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Education

2008 **Doctor of Philosophy**

Department of Computer Science, University of Southern California, Los Angeles, California
Dissertation: *Macroscopic Approaches to Control: Multi-Robot Systems and Beyond*
Advisor: Professor Maja Matarić

2006 **Master of Science**

Department of Computer Science, University of Southern California, Los Angeles, California

2001 **Bachelor of Science with Honours** (with distinction)

School of Computer Science, University of the Witwatersrand, Johannesburg, South Africa
Research report: *The Gap between Random Context and Context-Sensitive Grammars*
Supervisor: Associate Professor Sigrid Ewert

2000 **Bachelor of Science** (with distinction)

School of Computational & Applied Mathematics and School of Computer Science,
University of the Witwatersrand, Johannesburg, South Africa

Academic and Professional Experience

SEP. 2015 – **Associate Professor**

Dept. of Computer Science and Engineering, Texas A&M University, College Station, Texas.

AUG 2009–AUG 2015 **Assistant Professor**

Dept. of Computer Science and Engineering, Texas A&M University, College Station, Texas.

AUG 2008–AUG 2009 **Postdoctoral Research Associate**

Interaction Laboratory, Department of Computer Science, University of Southern California, Los Angeles, California.

2002–AUG 2008 **Graduate Research Assistant**

Interaction Laboratory, USC Robotics Research Lab, Center for Robotics and Embedded Systems, University of Southern California, Los Angeles, California.

1998–2002 **Founding Partner**

Silver Dragon Digital Creations, Information Technology company with G. Konidaris & M. Nanabhay. Highlight: mention of company's web application in "An outlet for political protest in Zimbabwe," *Time Europe*, 155(14), April 10, 2000.

1999 **Student Intern**

Liberty Holdings Limited. Developed software for monitoring status of multi-OS distributed infrastructure.

1998 **Student Intern**

Liberty Holdings Limited. Developed parsing software. Produced UNIX training and quick-reference materials. Tutored several technical employees with these materials.

Scholarships, Awards and Honors

- Robotics Science and Systems, Best Reviewer Award, 2015.
- Montague-CTE Scholars Award, 2013–2014.
The award is given annually by the Center for Teaching Excellence to a single tenure-track faculty member per College based on their early ability and interest in teaching.
- Runner-up, Best Student Paper, International Symposium on Distributed Autonomous Robotic Systems (DARS) 2012.

- Computer Science & Engineering Faculty Service Excellence Award, Spring 2010.
This department level award is awarded annually by the students.
- Best Paper Award, Artificial Intelligence and Agents, ACM Symposium on Applied Computing 2009.
- USC Graduate School Dissertation Completion Fellowship, Fall 2007 and Spring 2008.
- IEEE International Conference on Intelligent Robots and Systems (IROS) Best Reviewer Award, 2008.
- Travel support for the AUVSI, NSF/FAA/DHS Workshop on UAS Research Directions for the National Air Space, 2008.
- Member of the Honor Society of Phi Kappa Phi, 2008.
- George Bekey USC Robotics Lab Service Award, 2007.
- Best Poster Presentation Award, IEEE RO-MAN, 2007.
- USC Department of Computer Science, Best Teaching Assistant Award, 2007.
- USC Center for Excellence in Teaching Future Professoriate Program, 2005, 2006.
- USC Annenberg Communications Critical Pathway Fellowship, 2004.
- Altech systems prize, runner-up for Computer Science Honours Research project, 2001.
- National Research Foundation Scholarship for Computer Science Honours, 2001.
- E. J. A. Loerincz Scholarship, 2000.
- N. Pendock Award for Computational and Applied Mathematics Digital Image Processing, (with R. Phillips and J. Adler) 2000.
- Liberty Life medals (3) for outstanding student in Computer Science, 1998, 1999 & 2000.
- Sander and Laurie Ostrowiak Memorial Scholarship, 1999.
- Computer Science Department Annual Prizes, 1999 & 2000.
- Computer Society of South Africa Book Prize, 1998.
- Certificates of Merit (9) and First Class (4) for Coursework in Computer Science and Computation & Applied Mathematics, 1998–2001.
- Manduel Award for Enterprise, (with M. Nanabhay) 1997, also shared runner-up in Microsoft/Global Schools Homepage Competition for Jeppe.

Publications

Note: the symbol $\star$ denotes a student author who published under my advisement.

Journal Articles

- [J18] J. M. O’Kane and D. A. Shell. “Concise planning and filtering: hardness and algorithms” *IEEE Transactions on Automation Science and Engineering (T-ASE)*, accepted to appear, 2017.
- [J17] P. Ivanov $\star$ and D. A. Shell. “Hark! Who geos there? Concurrent Association of Communication Channels for Multiple Mobile Robots” *Autonomous Robots*, 41(4): 811–829, April 2017.
- [J16] Y.-H. Kim $\star$ and D. A. Shell. “Using a compliant, unactuated tail to manipulate objects.” *IEEE Robotics and Automation Letters*, 2(1): 223–230, January 2017.
- [J15] C. Nam $\star$ and D. A. Shell. “Analyzing the sensitivity of the optimal assignment in probabilistic multi-robot task allocation” *IEEE Robotics and Automation Letters*, 2(1): 193–200, January 2017.
- [J14] S. Janpuangtong $\star$ and D. A. Shell. “Helping Novices Avoid the Hazards of Data: Leveraging Ontologies to Improve Model Generalization Automatically with Online Data Sources.” *AI Magazine*, 37(2): 19–32, Summer 2016.
- [J13] L. Liu $\star$, N. Michael, and D. A. Shell. “Communication Constrained Task Allocation with Optimized Local Task Swaps.” *Autonomous Robots*, 39(3): 429–444, October 2015.
- [J12] C. Nam $\star$, and D. A. Shell. “Assignment Algorithms for Modeling Resource Contention in Multi-Robot Task Allocation.” *IEEE Transactions on Automation Science and Engineering*, 12(3):889–900, July 2015.
- [J11] L. Liu $\star$, D. A. Shell, and N. Michael. “From Selfish Auctioning to Incentivized Marketing.” *Autonomous Robots*, 37(4): 417–430, December 2014.
- [J10] L. Liu $\star$ and D. A. Shell. “Physically Routing Robots through a Multi-robot Network: Flexibility through a Three Dimensional Matching Graph.” *International Journal of Robotics Research*, 32(12): 1475–1494, September 2013.
- [J9] L. Liu $\star$ and D. A. Shell. “An Anytime Assignment Algorithm: From Local Task Swapping to Global Optimality.” *Autonomous Robots*, 35(4): 271–286, November 2013.
- [J8] B. Fine $\star$ and D. A. Shell. “Unifying Microscopic Flocking Motion Models for Virtual, Robotic, and Biological Flock Members.” *Autonomous Robots*, 35(2–3): 195–219, October 2013.

