

Jivko Sinapov

The James Schmolze Assistant Professor in Computer Science
Tufts University

Office address

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Education

- Ph.D., Computer Science with co-major in Human-Computer Interaction, Iowa State University, Ames, IA, USA (December 2013)
- B.Sc., Computer Science, University of Rochester, NY, USA (May 2005)

Research Interests

Artificial Intelligence, Developmental Robotics, Computational Perception, Robotic Manipulation, Machine Learning, Human-Robot and Human-Computer Interaction

Honors and Awards

- Winner of a Verizon 100k EdTech Challenge Competition, Spring 2019.
- The James Schmolze Faculty Development Professorship in Computer Science, Tufts University, Fall 2017.
- Teaching Excellence Award from the Graduate Program in Human Computer Interaction, Iowa State University, Spring 2013.
- Best Student Paper Award at the 9th IEEE International Conference on Development and Learning (ICDL), Ann Arbor, MI, Aug. 18-21, 2010.
- Iowa State University Professional Advancement Grant (multiple awards, 2009-2013)

Invited Talks

1. **“Curriculum Learning for AI Agents: A Framework and a Survey”**, Lunch-n-Learn talk @ BostonFussion, Boston, Oct. 9, 2020.
2. **“On the Multisensory Nature of Objects and Language: a Robotics Perspective”**, keynote talk at the 1st workshop on Multimodal Learning for Embodied Applications at the ACM Multimedia Conference, Nice, France, Oct. 25, 2019.
3. **“Learning About Objects through Behavioral Exploration and Multisensory Perception”**, invited talk at the University of Rochester Computer Science Colloquium, Rochester, NY, Oct. 14, 2019.

4. **“Symbol Grounding through Behavioral Exploration and Multisensory Perception: Solutions and Open Problems”**, invited talk at the University of Washington Robotics Colloquium, Seattle, WA, Nov. 2, 2018.
5. **“Learning Object Semantics using Behavioral Exploration Coupled with Multi-sensory Perception”**, invited talk at the RSS workshop: “Multi-Modal Perception and Control”, Pittsburgh, PA, June 29, 2018.
6. **“Grounding Language in Action and Perception: An Inquisitive Robot’s Quest to Learn the Meanings of Nouns and Adjectives”**, Computer Science Colloquium, Union College, Schenectady, New York, May 10, 2018.
7. **“Grounding Object Semantics in Multi-Modal Interactions”**, Computer Science Colloquium, Worcester Polytechnic Institute, Sep. 15, 2017.
8. **“School for AI: Curriculum Construction for RL Agents”**, invited talk at the 1st 2017 AAMAS Workshop: “Transfer in Reinforcement Learning”, Sao Paulo, Brazil, May 8, 2017.
9. **“Learning ‘In the Wild’: A Developmental Approach to Service Robots”**, Computer Science Colloquium, Dept. of Computer Science, CU Boulder, Jan. 24, 2017.
10. **“Learning and Multiagent Reasoning for Autonomous Robots”**, research presentation at the Austin-area STEM Conference, Austin, TX, Aug. 4, 2016.
11. **“Curriculum Development for Reinforcement Learning Agents”**, research presentation at the 2014 Machine Intelligence for Mission-Focused Autonomy PI meeting at the Air Force Research Lab, Rome, NY, Dec. 2, 2014.
12. **“Grounding Object Concepts in Exploratory Behaviors”**, invited talk at the 2014 Humanoids Workshop: “Active Learning in Robotics: Exploration Strategies in Complex Environments”, Madrid, Spain, Nov. 18, 2014.
13. **“Behavior-Grounded Multisensory Object Perception and Exploration by a Humanoid Robot”**, invited talk at UT Austin Computer Science Department Forum on Artificial Intelligence (FAI), Austin, TX, Sep. 19, 2014.
14. **“Robots that Learn and Develop”**, invited talk at the Computer Seminar Series at Simpson College, Indianola, IA, Mar. 3, 2009.

Funded Grants and Contracts

1. *ACT-NOW: Autonomous Cognitive Technologies for Novelty in Open Worlds*. Funded by DARPA SAIL-ON program (December 2019-present), ≈\$6,000,000. Matthias Scheutz (PI), Jivko Sinapov (co-PI), Michael C. Hughes (co-PI), Liping Liu (co-PI).
2. *5G-enabled Virtual and Augmented Reality for the K-12 Robotics Classroom*. Funded by Verizon Foundation (January 2019-present), \$100,000, Jivko Sinapov (PI), Chris Rogers (co-PI).

