Open-Ended Learning, Rome, Italy, October 5th 2017.
- *Robots, Skills, and Symbols*. IROS 2017 Second Workshop on Machine Learning Methods for High-Level Cognitive Capabilities in Robotics, Vancouver Canada, September 28th 2017.
- *High-Level Symbolic Representations for Planning*. RSS 2017 Workshop on: The What Without the How: Specifying Planning Problems in Robotics, Cambridge MA, July 15th 2017.
- *Combining State and Temporal Abstraction*. ICML 2016 Workshop on Abstraction in RL, New York City, June 23rd 2016.
- *What Are Representations For?* RSS 2016 Workshop on Geometry and Beyond—Representations, Physics, and Scene Understanding for Robotics, Ann Arbor, Michigan, June 19th 2016.
- *Avoiding Learning by Exploiting Structure*. ICRA 2016 Workshop on Nature Versus Nurture in Robotics, May 20th 2016.
- *Robots, Skills, and Symbols*. ICRA 2016 Workshop on Task-driven Perceptual Representations: Sensing, Planning and Control under Resource Constraints, Stockholm, May 16th 2016.

- *Learning Symbolic Representations for Planning*. RSS 2015 Workshop on Learning Reusable Concepts in Robotics, Rome, July 16th 2015.
- *Robots, Skills, and Symbols*. NIPS 2014 Workshop on Autonomously Learning Robots, Montreal, December 12th 2014.
- *Robots, Skills, and Symbols*. IJCAI 2013 Workshop on Machine Learning for Interactive Systems: Bridging the Gap between Perception, Action and Communication, Beijing, August 4th 2013.
- *Robots, Skills, and Symbols*. Schloss Dagstuhl Seminar on Mechanisms of Ongoing Development in Cognitive Robotics, February 13th 2013.

Universities and Research Laboratories

- Navy Center for Applied Research in Artificial Intelligence. *Signal to Symbol (via Skills)*, NCARAI Seminar, December 7th 2020.
- Carnegie Mellon University. *Signal to Symbol (via Skills)*, Robotics Institute Seminar, November 16th 2018.
- MIT. *Robot Motion Planning on a Chip*, Robotics Seminar, November 1st 2016.
- University of Pennsylvania. *Robots, Skills, and Symbols*, April 15th 2016.
- Indiana University. *Robots, Skills, and Symbols*, December 4th 2015.
- MIT. *Robots, Skills, and Symbols*, October 24th 2014.
- Brown University. *Robots, Skills, and Symbols*, October 23rd 2014.
- Texas A&M. *Robots, Skills, and Symbols*, October 6th 2014.
- University of Texas at Austin. *Robots, Skills, and Symbols*, October 3rd 2014.
- University of Michigan. *Robots, Skills, and Symbols*, September 19th 2014.
- Oregon State University. *Robots, Skills, and Symbols*, August 27th 2014.
- Harvard University. *Autonomous Robot Skill Acquisition*, Machine Learning Tea, September 19th 2012.
- University College London, Gatsby Computational Neuroscience Unit. *Autonomous Robot Skill Acquisition*, seminar, December 9th 2011.
- Rutgers. *Autonomous Robot Skill Acquisition*, DCS Colloquium, December 7th 2011.
- MIT. *Skill Acquisition in Continuous Reinforcement Learning Domains*, July 27th 2010.
- Brown University. *Skill Acquisition in Continuous Reinforcement Learning Domains*, July 26th 2010.
- Williams College. *Toward Autonomous Robot Skill Acquisition*, CS Colloquium, November 21st 2008.
- Rutgers. *Toward Autonomous Robot Skill Acquisition*, DCS Colloquium, September 22nd 2008.
- University of Massachusetts Amherst. *Agent Space vs. Problem Space: Knowledge and Skill Transfer in Reinforcement Learning*, Machine Learning and Friends Lunch, December 1st 2005; *Sensorimotor Abstraction Selection for Autonomous Robot Skill Acquisition*. Machine Learning and Friends Lunch, 30th April 2008.
- University of Edinburgh. *Behavior-Based Reinforcement Learning*, December 4th 2003.
- University of the Witwatersrand. *Behavior-Based Reinforcement Learning*, 5th October 2003.
- University of Bath. *Behavior-Based Reinforcement Learning*, BAI Summer Seminar Series, September 23rd 2003.