- [J7] L. Liu^{*} and D. A. Shell. “Large-scale multi-robot task allocation via dynamic partitioning and distribution.” *Autonomous Robots*, 33(3): 291–307, October 2012.
- [J6] Y.-H. Kim^{*}, S.-W. Lee, H. Yang, and D. A. Shell. “Toward Autonomous Robotic Containment Booms: Visual Servoing for Robust Inter-vehicle Docking of Surface Vehicles.” *Journal of Intelligent Service Robotics*, 5(1): 1–18, January 2012.
- [J5] L. Liu^{*} and D. A. Shell. “Assessing Optimal Assignment under Uncertainty: An Interval-based Algorithm.” *International Journal of Robotics Research*, 30(7): 936–953, June 2011.
- [J4] M. Buller, P. Cuddihy, E. Davis, P. Doherty, F. Doshi-Velez, E. Erdem, D. H. Fisher, N. Green, K. Hinkelmann, M. L. Maher, J. McLurkin, R. T. Maheswaran, S. Rubinelli, N. Schurr, D. Scott, D. A. Shell, P. A. Szekely, B. Thönssen, and A. Urken. “Reports of the AAAI 2011 Spring Symposia.” *AI Magazine*, 32(3): 119–127, Fall 2011.
- [J3] R. Murphy, D. A. Shell, A. Hopper, B. Duncan, B. Fine^{*}, K. Pratt, and T. Zourntos. “A Midsummer Night’s Dream (with Flying Robots).” *Autonomous Robots*, 30(2): 143–156, February 2010. (Public coverage of the work appeared in the Wired blog [18-Nov-2009], Engadget blog [18-Nov-2009], and Autonomous Robots blog [8-Dec-2010].)
- [J2] B. Atcheson, S. Ewert, and D. A. Shell. “A Note on the Generative Capacity of Random Context,” *South African Computer Journal*, 36:95–98, 2006.
- [J1] D. A. Shell and M. J. Matarić. “Insights Toward Robot-Assisted Evacuation.” *Advanced Robotics, The International Journal of the Robotics Society of Japan*, 19(8): 797–818, 2005.

Invited Book Chapters

- [BC1] D. A. Shell and M. J. Matarić. “Behavior-Based Methods for Modeling and Structuring Control of Social Robots.” In *Cognition and Multi-Agent Interaction: From Cognitive Modeling to Social Simulation*, Ron Sun (eds.), Cambridge University Press, 2005.

Conference Papers (Peer Reviewed)

- [C53] K. Qin^{*} and D. A. Shell. “Robotics going round the bend—a comparative study of estimators for anticipating river meanders” In *Proceedings of the IEEE International Conference on Robotics and Automation (ICRA)*, Singapore, May 2017. (Acc. rate: 41%)
- [C52] T. Alam, L. Bobadilla, and D. A. Shell. “Minimalist Robot Navigation and Coverage using a Dynamical System Approach” In *Proceedings of IEEE International Conference on Robotic Computing (IRC)*, Taiwan, April 2017. (Unknown acc. rate)
- [C51] S. Ghasemlou, F. Z. Saberifar, J. M. O’Kane, and D. A. Shell. “Beyond the planning potpourri: reasoning about label transformations on procrustean graphs.” In *Proceedings of the*

Workshop on the Algorithmic Foundations of Robotics (WAFR) — Springer Tracts in Advanced Robotics: Algorithmic Foundations of Robotics XII, San Francisco, December 2016. (Acc. rate: 25%)

- [C50] Y. Zhang* and D. A. Shell. “You can’t save all the pandas: impossibility results for privacy-preserving tracking.” In *Proceedings of the Workshop on the Algorithmic Foundations of Robotics (WAFR) — Springer Tracts in Advanced Robotics: Algorithmic Foundations of Robotics XII*, San Francisco, December 2016. (Acc. rate: 25%)
- [C49] C. Nam* and D. A. Shell. “Bundling policies for sequential stochastic tasks in multi-robot systems.” In *Proceedings of the International Symposium on Distributed Autonomous Robotic Systems (DARS)*, London, U.K., November 2016. (Acc. rate: 39%)
- [C48] A. Tamjidi*, S. Chakravorty, and D. A. Shell. “Unifying Consensus and Covariance Intersection for Decentralized State Estimation.” In *Proceedings of the IEEE International Conference on Intelligent Robots and Systems (IROS)*, Daejeon, South Korea, October 2016. (Acc. rate: 48%)
- [C47] F. Z. Saberifar, S. Ghasemlou, J. M. O’Kane, and D. A. Shell. “Set-labelled filters and sensor transformations.” In *Proceedings of Robotics: Science and Systems Conference (RSS-2016)*, Ann Arbor, Michigan, June 2016. (Acc. rate: 21%)
- [C46] R. Hosseini Teshnizi* and D. A. Shell. “Planning motions for a planar robot attached to a stiff tether.” In *Proceedings of the IEEE International Conference on Robotics and Automation (ICRA)*, Stockholm, Sweden, May 2016. (Acc. rate: 35%)
- [C45] J. O’Kane and D. A. Shell. “Automatic design of discreet discrete filters.” In *Proceedings of the IEEE International Conference on Robotics and Automation (ICRA)*, Seattle, Washington, May 2015. (Acc. rate: 41%)
- [C44] J-H Kim* and D. A. Shell. “A New Model for Self-Organized Robotic Clustering: Understanding Boundary Induced Densities and Cluster Compactness.” In *Proceedings of the IEEE International Conference on Robotics and Automation (ICRA)*, Seattle, Washington, May 2015. (Acc. rate: 41%)
- [C43] C. Nam* and D. A. Shell. “When to Do Your Own Thing: Analysis of Cost Uncertainties in Multi-Robot Task Allocation at Run-Time.” In *Proceedings of the IEEE International Conference on Robotics and Automation (ICRA)*, Seattle, Washington, May 2015. (Acc. rate: 41%)
- [C42] S. Janpuangtong* and D. A. Shell. “Leveraging Ontologies to Improve Model Generalization Automatically with Online Data Sources.” In *Proceedings of the Conference Innovative Applications of Artificial Intelligence (IAAI-2015)*, Austin, TX, January 2015. (Unknown acc. rate)

- [C41] P. Ivanov* and D. A. Shell. “Associating Nearby Robots to their Voices.” In *Proceedings of International Conference on the Synthesis and Simulation of Living Systems (ALife)*, New-York, NY, August 2014. (Unknown acc. rate)
- [C40] L. Liu*, N. Michael, and D. A. Shell. “Fully Decentralized Task Swaps with Optimized Local Searching.” In *Proceedings of Robotics: Science and Systems Conference (RSS-2014)*, Berkeley, California, July 2014. (Acc. rate: 32%)
- [C39] C. Nam* and D. A. Shell. “Assignment Algorithms for Modeling Resource Contention and Interference in Multi-Robot Task-Allocation.” In *Proceedings of the IEEE International Conference on Robotics and Automation (ICRA)*, Hong Kong, China, May 2014. (Acc. rate: 39%)
- [C38] R. Hosseini Teshnizi* and D. A. Shell. “Computing cell-based decompositions dynamically for planning motions of tethered robots.” In *Proceedings of the IEEE International Conference on Robotics and Automation (ICRA)*, Hong Kong, China, May 2014. (Acc. rate: 39%)
- [C37] Y.-H. Kim* and D. A. Shell. “Distributed Robotic Sampling of Non-homogeneous Spatio-Temporal Fields via Recursive Geometric Sub-division.” In *Proceedings of the IEEE International Conference on Robotics and Automation (ICRA)*, Hong Kong, China, May 2014. (Acc. rate: 39%)
- [C36] J. O’Kane and D. A. Shell. “Finding concise plans: Hardness and algorithms.” In *Proceedings of the IEEE International Conference on Intelligent Robots and Systems (IROS)*, pages 4803–4810, Tokyo Big Sight, Japan, November 2013. (Acc. rate: 43%)
- [C35] J-H Kim* and D. A. Shell. “Improving the performance of self-organized robotic clustering: modeling and planning sequential changes to the division of labor.” In *Proceedings of the IEEE International Conference on Intelligent Robots and Systems (IROS)*, pages 4314–4319, Tokyo Big Sight, Japan, November 2013. (Acc. rate: 43%)
- [C34] B. Fine* and D. A. Shell. “Eliciting Collective Behaviors through Automatically Generated Environments.’ In *Proceedings of the IEEE International Conference on Intelligent Robots and Systems (IROS)*, pages 3303–3308, Tokyo Big Sight, Japan, November 2013. (Acc. rate: 43%)
- [C33] L. Liu* and D. A. Shell. “Optimal Market-based Multi-Robot Task Allocation via Strategic Pricing.” In *Proceedings of Robotics: Science and Systems Conference (RSS-2013)*, Berlin Germany, June 2013. (Acc. rate: 30%)
- [C32] A. Ghoshal* and D. A. Shell. “Covering space with simple robots: from chains to random trees.” In *Proceedings of the IEEE International Conference on Robotics and Automation (ICRA)*, pages 914–920, Karlsruhe, Germany, May 2013. (Acc. rate: 39%)