3. *An Augmented Reality System and Framework for Human-Machine Collaborative Teaming*. Funded by the Center for Applied Brain and Cognitive Sciences (May 2018-August 2019), \$70,000. Jivko Sinapov (PI), Chris Rogers (co-PI).

Publications and Research Reports

Ph.D. Dissertation:

Sinapov, J., “Behavior-grounded multi-sensory object perception and exploration by a humanoid robot”, Ph.D. dissertation, Iowa State University, December 2013.

Journal Papers:

1. Tatiya, G., Hosseini, S., Hughes, M., and **Sinapov, J.**, “A Framework for Sensorimotor Cross-Perception and Cross-Behavior Knowledge Transfer for Object Categorization”, *In Frontiers in Robotics and AI, special issue titled “ViTac: Integrating Vision and Touch for Multimodal and Cross-Modal Perception”*, 2020.
2. Narvekar, S., Peng, B., Leonetti, M., **Sinapov, J.**, Taylor, M. E., and Stone, P., “Curriculum Learning for Reinforcement Learning Domains: A Framework and Survey”, *Journal of Machine Learning Research*, 21(181):150, 2020.
3. Thomason, J., Padmakumar, A., **Sinapov, J.**, Walker, N., Jiang, Y., Yedidsion, H., Hart, J., Stone, P. and Mooney, R.J., “Jointly improving parsing and perception for natural language commands through human-robot dialog”, *Journal of Artificial Intelligence Research* 67, 2020.
4. Khandelwal, P., Zhang, S., **Sinapov, J.**, Leonetti, M., Thomason, J., Yang, F., Gori, I., Svetlik, M., Khante, P., Lifschitz, V., Aggarwal, J.K., Mooney, R., and Stone, P. “BWIBots: A platform for bridging the gap between AI and Human-Robot Interaction research”, *International Journal of Robotics Research*, Vol 36, Issue 5-7, pp. 635 - 659, Feb. 2017.
5. Blessing, S.B., Devasani, S., Gilbert, S.G., and **Sinapov, J.** “Using ConceptGrid as an Easy Authoring Technique to Check Natural Language Responses”, *International Journal of Learning Technology*, Vol 10, No 1, pp. 50-70, May 2015.
6. Schenck, C., **Sinapov, J.**, Johnston, D., and Stoytchev, A. “Which Object Fits Best? Solving Matrix Completion Tasks with a Humanoid Robot”, *IEEE Transactions on Autonomous Mental Development*, Vol 6, No 3, pp. 226-240, Sep. 2014.
7. Hoffmann, H., Chen, Z., Earl, D., Mitchell, D., Salemi, B., and **Sinapov, J.** “Adaptive Robotic Tool Use Under Variable Grasps”, *Robotics and Autonomous Systems*, Vol. 62, No. 6, pp. 833-846, Jun. 2014.
8. **Sinapov, J.**, Schenck, C., Staley, K., Sukhoy, V., and Stoytchev, A. “Grounding Semantic Categories in Behavioral Interactions: Experiments with 100 Objects”, *Robotics and Autonomous Systems*, 62(5), pp. 617-706, May. 2014.
9. Schenck, C., **Sinapov, J.**, and Stoytchev, A. “Which Object Comes Next? Grounded Order Completion by a Humanoid Robot”, *Cybernetics and Information Technologies*, 12(3), pp. 5-16, Sep. 2012.