Academic Service and Memberships

- Action Editor, Journal of Machine Learning Research, November 2015—present.
- Action Editor, Journal of Artificial Intelligence Research, October 2017—September 2020.
- Advisory Board, Deep Learning Indaba, September 2017—present.
- Area Co-Chair (with Ifat Levy), The Multi-disciplinary Conference on Reinforcement Learning and Decision Making, 2019.
- Robotics Chair (with Prof. Gregory Dudek, Dr. Brad Knox, and Dr. Nick Hawes), AAAI 2014–2016.
- Co-organizer, co-founder (with Stefanie Tellex, Matt Walter and Brian Scassellati), and steering committee, *Northeast Robotics Colloquium* (NERC), 2012—present.
- Co-organizer (with Lorenzo Riano, Alessandro Saffioti, Nick Hawes, Siddharth Srivastava, and Moritz Tenorth), *IROS 2014 Workshop on AI and Robotics*, September 14th 2014.
- Co-organizer (with Alessandro Saffioti, Nick Hawes, and Moritz Tenorth), *AAAI 2014 Workshop on AI and Robotics*, July 27–28th 2014.
- Co-organizer (with Byron Boots, Nick Hawes, Todd Hester, Tekin Meriçli, Lorenzo Riano, Benjamin Rosman and Peter Stone), *AAAI 2013 Workshop on Intelligent Robotic Systems*, July 14–15th 2013.
- Co-organizer (with Gerhard Neumann, Freek Stulp, and Jan Peters), *RSS Workshop on Hierarchical and Structured Learning for Robotics*, June 28th, 2013.
- Co-organizer (with Byron Boots, Nick Hawes, Todd Hester, Bhaskara Marthi, Lorenzo Riano and Benjamin Rosman), *Designing Intelligent Robots: Reintegrating AI II*, AAAI 2013 Spring Symposium.
- Co-organizer (with Byron Boots, Stephen Hart, Todd Hester, Sarah Osentoski and David Wingate), *Designing Intelligent Robots: Reintegrating AI*, AAAI 2012 Spring Symposium.
- Co-organizer (with Özgür Şimşek), *Abstraction in Reinforcement Learning* ICML/UAI/COLT 2009 Workshop.
- Journal Reviewing:
 - Journal of Machine Learning Research (2006, 2007, 2008, 2010, 2012, 2013, 2015).
 - Journal of Artificial Intelligence Research (2006, 2007, 2011, 2012, 2013, 2014, 2015, 2016, 2020).
 - International Journal of Robotics Research (2013, 2016, 2017, 2018).
 - Autonomous Robots (2015).
 - Artificial Intelligence (2012, 2013, 2014, 2015).
 - IEEE Transactions on Robotics (2005, 2013, 2014, 2015, 2017).
 - Machine Learning (2009, 2011).
 - Robotics and Autonomous Systems (2010, 2011).
 - IEEE Transactions on Autonomous Mental Development (2010).
 - Computational Intelligence (2011, 2012, 2013).
 - IEEE Transactions on Neural Networks (2009, 2010).
 - South African Computer Journal (2011, 2012).
- Conference Reviewing:
 - Neural Information Processing Systems (2011, 2012, 2013, 2014, 2015, 2020).
 - International Conference on Machine Learning (2009, 2012, 2013, 2014, 2015, 2017, 2018, 2019).
 - Robotics: Science and Systems (2013, 2014, 2015, 2017, 2018, 2019, 2020).
 - International Joint Conference on Artificial Intelligence (2009, 2011, 2013, 2015, 2016).

- AAI Conference on Artificial Intelligence (2010, 2013, 2016, 2017).
- IEEE International Conference on Robotics and Automation (2010, 2011, 2012, 2013, 2015, 2016).
- IEEE/RSJ International Conference on Intelligent Robots and Systems (2012, 2013, 2014, 2015, 2016).
- International Conference on Automated Planning and Scheduling (2015).
- ACM/IEEE International Conference on Human-Robot Interaction (2010).
- IEEE Conference on Development and Learning (2010, 2011, 2012).
- North East Student Colloquium on Artificial Intelligence (2006, 2007, 2008).
- SAICSIT Annual Research Conference (2009, 2010, 2011, 2012, 2013).
- Senior Program Committee Member:
 - International Joint Conference on Artificial Intelligence (2013, 2015, 2017, 2018).
 - AAI Conference on Artificial Intelligence (2017, 2018).
 - International Conference on Robot Learning (2017, 2018)
 - IEEE/RSJ International Conference on Intelligent Robots and Systems (2017)
 - IEEE International Conference on Robotics and Automation (2017, 2018)
 - International Conference on Learning Representations (2019)
- Membership of Professional Societies:
 - Association for the Advancement of Artificial Intelligence (since 2006).
 - International Society for Adaptive Behavior (2004–2007).
 - South African Institute for Computer Scientists and Information Technologists (since 2001).