- [C31] J. O’Kane and D. A. Shell. “Automatic Reduction of Combinatorial Filters.” In *Proceedings of the IEEE International Conference on Robotics and Automation (ICRA)*, pages 4082–4089, Karlsruhe, Germany, May 2013. (Acc. rate: 39%)
- [C30] L. Liu^{*} and D. A. Shell. “Multi-robot Formation Morphing through a Graph Matching Problem.” In *Proceedings of the International Symposium on Distributed Autonomous Robotic Systems (DARS)*, Baltimore, Maryland, November 2012. (Unknown acc. rate)
 Runner-up for Best Student Paper Award.
- [C29] E. Drumwright and D. A. Shell. “Extensive analysis of Linear Complementarity Problem (LCP) solver performance on randomly generated rigid body contact problems.” In *Proceedings of the IEEE International Conference on Intelligent Robots and Systems (IROS)*, pages 5034–5039, Algarve, Portugal, October 2012. (Acc. rate: 45%)
- [C28] S. Kristek^{*} and D. A. Shell. “Orienting deformable polygonal parts without sensors.” In *Proceedings of the IEEE International Conference on Intelligent Robots and Systems (IROS)*, pages 973–979, Algarve, Portugal, October 2012. (Acc. rate: 45%)
- [C27] L. Liu^{*} and D. A. Shell. “An Efficient Distributed Topo-Geometric Spatial Density Estimation Method for Multi-Robot Systems.” In *Proceedings of the IEEE International Conference on Intelligent Robots and Systems (IROS)*, pages 828–833, Algarve, Portugal, October 2012. (Acc. rate: 45%)
- [C26] Y. Song^{*}, J.-H. Kim^{*}, and D. A. Shell, “Self-organized Clustering of Square Objects by Multiple Robots.” In *Proceedings of the International Conference on Swarm Intelligence (ANTS)*, pages 308–315, Brussels, Belgium, September 2012. (Unknown acc. rate)
- [C25] B. Fine^{*} and D. A. Shell. “Examining the Information Requirements for Flocking Motion.” In *Proceedings of the International Conference on Simulation of Adaptive Behavior (SAB)*, pages 442–452, Odense, Denmark, August 2012. (Unknown acc. rate)
- [C24] T. Mitra^{*} and D. A. Shell. “Cost, Precision, and Task Structure in Aggression-Based Arbitration for Minimalist Robot Cooperation.” In *Proceedings of the International Conference on Simulation of Adaptive Behavior (SAB)*, pages 431–441, Odense, Denmark, August 2012. (Unknown acc. rate)
- [C23] L. Liu^{*} and D. A. Shell. “A Distributable and Computation-flexible Assignment Algorithm: From Local Task Swapping to Global Optimality.” In *Proceedings of Robotics: Science and Systems Conference (RSS-2012)*, Sydney Australia, July 2012. (Acc. rate: 33%)
- [C22] Y.-H. Kim^{*}, D. A. Shell, C. Ho, and S. Saripalli. “Spatial Interpolation for Robotic Sampling: Uncertainty with two Models of Variance.” In *Springer Tracts in Advanced Robotics, Vol. 88, Proceedings of the International Symposium on Experimental Robotics (ISER)*, Québec City, Canada, June 2012. (Unknown acc. rate)

- [C21] R. Leontie, E. Drumwright, D. A. Shell, and R. Simha. “Load Equalization on a Two-Armed Robot via Proprioceptive Sensing.” In *Springer Tracts in Advanced Robotics, Vol. 88, Proceedings of the International Symposium on Experimental Robotics (ISER)*, Québec City, Canada, June 2012. (Unknown acc. rate)
- [C20] L. Liu* and D. A. Shell. “Tunable Routing Solutions for Multi-Robot Navigation via the Assignment Problem: A 3D Representation of the Matching Graph.” In *Proceedings of the IEEE International Conference on Robotics and Automation (ICRA)*, pages 4800–4805, Saint Paul, Minnesota, USA, May 2012. (Acc. rate: 40%)
- [C19] B. Fine* and D. A. Shell. “Flocking: Don’t need no stinkin’ robot recognition.” In *Proceedings of the IEEE International Conference on Intelligent Robots and Systems (IROS)*, pages 5001–5006, San Francisco, California, USA, September 2011. (Acc. rate: 32%)
- [C18] L. Liu* and D. A. Shell. “Multi-level Partitioning and Distribution of the Assignment Problem for Large-scale Multi-robot Task Allocation.” In *Proceedings of Robotics: Science and Systems Conference (RSS-2011)*, Los Angeles, California, USA, June 2011. (Acc. rate: 25%)
- [C17] E. Drumwright and D. A. Shell. “An Evaluation of Methods for Modeling Contact in Multi-body Simulation.” In *Proceedings of the IEEE International Conference on Robotics and Automation (ICRA)*, pages 1695–1701, Shanghai, China, May 2011. (Acc. rate: 49%)
- [C16] L. Liu*, B. Fine*, D. A. Shell, and A. Klappenecker. “Approximate Characterization of Multi-Robot Swarm ‘Shapes’ in Sublinear-Time.” In *Proceedings of the IEEE International Conference on Robotics and Automation (ICRA)*, pages 2588–2594, Shanghai, China, May 2011. (Acc. rate: 49%)
- [C15] E. Drumwright and D. A. Shell. “Modeling Contact Friction and Joint Friction in Dynamic Robotic Simulation using the Principle of Maximum Dissipation.” In *Proceedings of the Workshop on the Algorithmic Foundations of Robotics (WAFR) — Springer Tracts in Advanced Robotics: Algorithmic Foundations of Robotics IX*, pages 249–266, Singapore, December 2010. (Acc. rate: 40%)
- [C14] E. Drumwright, J. Hsu, N.Koenig, and D. A. Shell. “Extending Open Dynamics Engine for Robotics.” In *Proceedings of the International Conference on Simulation, Modeling and Programming for Autonomous Robots (SIMPAN) — Lecture Notes in Computer Science, Volume 6472*, pages 38–50, Darmstadt, Germany, November 2010. (Acc. rate: 58%)
- [C13] L. Liu* and D.A. Shell. “Assessing Optimal Assignment under Uncertainty: An Interval-based Algorithm.” In *Proceedings of Robotics: Science and Systems Conference (RSS-2010)*, Zaragoza, Spain, June 2010. (Acc. rate: 16%)
- [C12] D. A. Shell and M. J. Matarić. “High-Fidelity Radio Communications Modeling for Multi-Robot Simulation.” In *Proceedings of the IEEE International Conference on Intelligent*