10. Griffith, S., **Sinapov, J.**, Sukhoy, V., and Stoytchev, A. “A Behavior-Grounded Approach to Forming Object Categories: Separating Containers from Non-Containers”, *IEEE Transactions on Autonomous Mental Development*, 4(1), pp. 54-69, Mar. 2012.
11. **Sinapov, J.**, Bergquist, T., Schenck, C., Ohiri, U., Griffith, S., and Stoytchev, A. “Interactive Object Recognition Using Proprioceptive and Auditory Feedback”, *International Journal of Robotics Research*, 30(10), pp. 1250-1262, Sep. 2011.
12. **Sinapov, J.**, Sukhoy, V., Sahai, R., and Stoytchev, A. “Vibrotactile Recognition and Categorization of Surfaces by a Humanoid Robot”, *IEEE Transactions on Robotics*, 27(3), pp. 488-497, Jun. 2011.
13. Caragea, C., **Sinapov, J.**, Dobbs, D., and Honavar, V. “Mixture of Experts Models to Exploit Global Sequence Similarity on Bimolecular Sequence Labeling”, *BMC Bioinformatics*, 10(S4), Apr. 2009.
14. Caragea, C., **Sinapov, J.**, Silvescu, A., Dobbs, D., and Honavar, V. “Glycosylation Site Prediction Using Ensembles of Support Vector Machine Classifiers”, *BMC Bioinformatics*, 8:438, Nov. 2007.

Conference Papers:

1. Tatiya, G., Shukla, Y., Edegware, M., and **Sinapov, J.**, “Haptic Knowledge Transfer Between Heterogeneous Robots using Kernel Manifold Alignment”, *In proceedings of the 2020 IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)*.
2. Gizzi, E., Nair, L., **Sinapov, J.**, and Chernova, S., “From Computational Creativity to Creative Problem Solving Agents”, *In proceedings of the 2020 International Conference on Computational Creativity (ICCC), 2020*.
3. Tatiya, G., Hosseini, S., Hughes, M., and **Sinapov, J.**, “Sensorimotor Cross-Behavior Knowledge Transfer for Grounded Category Recognition”, *In proceedings of the Joint IEEE 9th International Conference on Development and Learning and Epigenetic Robotics (ICDL-EpiRob), Oslo, Norway, Aug. 19-22, 2019*.
4. Gizzi, E., Guaman, M., and **Sinapov, J.**, “Creative Problem Solving by Robots Using Action Primitive Discovery”, *In proceedings of the Joint IEEE 9th International Conference on Development and Learning and Epigenetic Robotics (ICDL-EpiRob), Oslo, Norway, Aug. 19-22, 2019*.
5. Tatiya, G., and **Sinapov, J.**, “Deep Multi-Sensory Object Category Recognition Using Interactive Behavioral Exploration”, *In proceedings of the IEEE International Conference on Robotics and Automation (ICRA), Montreal, Canada, May 20-24, 2019*.
6. Thomason, J., Padmakumar, A., **Sinapov, J.**, Walker, N., Jiang, Y., Yedidsion, H., Hart, J., Stone, P., and Mooney, R. “Improving Grounded Natural Language Understanding through Human-Robot Dialog”, *In proceedings of the IEEE International Conference on Robotics and Automation (ICRA), Montreal, Canada, May 20-24, 2019*.