Grants and Funding

- *Decision-Theoretic Sequential Decision Making for Observer-Aware, Goal-Directed Behavior in Swarms*. Office of Naval Research. Grant number N00014-21-1-2200, award amount: \$405,000.
- *Learning Task-Specific Representations for Broadly Capable Reinforcement Learning Agents*. National Science Foundation (with Co-PI Professor Michael Littman). Grant number 1955361, award amount: \$1,199,684.
- *CAREER: Learning Symbolic Representations for Robot Manipulation*. National Science Foundation. Grant number 1844960, award amount: \$549,988.
- *Online, Incremental Skill and Representation Acquisition for Lifelong Learning*. DARPA Seedling. Grant number W911NF1820268, award amount: \$360,890.
- *Hidden Parameter Markov Decision Processes: Exploiting Structure in Families of Tasks*. National Science Foundation (with PI Professor Finale Doshi-Velez). Grant number 1717569, award amount: \$450,000 (Brown University share \$208,000).
- *Constructing Abstract Hierarchies for Robust, Real-Time Control*. AFOSR Young Investigator Program. Grant number FA9550-17-1-0124, award amount: \$356,861.
- *Bridging the Gap Between Low-Level Robot Control and Flexible High-Level Task Planning*. DARPA Young Faculty Award. Grant number D15AP00104, award amount: \$492,826 + \$64,127 *Director's Fellowship* (additional third year).
- *Low-Power, Real-Time Motion Planning for Complex Robots in Unstructured Environments*. Robotics Fast Track Grant (with Co-PI Professor Daniel Sorin), award amount: \$99,242.28.
- *CRCNS: Representational Foundations of Adaptive Behavior in Natural and Artificial Agents*. National Institutes of Health (with PI Professor Matthew Botvinick and Co-PI Professor Samuel Gershman). Grant number 1R01MH109177-01, award amount: \$1,183,417.
- *Robotics Activities at Association for the Advancement of Artificial Intelligence (AAAI) 2016*. National Science Foundation. Award number 1600043, award amount: \$17,500.00.

Honors and Awards

- The Karen T. Romer Prize for Undergraduate Advising and Mentoring, Brown University, 2021.
- The IJCAI-JAIR Best Paper Prize, for *From Skills to Symbols: Learning Symbolic Representations for Abstract High-Level Planning*. George Konidaris, Leslie Kaelbling, and Tomas Lozano-Perez. For 2020, presented January 2021.
- NSF CAREER Award, 2019.
- Best Paper nomination at the 2019 IEEE/RSJ International Conference on Intelligent Robots and Systems, for *Bounded-Error LQR-Trees*. Barrett Ames and George Konidaris. November 2019.
- Richard B. Salomon Faculty Research Award, Brown University, 2018.
- DARPA Director's Fellowship, 2017.
- AFOSR Young Investigator Program Award (class of 2017).
- DARPA Young Faculty Award (class of 2015).
- Best Paper nomination at Robotics: Science and Systems, for *Policy Search for Multi-Robot Coordination under Uncertainty*. Christopher Amato, George Konidaris, Ariel Anders, Gabriel Cruz, Jonathan P. How and Leslie P. Kaelbling. July 2015.
- MIT Intelligence Initiative (I²) Postdoctoral Fellowship, April 2013.
- Best Student Video, AAAI 2011 Video Competition, for *Autonomous Robot Skill Acquisition*, Scott Kuindersma and George Konidaris. August 2011.
- 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).