- Robots and Systems (IROS)*, pages 2559–2564, St. Louis, Missouri, USA, October 2009. (Acc. rate: 58%)
- [C11] D. A. Shell and E. Drumwright. “Precise Generalized Exact Contact Point and Normal Determination for Rigid Body Simulation.” In *Proceedings of the ACM Symposium on Applied Computing (ACM SAC)*, Honolulu, Hawaii, USA, March 2009. (Acc. rate: unknown, ’08 was 29%)
- [C10] E. Drumwright and D. A. Shell. “A Robust and Tractable Contact Model for Dynamic Robotic Simulation.” In *Proceedings of the ACM Symposium on Applied Computing (ACM SAC)*, pages 1176–1180, Honolulu, Hawaii, USA, March 2009. (Acc. rate: unknown, ’08 was 29%)
Winner of Best Paper Award, Artificial Intelligence and Agents.
- [C9] J. Wainer, D. J. Feil-Seifer, D. A. Shell, and M. J. Matarić. “Embodiment and Human-Robot Interaction: A task-based perspective,” Short paper in *Proceedings of the IEEE International Symposium on Robot and Human interactive Communication (RO-MAN)*, pages 117–122, Jeju Island, South Korea, August 2007. (Unknown acc. rate)
- [C8] D. A. Shell and M. J. Matarić. “On foraging strategies for large-scale multi-robot systems.” In *Proceedings of the IEEE International Conference on Intelligent Robots and Systems (IROS)*, pages 2717–2723, Beijing, China, October 2006. (Unknown acc. rate)
- [C7] J. Wainer, D. J. Feil-Seifer, D. A. Shell, and M. J. Matarić. “The role of physical embodiment in human-robot interaction.” Short paper in *Proceedings of the IEEE International Symposium on Robot and Human Interactive Communication (RO-MAN)*, pages 117–122, Hatfield, United Kingdom, Sep 2006. (Unknown acc. rate)
Winner of Best Poster Presentation Award.
- [C6] D. A. Shell and M. J. Matarić. “Ergodic Dynamics for Large-Scale Distributed Robot Systems.” In *Proceedings of the Fifth International Conference on Unconventional Computation (UC) — Lecture Notes in Computer Science 4135*, pages 254–266, York, United Kingdom, September 2006. (Unknown acc. rate)
- [C5] D. A. Shell and M. J. Matarić. “Principled synthesis for large-scale systems: task sequencing.” In *Proceedings of the International Symposium on Distributed Autonomous Robotic Systems (DARS)*, pages 207–216, Minneapolis/St. Paul, Minnesota, USA, July 2006. (Unknown acc. rate)
- [C4] D. A. Shell and M. J. Matarić. “Directional Audio Beacon Deployment: an Assistive Multi-Robot Application.” In *Proceedings of the IEEE International Conference on Robotics and Automation (ICRA)*, pages 2588–2594, New Orleans, Louisiana, USA, April–May 2004. (Unknown acc. rate)
- [C3] D. A. Shell and M. J. Matarić. “Human Motion-Based Environment Complexity Measures for Robotics.” In *Proceedings of the IEEE International Conference on Intelligent Robots and Systems (IROS)*, pages 2559–2564, Las Vegas, Nevada, USA, October 2003. (Unknown acc. rate)

- [C2] G. Konidaris, D. A. Shell and N. Oren. “Evolving Neural Networks for the Capture Game.” In *Proceedings of the SAICSIT Postgraduate Symposium*, Port Elizabeth, South Africa, September 2002. (Unknown acc. rate)
- [C1] J. Adler, G. Christelis, J. Deneys, G. Konidaris, G. Lewis, A. Lipson, R. Phillips, D. Scott-Dawkins, D. A. Shell, B. Strydom, W. Trakman and L. Van Gool. “Finding Adjacencies in Non-Overlapping Polygons.” In *Proceedings of the SAICSIT Conference (Electronic Paper)*, Pretoria, South Africa, September 2001. (Unknown acc. rate)

Workshops/Conferences/Invited Contributions (Editor/Committee Reviewed)

- [W21] Orduño*, N. Winard*, S. Bierwagen*, D. A. Shell, N. Kalantar, A. Borhani, and E. Akleman. “A Mathematical Approach to Obtain Isoperimetric Shapes for D-Form Construction.” In *Bridges: Mathematics, Music, Art, Architecture, Education, Culture*, Jyväskylä, Finland, August 2016.
- [W20] R. Hosseini Teshnizi* and D. A. Shell. “Some progress toward tethered pairs” In the *ICRA Workshop on Emerging Topological Techniques in Robotics*, Stockholm, Sweden, 2014.
- [W19] G. Wilde, R. Murphy, D. A. Shell, and C. Marianno. “A Man-Packable Unmanned Surface Vehicle for Radiation Localization and Forensics.” Appeared in the *IEEE International Symposium on Safety, Security, and Rescue Robotics (SSRR)*, West Lafayette, Indiana, October 2015.
Finalist for Best Paper Award.
- [W18] T. Alam, M. Edwards*, L. Bobadilla, and D. A. Shell. “Distributed Multi-Robot Area Patrolling in Adversarial Environments.” Appeared in the *International Workshop on Robotic Sensor Networks (RSN)*, Seattle, Washington, USA, Apr 2015.
- [W17] Y.-H. Kim* and D. A. Shell. “Efficient modeling of non-homogeneous field dynamics for distributed robotic sampling.” Appeared in the *Robotics: Science and Systems Workshop, Robotic Exploration, Monitoring and Information Collection*, Berlin Germany, June 2013.
- [W16] L. Liu* and D. A. Shell. “Tackling Task Allocation Uncertainty via a Combinatorial Method.” Appeared in the *IEEE International Symposium on Safety, Security, and Rescue Robotics (SSRR)*, College Station, Texas, USA, November 2012.
- [W15] L. Liu* and D. A. Shell. “Distribute the Task Swapping Assignment Method under Communication Constraints.” Appeared in the *Symposium on Emerging Topics in Control and Modeling: Networked Systems (CMNS)*, Urbana-Champaign, Illinois, USA, October 2012.
- [W14] D. A. Shell, R. Murphy, A. Guerin, and A. Casey, “Artistic Elements and Practical Challenges in A Midsummer Nights Dream with Unmanned Vehicles.” Appeared in *IEEE Inter-*

national Conference on Robotics and Automation (ICRA) Workshop on Robotics and Performing Arts: Reciprocal influences, Saint Paul, Minnesota, USA, May 2012.