7. Fernandez, R., John, N., Kirmani, S., Hart, J., **Sinapov, J.**, and Stone, P. “Passive Demonstrations of Light-Based Robot Signals for Improved Human Interpretability” *In proceedings of the 2018 IEEE International Conference on Robot and Human Interactive Communication (RO-MAN), Nanjing, China, Aug. 27-31, 2018.*
8. Gizzi, E., Le Vie, L., Scheutz, M., Sarathy, V., **Sinapov, J.** “Knowledge Acquisition in the Cockpit Using One-Shot Learning”, *In proceedings of the IEEE National Aerospace and Electronics Conference (NAECON), Dayton, OH, Jul. 23-26, 2018.*
9. Amiri, S., Wei, S., Zhang, S., **Sinapov, J.**, Thomason, J., Stone, P. “Multi-modal Predicate Identification using Dynamically Learned Robot Controllers”, *In proceedings of the 2018 International Joint Conference on Artificial Intelligence (IJCAI), Stockholm, Sweden, July 13-19, 2018.*
10. Thomason, J., **Sinapov, J.**, Stone, P., and Mooney, R. “Guiding Exploratory Behaviors for Multi-Modal Grounding of Linguistic Descriptions”, *In proceedings of the 32nd Conference of the Association for the Advancement of Artificial Intelligence (AAAI), New Orleans, LA, Feb. 2-7, 2018.*
11. Thomason, J., Padmakumar, A., **Sinapov, J.**, Hart, J., Stone, P., and Mooney, R. “Opportunistic Active Learning for Grounding Natural Language Descriptions”, *In proceedings of the 1st Annual Conference on Robot Learning (CoRL 2017), Mountain View, California, November 13-15, 2017.*
12. Narvekar, S., **Sinapov, J.**, and Stone, P. “Autonomous Task Sequencing for Customized Curriculum Design in Reinforcement Learning”, *In proceedings of the 2017 International Joint Conference on Artificial Intelligence (IJCAI), Melbourne, Australia, Aug 19-25, 2017.*
13. Svetlik, M., Leonetti, M., **Sinapov, J.**, Shah, R., Walker, N., and Stone, P. “Automatic Curriculum Graph Generation for Reinforcement Learning Agents”, *In proceedings of the 31st Conference of the Association for the Advancement of Artificial Intelligence (AAAI), San Francisco, CA, Feb. 4-9, 2017.*
14. **Sinapov, J.**, Khante, P., Svetlik, M., and Stone, P. “Learning to Order Objects using Haptic and Proprioceptive Exploratory Behaviors”, *In proceedings of the 2016 International Joint Conference on Artificial Intelligence (IJCAI), New York City, NY, July 9-15, 2016.*
15. Thomason, J., **Sinapov, J.**, Svetlik, M., Stone, P., and Mooney, R. “Learning Multi-Modal Grounded Linguistic Semantics by Playing I, Spy”, *In proceedings of the 2016 International Joint Conference on Artificial Intelligence (IJCAI), New York City, NY, July 9-15, 2016.*
16. Narvekar, S., **Sinapov, J.**, Leonetti, M., and Stone, P. “Source Task Creation for Curriculum Learning ”, *In proceedings of the 2016 ACM Conference on Autonomous Agents and Multi-Agent Systems (AAMAS), 2016.*
17. Gori, I., **Sinapov, J.**, Khante, P., Stone, P., and Aggarwal, J. K. “Robot-centric activity recognition in the wild”, *In proceedings of the 2015 International Conference on Social Robotics (ICSR), Paris, France, Oct 24-30, 2015.*

18. **Sinapov, J.**, Narvekar, D., Leonetti, M., and Stone, P. “Learning Inter-Task Transferability in the Absence of Target Task Samples”, *In proceedings of the 2015 ACM Conference on Autonomous Agents and Multi-Agent Systems (AAMAS), Istanbul, Turkey, May 4-8, 2015.*
19. Cotos, E., Gilbert, S., and **Sinapov, J.**, “NLP-based analysis of rhetorical functions for AWE feedback”, *In Proceedings of the XVIIth International CALL Research Conference, Antwerp, Belgium, July 7-9, 2014.*
20. **Sinapov, J.**, Schenck, C., and Stoytchev, A. “Learning Relational Object Categories Using Behavioral Exploration and Multimodal Perception”, *In proceedings of the 2014 IEEE International Conference on Robotics and Automation (ICRA), Hong Kong, China, May 31-Jun. 5, 2014.*
21. **Sinapov, J.**, and Stoytchev, A. “Grounded Object Individuation by a Humanoid Robot”, *In Proceedings of the IEEE International Conference on Robotics and Automation (ICRA), Karlsruhe, Germany, May 6-10, 2013.*
22. **Sinapov, J.**, and Stoytchev, A. “Object Category Recognition by a Humanoid Robot Using Behavior-Grounded Relational Learning”, *In Proceedings of the IEEE International Conference on Robotics and Automation (ICRA), Shanghai, China, May 9-13, pp. 184-190, 2011.*
23. **Sinapov, J.**, and Stoytchev, A. “The Odd One Out Task: Toward an Intelligence Test for Robots”, *In Proceedings of the IEEE International Conference on Development and Learning (ICDL), Ann Arbor, MI, Aug. 18-21, pp. 126-131, 2010.*
(Best Student Paper Award)
24. Sukhoy, V., **Sinapov, J.**, Wu, L., and Stoytchev, A. “Learning to Press Doorbell Buttons”, *In Proceedings of the IEEE International Conf. on Development and Learning (ICDL), Ann Arbor, MI, Aug. 18-21, pp. 132-139, 2010.*
25. **Sinapov, J.**, and Stoytchev, A. “The Boosting Effect of Exploratory Behaviors”, *In Proceedings of the 24th National Conference on Artificial Intelligence (AAAI), Atlanta, GA, Jul. 11-15, pp. 1613-1618, 2010.*
(Nominated for Best Paper Award by a reviewer)
26. Griffith, S., **Sinapov, J.**, Sukhoy, V., and Stoytchev, A. “How to Separate Containers from Non-Containers? A Behavior-Grounded Approach to Acoustic Object Categorization”, *In Proceedings of the IEEE International Conf. on Robotics and Automation (ICRA), Anchorage, AK, May 3-8, pp. 1852-1859, 2010.*
27. **Sinapov, J.**, Weimer, M., and Stoytchev, A. “Interactive Learning of the Acoustic Properties of Household Objects”, *In Proceedings of the IEEE International Conf. on Robotics and Automation (ICRA), Kobe, Japan, May 12-17, pp. 2518-2524, 2009.*
28. Griffith, S., **Sinapov, J.**, Miller, M., and Stoytchev, A. “Toward Interactive Learning of Object Categories by a Robot: A Case Study with Container and Non-Container Objects”, *In Proceedings of the IEEE International Conference on Development and Learning (ICDL), Shanghai, China, Jun. 4-7, 2009.*