Publications

Journal Articles

1. O. Kroemer, S. Niekum, and G.D. Konidaris. A Review of Robot Learning for Manipulation: Challenges, Representations, and Algorithms. *Journal of Machine Learning Research* 22(30), pages 1–82, January 2021.
2. B. Keller, M. Draelos, K. Zhou, R. Qian, A.N. Kuo, G.D. Konidaris, K. Hauser, and J.A. Izatt. Optical Coherence Tomography-Guided Robotic Ophthalmic Microsurgery via Reinforcement Learning from Demonstration. *IEEE Transactions on Robotics* 36(4), 1207–1218, August 2020.

3. G.D. Konidaris. On The Necessity of Abstraction. *Current Opinion in Behavioral Sciences* 29 (Special Issue on Artificial Intelligence), pages 1–7, October 2019.
4. E. Rosen, D. Whitney, E. Phillips, G. Chen, J. Tompkin, G.D. Konidaris, and S. Tellex. Communicating And Controlling Robot Arm Motion Intent Through Mixed Reality Head-Mounted Displays. *The International Journal of Robotics Research* 38(12-13), October 2019.
5. C. Amato, G.D. Konidaris, L.P. Kaelbling, and J.P. How. Modeling and Planning with Macro-Actions in Decentralized POMDPs. *Journal of Artificial Intelligence Research* 64, pages 817–859, March 2019.
6. Y. Zhou, B. Burchfiel, and G.D. Konidaris. Representing, Learning, and Controlling Complex Object Interactions. *Autonomous Robots* 42(7), pages 1355–1367, April 2018.
7. E.L. Nelson, N.E. Berthier, and G.D. Konidaris. Handedness and Reach-to-Place Kinematics in Adults: Left-Handers Are Not Reversed Right-Handers. *Journal of Motor Behavior* 50:4, pages 381–391, July 2018.
8. G.D. Konidaris, L.P. Kaelbling, and T. Lozano-Perez. From Skills to Symbols: Learning Symbolic Representations for Abstract High-Level Planning. *Journal of Artificial Intelligence Research* 61, pages 215–289, January 2018.
9. C. Amato, G.D. Konidaris, A. Anders, G. Cruz, J. How, and L.P. Kaelbling. Policy Search for Multi-Robot Coordination under Uncertainty. *The International Journal of Robotics Research* 35(14), pages 1760–1778, December 2016.
10. D. Wookey and G.D. Konidaris. Regularized Feature Selection in Reinforcement Learning. *Machine Learning* 100(2), pages 655–676, September 2015.
11. S. Niekum, S. Osentoski, G.D. Konidaris, S. Chitta, B. Marthi, and Andrew G. Barto. Learning Grounded Finite-State Representations from Unstructured Demonstrations. *The International Journal of Robotics Research*, 34(2), pages 131–157, February 2015.
12. E.L. Nelson, G.D. Konidaris, and N.E. Berthier. Hand preference status and reach kinematics in infants. *Infant Behavior and Development*, 37(4), 615–623, November 2014.
13. G.D. Konidaris, I. Scheidwasser and A.G. Barto. Transfer in Reinforcement Learning using Common Features. *Journal of Machine Learning Research* 13:1333–1371, May 2012.
14. E.L. Nelson, G.D. Konidaris, N.E. Berthier, M.C. Braun, M.S.F.X. Novak, S.J. Suomi and M.A. Novak. Kinematics of reaching and implications for handedness in rhesus monkey infants. *Developmental Psychobiology* 54(4), pages 460–467, May 2012.
15. G.D. Konidaris, S.R. Kuindersma, R.A. Grupen and A.G. Barto, Robot Learning from Demonstration by Constructing Skill Trees. *The International Journal of Robotics Research* 31(3), pages 360–375, March 2012.
16. G.D. Konidaris and G.M. Hayes. An Architecture for Behavior-Based Reinforcement Learning. *Adaptive Behavior* 13(1), pages 5–32, March 2005.

Highly Refereed Conference Papers

17. K. Asadi, N. Parikh, R. Parr, G.D. Konidaris, and M.L. Littman. Deep Radial-Basis Value Functions for Continuous Control. Accepted, *Proceedings of the Thirty-Fifth AAAI Conference on Artificial Intelligence*, February 2021.
18. J. Roy and G.D. Konidaris. Visual Transfer For Reinforcement Learning Via Wasserstein Domain Confusion. Accepted, *Proceedings of the Thirty-Fifth AAAI Conference on Artificial Intelligence*, February 2021.
19. E. Rosen, N. Kumar, N. Gopalan, D. Ullman, G.D. Konidaris, and S. Tellex. Building Plannable Representations with Mixed Reality. In *Proceedings of the 2020 IEEE/RSJ International Conference on Intelligent Robots and Systems*, October 2020.
20. S. Murray, G.D. Konidaris, and D.J. Sorin. Roadmap Subsampling for Changing Environments. In *Proceedings of the 2020 IEEE/RSJ International Conference on Intelligent Robots and Systems*, October 2020.