- [W13] E. Drumwright and D. A. Shell. “An exhaustive analysis of LCP solver performance on randomly generated rigid body contact problems.” Appeared as a poster in *Robotics: Science and Systems Workshop, Toward High-Performance Computing Support for the Simulation and Planning of Robot Contact Tasks*, Los Angeles, California, USA, June 2011.
- [W12] A. Ghoshal* and D. A. Shell. “Being there, being the RRT: Space filling and searching in place with minimalist robots.” Appeared in *AAAI Spring Symposium: Multi-Robot Systems and Physical Data Structures*, Stanford, California, USA, March 2011.
- [W11] J-H Kim*, Y. Song*, and D. A. Shell. “Robot Spatial Distribution and Boundary Effects Matter in Puck Clustering.” Appeared in *AAAI Spring Symposium: Multi-Robot Systems and Physical Data Structures*, Stanford, California, USA, March 2011.
- [W10] L. Liu* and D. A. Shell. “Task Insertion and Reassignment in Networked Robots for Topological Morphing.” Appeared as poster in *IEEE ICRA Network Science and Systems workshop (IEEE NETSS-ICRA)*, Anchorage, Alaska, USA, May 2010.
- [W9] J. O’Hollaren* and D. A. Shell. “Incremental Multi-Robot Deployment for Line-of-Sight Chains Using on Radio Signal Strength.” Appeared as poster in *IEEE ICRA Network Science and Systems workshop (IEEE NETSS-ICRA)*, Anchorage, Alaska, USA, May 2010.
- [W8] B. A. Duncan, R. R. Murphy, D. A. Shell, and A. G. Hopper. “A midsummer night’s dream: social proof in HRI,” A late breaking report in *Proceedings of the ACM/IEEE International Conference on Human-Robot Interaction (HRI)*, Osaka, Japan, March 2010.
- [W7] M. Emad-Ud-Din* and D. A. Shell. “Estimation of Pedestrian Distribution in Indoor Environments using Multiple Pedestrian Tracking.” In *IEEE/RSJ ICRA 2009 Workshop: People Detection and Tracking*, Kobe, Japan, May 2009.
- [W6] D. A. Shell, S. Viswanathan, J. Huang, R. Ghosh, J. Huang, M. J. Matarić, K. Lerman, and R. Sekuler. “Spatial Behavior of Individuals and Groups: Preliminary Findings from a Museum Scenario.” In *IEEE/RSJ IROS 2007 Workshop: From Sensors to Human Spatial Concepts (FS2HSC)*, San Diego, California, USA, November 2007.
- [W5] D. A. Shell and M. J. Matarić. “Macroscopic information processing in natural systems as an insight for swarm robotics.” In *Proceedings of Robotics: Science and Systems 2007 Workshop: Algorithmic Equivalences Between Biological and Robotic Swarms*, Atlanta, Georgia, USA, June 2007.
- [W4] D. A. Shell and M. J. Matarić. “Principled Synthesis for large-scale multi-robot systems: task sequencing.” In *Symposium on Complex Systems Engineering*, Santa Monica, California, USA, January 2007.

- [W3] D. A. Shell, C. V. Jones and M. J. Matarić. “Ergodic Dynamics by Design: A Route to Predictable Multi-Robot Systems.” Poster paper in *Proceedings of the Naval Research Laboratory Workshop on Multi-Robot Systems*, pages 291–297, Naval Research Laboratory, Washington, DC, March 2005.
- [W2] C. V. Jones, D. A. Shell, M. J. Matarić and B. P. Gerkey. “Principled Approaches to the Design of Multi-Robot Systems.” Invited contribution to *Workshop on Networked Robotics, International Conference on Intelligent Robots and Systems*, pages 71–80, Sendai, Japan, September 2004.
- [W1] D. A. Shell and M. J. Matarić. “On the use of the term ‘Stigmergy’.” Poster Paper in the Proceedings of the *Second International Workshop on the Mathematics and Algorithms of Social Insects*, page 193, Atlanta, Georgia, USA, December 2003.

Grant Writing and Reporting Experience

National Science Foundation grant (Award # 1637889) “*NRI: A model based approach in distributed adaptive sampling of spatio-temporally varying fields*” PI: S. Chakravorty, Co-PI: D. Shell funded by the Division of Electrical, Communications, and Cyber Systems. September 2016–August 2019. Total award: \$500,000; PI: \$170,000.

National Science Foundation grant (Award # 1527436) “*Collaborative Research: Why is automating the design of robot controllers hard, and what can be done about it?*” PI: D. Shell, with collaborator PI: J. O’Kane (U.S.C) funded by the Division of Information & Intelligent Systems. August 2015–July 2018. Total award: \$250,000; PI: \$225,000.

National Science Foundation grant (Award # 1453652) “*CAREER: Bridging Self-Organized and Algorithmic Approaches to Multi-Robot Systems*” D. Shell funded by the Division of Information & Intelligent Systems. March 2015–February 2020. Total award: \$550,000.

National Science Foundation grant (Award # 1302393) “*Collaborative Research: Decision-Making on Uncertain Spatial-Temporal Fields: Modeling, Planning and Control with Applications to Adaptive Sampling*” PI: D. Shell, with collaborators PI: S. Saripalli (ASU), and PI: M. Kobilarov (Johns Hopkins), funded by the Division of Information & Intelligent Systems. September 2013–August 2017. Total award: \$600,000; PI: \$200,000.

National Science Foundation grant (Award # 1305093) “*IEEE International Symposium on Safety, Security, and Rescue Robotics (SSRR 2012–2013) Student Travel Awards*” D. Shell, funded by the Division of Information & Intelligent Systems. October 2012– . Total award: \$10,000.

National Science Foundation grant (Award # 1153994) “*IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS 2011) Student Travel Award*” D. Shell, with collaborators funded by the Division of Information & Intelligent Systems. August 2011–September 2011. Total award: \$40,000.

National Science Foundation grant (Award # 11000579) “*Collaborative Research: A Complementarity-Free Contact Model for Robotics Applications*” Co-PI: D. Shell, with collaborators, PI: E. Drumwright (GWU), and Co-PI: A. Ruina (Cornell), funded by the Division of Civil, Mechanical, and Manufacturing Innovation. September 2011–August 2014. Total award: \$300,000; PI: \$87,000.

Prior to joining the professoriate:

DARPA Grant “*ARTEMUS: Agile Robot Teams for Mobile Networking in Urban Settings*” PI: V. Manikonda (I-A-I); Co-PIs: M. Matarić (USC), P. Stone (University of Texas at Austin) and M. Veloso (Carnegie Mellon University), funded as part of the LANdroid Control Software program. February 2008–February 2009. As a graduate student, I co-authored the USC component of the funded proposal.

Teaching Experience

2009– **Instructor**

Department of Computer Science and Engineering, Texas A&M University.

CSCE 314: *Programming Languages*, Spring 2016, Spring 2017. This course explores the design space of programming languages via an in-depth study of two programming languages, one functional (Haskell), one object-oriented (Java); it focuses on idiomatic uses of each language and on features characteristic for each language, ± 75 –100 students.

Department of Computer Science and Engineering, Texas A&M University.

CSCE 420: *Introduction to Artificial Intelligence*, Spring 2010, Fall 2010, Fall 2011, Fall 2012, Fall 2013, Spring 2014 (Hons.), Fall 2015. Senior undergraduate elective course surveying fundamental concepts, techniques, logic and programming languages for intelligent systems, with ± 35 –55 students. The course has a programming project that allows students to use physical robots.

CSCE 482: *Senior Capstone Design*, Spring 2014, Fall 2015, Spring 2017. Senior undergraduate capstone design course for computer scientists focused on software design, development methodologies, product evaluations, communication, project planning and management. A total of 30 students.

CSCE 483: *Computer System Design*, Fall 2011, Fall 2012. Senior undergraduate capstone design course for computer engineers focused on engineering design, design methodologies, design evaluations, communication, project planning and management. A total of 8–15 students.