29. **Sinapov, J.**, and Stoytchev, A. “Detecting the Functional Similarities Between Tools Using a Hierarchical Representation of Outcomes”, *In Proc. of the IEEE International Conf. on Development and Learning (ICDL), Monterey, CA, Aug. 9-12, 2008.*
30. Caragea, C., **Sinapov, J.**, Dobbs, D., and Honavar, V. “Using Global Sequence Similarity to Enhance Biological Sequence Labeling”, *In Proceedings of the IEEE Conf. on Bioinformatics and Biomedicine, Philadelphia, PA, Nov. 3-5, 2008.*
31. **Sinapov, J.**, and Stoytchev, A. “Learning and Generalization of Behavior-Grounded Tool Affordances”, *In Proceedings of the IEEE International Conference on Development and Learning (ICDL), London, UK, Jul. 11-13, 2007.*
32. Caragea, C., **Sinapov, J.**, Dobbs, D., and Honavar, V. “Assessing the Performance of Macromolecular Sequence Classifiers”, *In Proceedings of the IEEE Conference on Bioinformatics and Bioengineering (BIBE), Boston, MA, Oct. 14-17, 2007.*

Workshop, Symposium, and Short Papers:

1. Cleaver, A., Tang, D., Chen, V., and **Sinapov, J.**, “HAVEN: A Unity-based Virtual Robot Environment to Showcase HRI-based Augmented Reality”, *In Proceedings of the 2020 AAAI Fall Symposium “Artificial Intelligence for Human-Robot Interaction”, 2020.*
2. Cleaver, A., Muhammad, F., Hassan, A., Short, E., and **Sinapov, J.**, “A Shared Reality with Intelligent Robots for Collaborative Human-Robot Interaction”, *In Proceedings of the 2020 AAAI Fall Symposium “Artificial Intelligence for Human-Robot Interaction”, 2020.*
3. Cleaver, A., Short, E., and **Sinapov, J.**, “RAIN: A Vision Calibration Tool using Augmented Reality”, *In proceedings of the 3rd International Workshop on Virtual, Augmented, and Mixed Reality for Human-Robot Interactions (VAM-HRI), March, 2020.*
4. Tatiya, G., and **Sinapov, J.**, “Sensorimotor Cross-Perception Knowledge Transfer for Grounded Category Recognition”, *In proceedings of the ICRA 2019 Workshop: Integrating Vision and Touch for Multimodal and Cross-modal Perception (ViTac), Montreal, Canada, May 23, 2019.*
5. Muhammad, F., Hassan, A., Cleaver, A., and **Sinapov, J.**, “Creating a Shared Reality with Robots”, *In Proceedings of Late-Breaking Reports Track at the 14th ACM/IEEE Annual Conference on Human-Robot Interaction, Daegu, Korea, Mar. 11-14, 2019.*
6. Hart, J., Yedidsion, H., Jiang, Y., Walker, N., Shah, R., Thomason, J., Padmakumar, A., Fernandez, R., **Sinapov, J.**, Mooney, R., and Stone, P. “Interaction and Autonomy in RoboCup@Home and Building-Wide Intelligence”, *In proceedings of the 2018 AAAI Fall Symposium “Interactive Learning in Artificial Intelligence for Human-Robot Interaction”, Arlington, Virginia USA, Oct. 18-20, 2018.*