21. S. James, B. Rosman, and G.D. Konidaris. Learning Portable Representations for High-Level Planning. In *Proceedings of the Thirty-Seventh International Conference on Machine Learning*, July 2020
22. N. Gopalan, E. Rosen, G.D. Konidaris, and S. Tellex. Simultaneously Learning Transferable Symbols and Language Groundings from Perceptual Data for Instruction Following. In *Robotics: Science and Systems XVI*, July 2020.
23. Y. Jinnai, J. Park, M.C. Machado, and G.D. Konidaris. Exploration in Reinforcement Learning with Deep Covering Options. In *Proceedings of the Eighth International Conference on Learning Representations*, April 2020.
24. A. Bagaria and G.D. Konidaris. Option Discovery using Deep Skill Chaining. In *Proceedings of the Eighth International Conference on Learning Representations*, April 2020.
25. B. Abbatematteo, S. Tellex, and G.D. Konidaris. Learning to Generalize Kinematic Models to Novel Objects. In *Proceedings of the Third Conference on Robot Learning*, November 2019.
26. V. Cohen, B. Burchfiel, T. Nguyen, N. Gopalan, G.D. Konidaris, and S. Tellex. Grounding Language Attributes to Objects Using Bayesian Eigenobjects. In *Proceedings of the 2019 IEEE/RSJ International Conference on Intelligent Robots and Systems*, pages 1187–1194, November 2019.
27. B. Ames and G.D. Konidaris. Bounded Error LQR-Trees. In *Proceedings of the 2019 IEEE/RSJ International Conference on Intelligent Robots and Systems*, pages 144–150, November 2019.
28. A. Pacheck, G.D. Konidaris, and H. Kress-Gazit. Automatic Encoding and Repair of Reactive High-Level Tasks with Learned Abstract Representations. In *Robotics Research: the 18th Annual Symposium*, October 2019.
29. S. Kim, K. Asadi, M.L. Littman, and G.D. Konidaris. DeepMellow: Removing the Need for a Target Network in Deep Q-Learning. In *Proceedings of the Twenty Eighth International Joint Conference on Artificial Intelligence*, pages 2733–2739, August 2019.
30. S. Murray, W. Floyd-Jones, G.D. Konidaris, and D.J. Sorin. A Programmable Architecture for Robot Motion Planning Acceleration. In *Proceedings of the 30th IEEE International Conference on Application-specific Systems, Architectures and Processors*, July 2019.
31. Y. Jinnai, J. Park, D. Abel, and G.D. Konidaris. Discovering Options for Exploration by Minimizing Cover Time. In *Proceedings of the 36th International Conference on Machine Learning*, pages 3130–3139, June 2019.
32. Y. Jinnai, D. Abel, D. Hershkowitz, M.L. Littman, and G.D. Konidaris. Finding Options that Minimize Planning Time. In *Proceedings of the 36th International Conference on Machine Learning*, pages 3120–3129, June 2019.
33. N. DeMarinis, S. Tellex, V. Kemerlis, G.D. Konidaris, and R. Fonseca. Scanning the Internet for ROS: A View of Security in Robotics Research. In *Proceedings of the 2019 International Conference on Robotics and Automation*, May 2019.
34. S.Y. Gadre, E. Rosen, G. Chien, E. Phillips, S. Tellex, and G.D. Konidaris. End-User Robot Programming Using Mixed Reality. In *Proceedings of the 2019 International Conference on Robotics and Automation*, May 2019.
35. A. Levy, G.D. Konidaris, R. Platt, and K. Saenko. Learning Multi-Level Hierarchies with Hindsight. In *Proceedings of the Eighth International Conference on Learning Representations*, May 2019.
36. B. Burchfiel and G.D. Konidaris. Hybrid Bayesian Eigenobjects: Combining Linear Subspace and Deep Network Methods for 3D Robot Vision. In *Proceedings of the 2018 IEEE/RSJ International Conference on Intelligent Robots and Systems*, pages 6843–6850, October 2018.
37. B. Ames, A. Thackston, and G.D. Konidaris. Learning Symbolic Representations for Planning with Parameterized Skills. In *Proceedings of the 2018 IEEE/RSJ International Conference on Intelligent Robots and Systems*, pages 526–533, October 2018.