CSCE 689: *Special Topics in Multi-Robot Systems*, Fall 2009, Spring 2011. Graduate course on state-of-the-art in control and synthesis techniques for multi-robot systems, with 9~15 students reading and discussing relevant research papers; the course has a strong project component with all students presenting a final physical robot demonstration.

CSCE 643: *Seminar in Intelligent Systems and Robotics*, Spring 2012. A seminar-style graduate course which is a survey of issues and approaches to control and coordination in distributed robotics, with 6~10 implementing projects in teams.

CSCE 625: *Artificial Intelligence*, Fall 2014, Spring 2016. This course serves as an introduction to Artificial Intelligence for graduate students, covering classical search algorithms, heuristics, logic, theorem proving, knowledge representation, and elementary machine learning. The class size has varied from 10–55 students.

CSCE 631: *Programming Environments in AI: Intelligent Agents and Multi-Agent Systems*, Spring 2013. Graduate course on state-of-the-art in control and synthesis techniques for multi-robot systems, with 9~15 students reading and discussing relevant research papers; the course has a strong communication and project component.

ENGR 491: *AggiE Challenge — Ground & Marine Robotics to facilitate Rapid Arms Control Verification*, Fall 2014–Spring 2015. A two semester project-based course focused on adapting existing ground and marine rescue robots to help the U.S. State Department verify nuclear arms control. The class had 10 students from 4 different engineering departments, it was co-taught with R. Murphy (CSE) and C. Marianno (Nuclear Eng.). See also [W19].

Prior to joining the professoriate:

2005–
2006 **Teaching Assistant**

Department of Computer Science, University of Southern California.

CSCI 555: *Advanced Operating Systems*, (2006) Professor: T. Faber. Graduate course on distributed systems and advanced topics in operating systems, with ± 60 students reading and discussing relevant papers in the field. Roles: grading and coordinating grading, office hours.

CSCI 584: *Control and Learning in Mobile Robots and Multi-Robot Systems*, (2005) Professor: M. Mataric. Graduate seminar-style course with a survey of issues in robotics. Approximately 20 students. Roles: syllabus refinement, chairing discussion, grading, project guidance, etc. Lectured on “Probabilistic estimation and SLAM” and “Robot controller development with player, stage, and gazebo.”

2002 **Course Materials Developer and Teaching Assistant**

School of Computer Science, University of the Witwatersrand, Johannesburg, South Africa. COMS 300E: *Formal Languages and Automata*, Professor: S. Ewert. Course deals with abstract mathematical theory of computation. Roles: development of laboratory and assessment materials, supervision of lab tutors and tutoring, office hours.

2001 **Tutor**

School of Computer Science, University of the Witwatersrand, Johannesburg, South Africa. Weekly tutorial sessions with Higher Diploma students across the Computer Science curriculum (computer organisation, algorithms, databases, programming languages, software engineering, artificial intelligence and operating systems).

Student Advising and Mentoring

Graduated alumni and alumnae:

Doctoral Students

- *Young-Ho Kim*; PhD Computer Engineering, Dissertation Title “Manipulating Objects Using Compliant, Unactuated Tails: Modeling and Planning” — Defended February 2017. Currently negotiating a position in industry.
- *Changjoo Nam*; PhD Computer Science, Dissertation Title “Multi-robot Task Allocation in Uncertain and Dynamic Environments” — Defended May 2016. Currently a Postdoctoral researcher at Carnegie Mellon University.
- *Jung-Hwan Kim*; PhD Computer Science, Dissertation Title “New Models of Self-Organized Multi-Robot Clustering” — Defended October 2015. Currently an LG Electronics.
- *Benjamin Fine*; PhD Computer Science, Dissertation Title “Constructing Geometries for Group Control: Methods for Reasoning about Social Behaviors” — Defended August 2015. Currently faculty at Ramapo College of New Jersey.
- *Lantao Liu*; PhD Computer Engineering, Dissertation Title “Linear Sum Assignment Algorithms for Distributed Multi-robot Systems” Graduated May 2013. Currently a Postdoctoral researcher at the University of Southern California.

Masters Students

- *Taahir Ahmed*; MS Computer Science, Thesis Title “Dynamics Beamforming without Phase Shifters”, Passed exam March 2017. Currently in industry, at Frogslayer.
- *Reza H. Teshnizi*; MS Computer Science, Thesis Title “Motion Planning for a Tethered Mobile Robot”, Graduated May 2015. Currently in industry.
- *Plamen Ivanov*; MS Computer Science, Thesis Title “Solving the Communication Channel Association Problem for Moving Robots”, Graduated March 2015. Currently in industry.
- *Yong Song*; MS Computer Science, Thesis Title “Minimalist Multi-Robot Clustering of Square Objects: New Strategies, Experiments, and Analysis”, Graduated May 2013. Currently at LG.
- *Asish Ghoshal*; MS Computer Science, Thesis Title “A data-structure inspired approach to multi-robot space coverage”, Graduated May 2012. Currently a Ph.D student at Purdue University.
- *Shawn Kristek*; MS Computer Science, Thesis Title “Orienting deformable polygonal parts without sensors”, Graduated December 2011. Currently works for Weatherford International.
- *Tanushree Mitra*; MS Computer Science, Thesis Title “Cost, precision, and task structure in aggression-based arbitration for minimalist robot cooperation”, Graduated May 2011. Currently a Ph.D student at Georgia Institute of Technology.

Undergraduate Students: Theses

- *Scott Weaver*, Honors Student, Thesis Title “Real-Time Classification of Road Conditions”, December 2016.
- *Eric Cochrane*, Honors Student, Thesis Title “A Novel Continuum Manipulator”, December 2016.
- *Matthew Edwards*; Honors Student, Thesis Title “Multi-robot Patrol via the Metropolis Hastings Algorithm”, May 2015.
- *Jordan Cazamias*; Honors Student, Tentative Honors Thesis Title “Exploring Shape Grammar Induction as a Tool for Automated Design”, May 2014.
- *Taahir Ahmed*; Honors Student, ECE advisee, Honors-Fellow Thesis Title “S-Circuit Uncertainty”, December 2012.

Undergraduate Students: Directed Students and Other Research

- *Grace Coffman*, Senior Student, Summer 2014–Fall 2014.
- *Kate Wells*, Senior student, Spring 2012–Spring 2013.
- *Jared Brandhorst*, Senior student, Direct Studies, Fall 2011.
- *Sarena Chism*, TAMU Louis Stokes Alliance for Minority Participation (LSAMP) Scholar, Fall 2009 and Spring 2010.