7. Gizzi, E., Le Vie, L., Scheutz, M., Sarathy, V., **Sinapov, J.** “A Generalized Framework for Detecting Anomalies in Real-Time Using Contextual Information”, *In proceedings of the 2018 Workshop on Modeling and Reasoning in Context (MRC) co-located with IJCAI, Stockholm, Sweden, Jul. 13, 2018.*
8. Thomason, J., Padmakumar A., **Sinapov, J.**, Walker, N., Jiang, Y., Yedidsion, H., Hart, J., Stone, P., and Mooney, R.J. “Jointly Improving Parsing and Perception for Natural Language Commands through Human-Robot Dialog”, *In proceedings of the RSS Workshop on Models and Representations for Natural Human-Robot Communication (MRHRC-18), Pittsburgh, PA, Jun. 29-30, 2018.*
9. Amiri, S., Wei, S., Zhang, S., **Sinapov, J.**, Thomason, J., and Stone, P. “Robot Behavioral Exploration and Multi-modal Perception using Dynamically Constructed Controllers”, *In proceedings of the AAAI Spring Symposium on Integrating Representation, Reasoning, Learning, and Execution for Goal Directed Autonomy, Stanford, CA, Mar. 26-28, 2018.*
10. Cheli, M., **Sinapov, J.**, Danahy, E., Rogers, C. ”Towards an Augmented Reality Framework for K-12 Robotics Education, *In proceedings of the 1st International Workshop on Virtual, Augmented, and Mixed Reality for Human-Robot Interactions (VAM-HRI), Chicago, IL, Mar. 5, 2018.*
11. Thomason, J., **Sinapov, J.**, and Mooney, R. “Guiding Interaction Behaviors for Multi-modal Grounded Language Learning”, *In proceedings of the 1st Workshop on Language Grounding for Robotics at ACL, Vancouver, Canada, Aug 3, 2017.*
12. Gonzalez, S., Chidambaram, V., **Sinapov, J.**, and Stone, P. “CC-Log: Drastically Reducing Storage Requirements for Robots Using Classification and Compression”, *In proceedings of The 9th USENIX Workshop on Hot Topics in Storage and File Systems (HotStorage '17), Santa Clara, CA, Jul 10-11, 2017.*
13. Zhang, S., **Sinapov, J.**, Wei, S., and Stone, P. “Robot Behavioral Exploration and Multimodal Perception using POMDPs”, *In proceedings of the AAAI Spring Symposium on “Interactive Multi-Sensory Object Perception for Embodied Agents”, San Francisco, CA, March 27-29, 2017.*
14. Cotos, E., Gilbert, S., and **Sinapov, J.** “NLP-based analysis of rhetorical functions for AWE feedback”, *In the Proceedings of the XVIth International CALL Research Conference, Antwerp, Belgium, July 7-9, 2014.*
15. **Sinapov, J.**, Earl, D., Mitchell, D., and Hoffmann, H. “Interactive Audio-Tactile Annotation of 3D Point Clouds for Robotic Manipulation”, *In Proceedings of the ICRA Mobile Manipulation Workshop on Interactive Perception, Karlsruhe, Germany, May 6, 2013.*
16. Sukhoy, V., Sahai, R., **Sinapov, J.**, and Stoytchev, A. “Vibrotactile Recognition of Surface Textures by a Humanoid Robot”, *In Proceedings of the 2009 Humanoids Workshop: Tactile Sensing in Humanoids - Tactile Sensors and Beyond, Paris, France, Dec. 7, pp. 57-60, 2009.*