38. D. Abel, Y. Jinnai, Y. Guo, G.D. Konidaris, and M.L. Littman. Policy and Value Transfer for Lifelong Reinforcement Learning. In *Proceedings of the Thirty-fourth International Conference on Machine Learning*, pages 20–29, July 2018.
39. G. Andersen and G.D. Konidaris. Active Exploration for Learning Symbolic Representations. In *Neural Information Processing Systems 30*, pages 5009–5019, December 2017.
40. T. Killian, S. Daulton, G.D. Konidaris, and F. Doshi-Velez. Robust and Efficient Transfer Learning with Hidden Parameter Markov Decision Processes. In *Neural Information Processing Systems 30*, pages 6250–6261, December 2017.
41. D. Whitney, E. Rosen, E. Phillips, G.D. Konidaris, and S. Tellex. Comparing Robot Grasping Teleoperation Across Desktop and Virtual Reality with ROS Reality. In *Robotics Research: the 17th Annual Symposium*, December 2017.
42. E. Rosen, D. Whitney, E. Phillips, G. Chen, J. Tompkin, G.D. Konidaris, and S. Tellex. Communicating Robot Arm Motion Intent Through Mixed Reality Head-mounted Displays. In *Robotics Research: the 17th Annual Symposium*, December 2017.
43. B. Burchfiel and G.D. Konidaris. Bayesian Eigenobjects: A Unified Framework for 3D Robot Perception. In *Robotics: Science and Systems XIII*, July 2017.
44. S. James, G.D. Konidaris, and B. Rosman. An Analysis of Monte Carlo Tree Search. In *Proceedings of the Thirty-First AAAI Conference on Artificial Intelligence*, pages 3576–3582, February 2017.
45. S. Murray, W. Floyd-Jones, Y. Qi, G.D. Konidaris and D. Sorin. The Microarchitecture of a Real-Time Robot Motion Planning Accelerator. In *Proceedings of the The 49th Annual IEEE/ACM International Symposium on Microarchitecture*, October 2016.
46. G.D. Konidaris. Constructing Abstraction Hierarchies Using a Skill-Symbol Loop. In *Proceedings of the 25th International Joint Conference on Artificial Intelligence*, pages 1648–1654, July 2016.
47. F. Doshi-Velez and G.D. Konidaris. Hidden Parameter Markov Decision Processes: A Semiparametric Regression Approach for Discovering Latent Task Parametrizations. In *Proceedings of the 25th International Joint Conference on Artificial Intelligence*, pages 1432–1440, July 2016.
48. S. Murray, W. Floyd-Jones, Y. Qi, D. Sorin and G.D. Konidaris. Robot Motion Planning on a Chip. In *Robotics: Science and Systems XII*, June 2016.
49. Y. Zhou and G.D. Konidaris. Representing and Learning Complex Object Interactions. In *Robotics: Science and Systems XII*, June 2016.
50. W. Masson, P. Ranchod, and G.D. Konidaris. Reinforcement Learning with Parameterized Actions. In *Proceedings of the Thirtieth AAAI Conference on Artificial Intelligence*, pages 1934–1940, February 2016.
51. P. S. Thomas, S. Niekum, G. Theodorou, and G. D. Konidaris. Policy Evaluation using the Ω -Return. In *Advances in Neural Information Processing Systems 29*, pages 334–342, December 2015.
52. P. Ranchod, B. Rosman, G.D. Konidaris. Nonparametric Bayesian Reward Segmentation for Skill Discovery Using Inverse Reinforcement Learning. In *Proceedings of the IEEE/RSJ International Conference on Intelligent Robots and Systems*, pages 471–477, September 2015.
53. G.D. Konidaris, L.P. Kaelbling, and T. Lozano-Perez. Symbol Acquisition for Probabilistic High-Level Planning. In *Proceedings of the Twenty Fourth International Joint Conference on Artificial Intelligence*, pages 3619–3627, July 2015.
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