Graduate Students: Other

- *Jing Zhou*, China Scholarship Council, Joint Education Project Visiting Scholar, Spring 2011 and Fall 2011.
- *Zhenzhen Xu*, China Scholarship Council, Joint Education Project Visiting Scholar, Spring 2016 and Fall 2016.
- Thesis commmittee service:

James T. Falkner (TAMU, PhD in Nuclear Engineering)

Grant Wilde (TAMU, MS in CSE, PhD in CSE)

Christopher Liberatore (TAMU, MS in CSE, PhD in CSE)

Read Sandstrom (TAMU, MS in CSE, PhD in CSE)

John Phllips (TAMU, MS in CSE, PhD in CSE)

Vijay Rajanna (TAMU, PhD in CSE, proposal: 24-Mar-2017)

Traci Sarmiento (TAMU, PhD in CSE, proposal: 14-Feb-2017)

Amir Hossein Tamjidi (TAMU, MS in Aerospace Engin., defense: 23-Mar-2017)

Avinash Parnandi (TAMU, PhD in CEE, defense: 3-Mar-2017)

Saurav Agarwal (TAMU, PhD in Aerospace Engineering, proposal: 1-Jun-2016)

Jin Huang (TAMU, PhD in CSE, defense: 26-Feb-2016)

Sandesh Aryal (TAMU, PhD in CSE, defense: 2-Oct-2015)

Yan Lu (TAMU, PhD in CSE, defense: 4-Jun-2015)

Iain Brookshaw (external examiner, Univ. of Southern Queensland, PhD, School of Mechanical and Electrical Engineering, defense: 26-Feb-2015)

Jory Denny (TAMU, PhD in CSE, proposal: 30-Jul-2014)

Abdallah Kassir (external examiner, University of Sydney, PhD, School of Aerospace, Mechanical and Mechatronic Engineering, defense: 9-Jul-2014)

Ryan Sinnet (TAMU, MS in Mechanical Engineering, defense: 4-Mar-2011)

(TAMU, PhD in Mechanical Engineering, proposal: 30-Jun-2014)

Wen Li (TAMU, PhD in CSE, defense: 22-Apr-2014)

Andrew Giese (TAMU, MS in CSE, defense: 4-Mar-2014)

Vasant Srinivasan (TAMU, PhD in CSE, defense: 3-Mar-2014)
Ali-akbar Agha-mohammadi (TAMU, PhD in CSE, defense: 9-Oct-2013)
Leonardo Bobadilla (external member, University of Illinois at Urbana-Champ.,
 PhD in CS, defense: 21-Jun-2013)
Shraddha Sangelkar (TAMU, PhD in ISE, defense: 29-May-2013)
Troy McMahon (subst. member, TAMU, PhD in CSE, proposal: 13-Dec-2012)
Danielle Cummings (TAMU, PhD in CSE, defense: 2-Sep-2012)
Joshua Peschel (TAMU, PhD in CSE, defense: 4-May-2012)
Hak Yi (TAMU, PhD in Mechanical Engineering, defense: 2-May-2012)
Sung Huh (TAMU, MS in Mechanical Engineering, defense: 11-Oct-2011)

Current Advisees:

Doctoral Students

- *Sasin Janpuangtong*; PhD Student, Tentative Dissertation Title “User-centric methods for automating inference from diverse data sources”, Fall 2011–
- *Yulin Zhang*; PhD Student, Fall 2015–
- *Reza Oftadeh*; PhD Student, Spring 2016–
- *Diego Lopez*; PhD Student, Spring 2017–

Undergraduate Students: Theses

- *Nafe Alsawfta*, Tentative Thesis Title “Link-reversal algorithms in heterogeneous networks”, Fall 2016–
- *Denise Irvin*, Tentative Thesis Title “Mixed uncertainty in multi-robot task-assignment”, Fall 2016–

Undergraduate Students: Directed Students and Other Research

- *Gregory Donelan II*, Sophomore student, Spring 2014–
- *Trevor Nelligan*, Sophomore student, Spring 2014.
- *Jacob Brown*, Visiting REU student, Summer 2014.
- *Daniel Medina*, Honors student, Summer 2014–.
- *Nick Fox*, U4 student, Fall 2015–.
- *Will Davis*, U4 student, Fall 2015–.
- *Tyler Romero*, U4 student, Fall 2015–.

Other Mentoring:

High-School Teachers

- *Michael Doddo* (Hereford High School); NSF Research Experience for Teachers (RET), “Multi-Robot Swarms”, Summer 2016.
- *Tami Dudo* (College Station ISD); NSF Research Experience for Teachers (RET), “Graph Theory in Everyday Life”, Summer 2014.
- *Sarah Kostroun* (Midway ISD); NSF Research Experience for Teachers (RET), “Graph Theory in Everyday Life”, Summer 2014.

Professional Activities and Academic Service

Conference Organization

IEEE CASE’16 NSF Doctoral Consortium, co-organizer (along with D. Poppa, and D. Song), 22 August 2016.

IEEE CASE’16 Workshop on Multi-Robot Systems in Automation: Topics in Planning and Control, co-organizer (with A. T. Becker, and J. M. O’Kane), 21 August 2016.

RSS’16 Workshop on Minimality & Design Automation, co-organizer (with A. Censi, and J. O’Kane), 18 June 2016.

RSS’15 Workshop on Negative results in Experimental Robotics: Learning the Right Lessons from Robotics, co-organizer (with R. Knepper), 17 July 2015.

The NSF-funded Workshop on *Research Issues at the Boundary of AI and Robotics*, co-organizer (with S. Koenig, and N. Amato), 25 January 2015.

IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS’14) workshop on “*The future of multiple-robot research and its multiple identities*,” co-organizer (with L. Sabattini, A. Franchi, and N. Ayanian), 18 September 2014.

Program Committee Area Chair for Robotics Science and Systems 2014, Berkeley, California.

Local Organization Chair for IEEE International Symposium on Safety, Security, and Rescue Robotics (SSRR). College Station, Texas. November 2012.

Student Travel Chair for IEEE International Symposium on Safety, Security, and Rescue Robotics (SSRR). For both 2012 and 2013.

Program Committee Area Chair for Robotics Science and Systems 2013, Berlin, Germany.

Robotics Science and Systems 2012, Sydney, Australia; Publicity chair.

Robotics Science and Systems 2011, Los Angeles, California; Co-chair (with P. Newman) the video session and video award ceremony.

Co-organizer (with J. McLurkin) of the *AAAI 2011 Spring Symposium on Multi-Robot Systems and Physical Data Structures* (21-23 March 2011).

Student Travel Awards Committee for IEEE/RSJ International Conference on Intelligent Robots and Systems 2011, San Francisco, California. Member of committee (along with D. Song and A. Hsieh)

AUVSI, NSF/FAA/DHS Workshop on UAS Research Directions for the National Air Space 2008 June 10, 2008, San Diego, California. Assisted local organization.

The Eighth International Conference on the Simulation of Adaptive Behavior (SAB '04) July 13–17, 2004, Los Angeles, California. Assisted General Chair with local conference arrangements.

IEEE-RAS/RSJ International Conference on Humanoid Robots (Humanoids '04) November 10–12, 2004, Los Angeles, California. Assisted General Chair with local conference arrangements.

Reviewing and Program Committees

Reviewing for Journals

- Autonomous Robots (2014, 2015, 2016, 2017)
- IEEE Transactions on Automation Science (2014)
- IEEE Transactions on Robotics (2006, 2009, 2011, 2012, 2013, 2014, 2015, 2016)
- Robotics and Autonomous Systems (2006)
- Adaptive Behavior (2007, 2013)
- International Journal of Robotics Research (2005, 2012, 2013, 2015)
- Autonomous Robots (2002, 2006, 2007, 2010)
- Journal of Intelligent and Robotic Systems (2011)
- Intelligent Service Robotics (2009)
- Computer Communications (2011)
- International Journal of Social Robotics (2010)
- Soft Computing (2015)
- Swarm Intelligence (2013)

Reviewing for Funding Agencies

- National Science Foundation (panels: Nov. 2009, May 2010, Jan. 2013, May 2015, May 2016; reviews: Feb. 2015)
- Natural Sciences and Engineering Research Council of Canada (NSERC) (panel: 6-8 May 2012; reviews: Jan 2007, Nov 2009, Sept. 2015)

Program Committee/Associate Editorial Service

- International Conference on Autonomous Agents and Multiagent Systems (AAMAS) 2009, 2011.
- International Joint Conference on Artificial Intelligence (IJCAI) 2011.
- IEEE International Conference on Robotics and Automation (ICRA) 2010, 2012.
- IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS) 2012, 2013, 2014.