17. Bergquist, T., Schenck, C., Ohiri, U., **Sinapov, J.**, Griffith S., and Stoytchev, A. “Interactive Object Recognition Using Proprioceptive Feedback”, *In Proceedings of the IROS Workshop: Semantic Perception for Mobile Manipulation, St. Louis, MO, Oct. 15, 2009.*
18. **Sinapov, J.**, and Stoytchev, A. “From Acoustic Object Recognition to Object Categorization by a Humanoid Robot”, *In Proceedings of the RSS Workshop: Mobile Manipulation in Human Environments, Seattle, WA, Jun. 28, 2009.*
19. **Sinapov, J.**, Weimer, M., and Stoytchev, A. “Interactive Learning of the Acoustic Properties of Objects by a Robot”, *In Proceedings of the RSS Workshop: Robot Manipulation: Intelligence in Human Environments, Zurich, Switzerland, Jun. 28, 2008.*
20. **Sinapov, J.**, Stoytchev, A. “Learning Behavior-Grounded Tool Affordances with Generalization Across Different Tools”, *In Proceedings of the RSS Manipulation Workshop: Sensing and Adapting to the Real World, Atlanta, GA, Jun. 30, 2007.*

Creative Works:

1. Griffith, S., **Sinapov, J.**, Miller, M., and Stoytchev, A. “Toward Interactive Learning of Container and Non-Container Objects”, *Research Video, International Joint Conference on Artificial Intelligence (IJCAI) AI Video Competition (a.k.a., AI Oscars), Jul. 14, 2009. (Nominated for Best Narration)*

Patents:

1. Hoffmann, H., and **Sinapov, J.**, “Device and method to identify functional parts of tools for robotic manipulation”, Publication Number: US9144905 B1. Filed on Jan. 21, 2014.

Position History

The James Schmolze Assistant Professor

Department of Computer Science
Tufts University

Fall 2017-

Clinical Assistant Professor

The Texas Institute for Discovery Education in Science (College of Natural Sciences)
The University of Texas at Austin

Spring 2016-Summer 2017

Postdoctoral Associate

Department of Computer Science
The University of Texas at Austin

Summer 2014-Summer 2017

Lecturer

Graduate Program in Human Computer Interaction
Iowa State University

Spring 2014

Graduate Teaching Assistant

Iowa State University

*Fall 2012-Fall 2013***Research Intern***DARPA's ARM-S Manipulation Challenge*

HRL Laboratories, Malibu, CA

*Summer-Fall 2011***Graduate Teaching Assistant**

Graduate Program in Human Computer Interaction

Iowa State University

*Spring 2011***Research Intern***Developed software for proprioceptive perception for the PR2 robot*

Willow Garage, Menlo Park, CA

*Summer 2010***Graduate Research Assistant**

Virtual Reality Applications Center (VRAC)

Iowa State University

*Summer 2006-Spring 2010***Teaching and Mentoring Experience**

Instructor

COMP 138: Reinforcement Learning

Fall 2018

COMP 150: Probabilistic Robotics for HRI

Spring 2019

COMP 150: Reinforcement Learning

Fall 2018

COMP 50: Autonomous Intelligent Robotics

Spring 2018

COMP 150-02: Developmental Robotics

Fall 2017

CS 378: Autonomous Intelligent Robots

Spring 2016 and Fall 2016

CprE/HCI/ComS 575: Computational Perception

Spring 2014

HCI 573X: UI Implementation for Web Applications

*Summer 2013 and Spring 2014***Graduate Teaching Assistant**

HCI 521: Cognitive Psychology of HCI

Fall 2012 and Fall 2013

HCI 574: Computation Implementation and Prototyping in HCI

Spring 2013

CprE/HCI/ComS 575: Computational Perception

Spring 2012 and Spring 2013

ComS 330: Discrete Computational Structures

Spring 2012

CprE/HCI 585X: Developmental Robotics

*Spring 2011***Mentor for the NSF Research Experience for Undergraduates (REU) Program**

Mentored a team of three undergraduates

*Summer 2008 and Summer 2009***Professional Activities**

Organizer:

- 2020 AAAI Fall Symposium: Artificial Intelligence for Human-Robot Interaction, November 13-14, 2020.

- 2019 AAAI Fall Symposium: Artificial Intelligence for Human-Robot Interaction, November 7-9, 2019.
- 2017 AAAI Spring Symposium: Interactive Multisensory Object Perception for Embodied Agents, March 27-29, 2017.