Recent reviewing for Conferences (a selection)

- Robotics Science and Systems (RSS)
- IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)
- IEEE International Conference on Robotics and Automation (ICRA)
- International Conference on Automated Planning and Scheduling (ICAPS)
- International Workshop on Robot and Human Interactive Communication (RO-MAN)
- International Conference on Human-Robot Interaction (HRI)
- Workshop on the Algorithmic Foundations of Robotics (WAFR)
- American Control Conference (ACC)
- ACM SIGCHI Conference on Human Factors in Computing Systems (ACM CHI)
- Symposium on Distributed Autonomous Robotic Systems (DARS)
- ACM Symposium On Applied Computing (ACM SAC)

University Committees

- TAMU College of Engineering, Honors and Awards Committee Fall 2015.
- TAMU College of Engineering Junior Faculty Advisory Committee, Spring 2015–
- TAMU CSE Department Advisory Committee, Fall 2011–Spring 2012, Fall 2012–Spring 2013, Fall 2013–Spring 2014, Fall 2014–Spring 2015, Fall 2015–Spring 2016, Fall 2016–Spring 2017 (Elected).
- TAMU CSE Department, Ad hoc Committee on Peer Evaluation of Teaching, Fall 2012–Spring 2013.

- TAMU CSE Department Library Committee, Fall 2009, Spring 2010, Fall 2010.
- TAMU CSE Webpage Committee, Spring 2011.
- Student representative, USC Academic Senate/Provost Committee on Learner-Centred Teaching (2005).
- Graduate student representative, Information Services Division Workshop (2005).
- Student representative, Seaver Science and Engineering Library meeting (2004 & 2006).

Other

- USC Center for Robotics and Embedded Systems (CRES) webmaster (2003–2008)
- USC Robotics Research Lab webmaster (with N. Koenig & D. Wolf, 2003–2008)
- USC Interaction Lab webmaster (with N. Koenig, 2003–2008)

Invited Lectures

“On the interplay of explicit and implicit coordination,” an invited presentation at the ARL Workshop on Heterogeneity, Diversity, and Resilience in Multi-Robot Systems, August 15–16, 2016.

“Robots at the end of their tether,” a colloquium lecture delivered at University of South Carolina, October 16, 2015.

“Distributed Multi-Robot Systems,” a talk to the NSF Smart-Skin group, Dept. of Construction Science and School of Architecture, October 2, 2015.

“Task Planning and Allocation in Multi-Robot Systems,” invited talk at the RSS Workshop on “Principles of Multi-Robot Systems,” July 16, 2015.

“Unifying two views of multi-robot task-allocation,” a colloquium lecture delivered at Drexel University, April 3, 2015.

“Lessons from practical multi-robot systems,” part of the Texas Systems Day workshop held at UT Dallas, March 27, 2015.

“Multi-Robot Coordination via Matching Algorithms,” a colloquium lecture delivered at George Washington University, February 6, 2015.

“Multi-Robot Coordination via Matching Algorithms,” a colloquium lecture delivered at Cornell University, November 11, 2014.

“Multi-Robot Systems,” as an invited expert for the ISAT Survivalist/Intermittent Computing and Communications: Programming Abstractions for Survivalist Computing Workshop, Chicago, October 12, 2014.

“Coordinated Robot Swarms and Teams,” a keynote talk delivered at the joint meeting of the 25th Annual Symposium of the Pattern Recognition Association of South Africa, the 6th Workshop on African Language Technology (AfLaT), and the 7th conference of Robotics and Mechatronics (RobMech), November 28, 2014.

“Some Recent Work and Speculations Toward the Reduction of Superfluity and Redaction of Redundancy With the Aim of Achieving Brevity and Conciseness in Estimation and Planning,” part of the symposium entitled *“The very best of robotics today”*, at Rice University, April 4, 2014.

“Recent Algorithms for the Assignment Problem in Multi-Robot Task Allocation,” in the TAMU multi-disciplinary series on Systems, Control and Robotics. Sep. 26, 2014.

“Recent Algorithms for the Assignment Problem in Multi-Robot Task Allocation,” Maryland Robotics Center, The Institute for Systems Research, University of Maryland, April 11, 2014.

“Skeptics in the Pub: The Robot Revolution,” a public lecture given to the Houston Skeptic Society, a group dedicated to promoting science, critical thinking, and rational thought, May 28, 2013.

“Multi-Robot Task Allocation Algorithms: Scale, uncertainty, and performance,” Computer Science Seminar, Texas State University in San Marcos, Sept.28, 2012.

“AI Search Strategies: BFS, DFS, A, and D-lite,” a talk given to Texas Aggie Game Developers (TAGD), Oct. 17, 2012.

“Current Topics in Distributed AI,” a lecture delivered to the local Upsilon Pi Epsilon chapter, the honors society for Computing and Information Disciplines, Nov. 16, 2011.

“Coordination, Resource Arbitration, and Task-Allocation in Multi-Robot Systems” in the TAMU multi-disciplinary series on Systems, Control and Robotics. Apr. 29, 2011.

“Intelligent Robots” at Bryan Science Cafe, Jan. 18, 2011.

“Robots and Artificial Intelligence” panel discussion at Rock the Republic, Oct. 21, 2010.

“Truth seeking devices” at the Bryan Subversive Manifesto for Underground Technology; Aug. 5, 2010 (talk) and Sep. 30, 2010 (demo).

“Minimalist robotic experiments in distributed Artificial Intelligence.” at TAMU Department of Recreation, Park and Tourism Sciences. Apr. 9, 2010.

“Sometimes aggregation = simplification,” lecture to the Texas A&M Department of Computer Science & Engineering’s Industrial Affiliates. Sep. 16, 2009.

“Macroscopic modeling for robot swarms,” at Harvey Mudd College for Z. Dodds’s Computer Science 154: Robotics class, Mar. 24, 2009.

“Player/Stage/Gazebo”, at Intelligent Automation, Inc (IAI) at the invitation of V. Manikonda, Oct. 2, 2008.

“Complexity and Robotic Systems” presented with C. V. Jones for visit of N. Gessler’s class Anthropology 137:Artificial Culture, Exploring Human Complex Worlds. Oct. 24, 2004.

“Formalizing Intentional and Emergent Group Behaviour in Robots” presented with M. J. Matarić and C. V. Jones, at the UCLA Institute for Pure and Applied Mathematics (IPAM) workshop on Inverse Problems: Computational Methods and Emerging Applications, Biological and Artificial Swarms. Oct. 3, 2003.

Professional Development

Scientific Integrity Course, University of Southern California, April 2006.

Future Professoriate Program, Center for Excellence in Teaching, University of Southern California. Selected from a university-wide pool of applicants to participate in an intensive year-long program on the development of practical skills and theoretical knowledge necessary for leadership, research, and teaching within the academic field. Fall 2005 and Spring 2006.

Personal

- Member of Toastmasters International, attained level of Competent Communicator (CC) (2006–2008). In 2007–2008 held elected position of Vice President with Special Responsibility for Membership at Santa Monica Club 638.
- Assistant Troop Scouter for 1st Primrose Boy Scout Troop (1999–2002)
- Private pilot’s license with over 130 solo hours in Cessna-172 light aircraft (2002)