Senior Program Committee Member:

- 2019 ACM Conference on Autonomous Agents and Multi-Agent Systems (AAMAS)

Area Chair:

- 2021 International Joint Conference on Artificial Intelligence
- 2019 Conference on Robot Learning (CoRL 2019)

Program Committee Member:

- 2020, 2018 ACM Conference on Autonomous Agents and Multi-Agent Systems (AAMAS)
- 2020, 2019 Conf. of the Association for the Advancement of Artificial Intelligence (AAAI)
- 2020, 2017 International Joint Conference on Artificial Intelligence (IJCAI)
- 2020, 2019 and 2018 AAMAS Workshops on Adaptive Learning Agents (ALA)
- 2019 NAACL Combined Workshop on Spatial Language Understanding & Grounded Communication for Robotics
- RoboCup Symposium, Montreal Canada, Jun. 22, 2018.
- 2018 Workshop on Goal Specifications for Reinforcement Learning (GoalsRL) held at IJCAI-ECAI, Stockholm, Sweden, Jul. 14, 2018.
- AAAI Spring Symposium on Integrating Representation, Reasoning, Learning, and Execution for Goal Directed Autonomy, Stanford, CA, Mar. 26-28, 2018.
- 2017 Conference on Neural Information Processing Systems (NIPS), Long Beach, CA, Dec. 4-7, 2017.
- 2017 International Workshop on Evaluation Methods Standardization for Human-Robot Interaction, Lisbon, Portugal, Aug. 28, 2017.
- 2017 Adaptive Learning Agents AAMAS workshop, Singapore, May 8, 2017.
- 2017 ACM Workshop on Transfer in Reinforcement Learning, Singapore, May 8, 2017.
- 2016 NIPS Workshop on Future of Interactive Learning Machines, Dec 9, Barcelona, Spain, 2016.
- 2016 ACM Conference on Autonomous Agents and Multi-Agent Systems (AAMAS), Singapore, May 9-13, 2016.

- The 30th and 31st AAAI Conference on Artificial Intelligence (AAAI 2016 and AAAI 2017)
- 2016 AAAI/SIGART Doctoral Consortium, February 12-13, 2016, Phoenix, Arizona, USA
- Humanoids Workshop on Developmental Robotics, Osaka, Japan, Nov. 29, 2012.
- IEEE International Conference on Development and Learning (ICDL), Ann Arbor, MI, Aug 18-21, 2010.
- RSS Workshop: Strategies and Evaluation for Mobile Manipulation in Household Environments, Zaragoza, Spain, Jun. 27, 2010.

Reviewer:

- IEEE International Conference on Development and Learning and Epigenetic Robotics (2010-2012, 2015, 2017, 2019, 2021)
- IEEE/RSJ International Conf. on Intelligent Robots and Systems (IROS 2012, 2013, 2014, 2017, 2019, 2020)
- ACM/IEEE International Conference on Human Robot Interaction (2013, 2014, 2018, 2019, 2021)
- IEEE International Conference on Robotics and Automation (ICRA 2011-2015, 2018-2020) Field Robotics
- Journal of Field Robotics (2020)
- Journal of Artificial Intelligence (2019)
- IEEE Transactions on Robotics (T-RO 2016, 2017, 2019)
- Journal of Machine Learning Research (2018)
- Conference on Robot Learning (CoRL 2017, 2018)
- Systems, Man, and Cybernetics (2018)
- International Conference on Machine Learning (ICML 2018)
- Frontiers Journal in Neurorobotics (2012, 2017)
- Journal on Artificial Intelligence Research (JAIR 2017)
- IEEE Transactions on Autonomous Mental Development (TAMD 2015)
- IEEE-RAS International Conference on Humanoid Robotics (Humanoids 2015)
- 3rd Indian International Conf. on Artificial Intelligence (2007)

Volunteering and Service:

- Presenter at the Center for Engineering Education and Outreach Engineering Design Lab High School Summer Program (Summer 2020)

- Presenter at Tufts University's STEM Open House (Fall 2019)
- Presenter at Tufts University's Engineering Open House (Fall 2019)
- Visits to local high schools for robotics demonstrations under Tufts' "Professors on the Road" program (Fall 2018)
- Mentor at the 2018 IJCAI-ECAI Doctoral Consortium, Stockholm, Sweden, Jul. 13, 2018.
- Judge at the Computational Thinking Challenge, Ames, IA (2013)
- Judge at First Lego League State Championships, Ames, IA (2010, 2011, 2013)
- Student volunteer at the Human-Robot Interaction conference (HRI 2009)
- Student volunteer at the 24th National Conference on Artificial Intelligence (AAAI 2008)