Yu Sun, Email: yusun@usf.edu; Lab: http://rpal.cse.usf.edu; Phone: 813-385-4612

Experience

Current Appointments

Professor	2020-present	Computer Science & Eng., University of South Florida

Previous Appointments

Associate Chair of Graduate Affairs	2018-2020	Computer Science & Eng., University of South Florida
Associate Professor	2015-2020	Computer Science & Eng., University of South Florida
Visiting Associate Professor	2016-2017	Mechanical Engineering, Stanford University
Assistant Professor	2009-2015	Computer Science & Eng., University of South Florida
Post-doc	2008-2009	School of Computing, University of Utah
Post-doc	2007-2008	Mitsubishi Electric Research Labs (MERL), Boston, MA
Software Engineer	2000-2001	Atwell Cop., Tokyo, Japan

Education

Ph.D. Computer Science, 2002-2007, University of Utah, Salt Lake City, UT, USA

M.S. Control Theory and Engineering, 1997-2000, Dalian Univ. of Tech., China

B.S. Electrical Engineering, Minor in Mathematics, 1993-1997, Dalian Univ. of Tech., China

Grants

Current Grants:

- PI, NIH NINR, R21, "A Multimodal Approach for Monitoring Prolonged Acute Pain in Neonates," $400,567, 7/16/2020-6/30/2023 (Co-Investigators: Dmitry Goldgof, CSE, Thao Ho, College of Nursing, Denise Maguire, College of Nursing, and Yangxin Huang, College of Public Health).
- PI, Subcontract of NIH NICHD/NINR STTR, "An AI-based Multimodal Approach to Predict Pain in Postnatal Care Scenarios," $179,988, 8/10/2022-7/31/2023 (Co-Investigators: Dmitry Goldgof, CSE, Terri Ashemeade, Pediatrics, Stephanie Presscott, College of Nursing, and Yangxin Huang, College of Public Health, SRC is the leading company, Peter Mouton is the lead PI).

Completed:

- PI, NSF, "RI: Small: Generalizing Learned Manipulation Skills to Unseen Situations by Balancing Uncertainties," $334,823, 9/1/2019/-8/31/2022, single PI.
- PI (USF), NSF, "CHS: Small: Collaborative Research: Wearable Fingertip Haptic Devices for Virtual and Augmented Reality: Design, Control, and Predictive Tracking," with Allison Okamura at Stanford University (Lead PI), $173,338 (USF portion), 8/1/2018-7/31/2022.
- Co-PI, NSF, "REU Site: REU Site on Ubiquitous Sensing," $439,215, 8/1/2016-9/30/2022, PI: Miguel Labrador.
- Co-PI, ARMY-CDMRP, "An Automated Pressure Ulcer Monitoring System to Improve Pressure Ulcer Healing Outcomes for Veterans with SCI," Subcontract from VA, $593,094, 9/30/2016-9/29/2021, PI: Matthew Peterson (VA)
- PI, Microsoft Research, "Microsoft Research Dissertation Grant - Searching High and Low for Mosquito Breeding Habitats Using UAVs," $20,740, 8/8/2019-8/7/2020 (For Ph.D. student Troi Williams).
- PI, NSF, "NRI: EAGER: Characterizing Physical Interaction in Instrument Manipulations," $299,887, 3/1/2016-2/28/2019, single PI.
- PI, NSF, "RI: Small: Functional Object-Oriented Network for Manipulation Learning," $398,529, 8/15/2014-7/31/2019, single PI.
- PI, Evatech and Florida High Tech Corridor, "Developing Deep Neural Networks to Detect Objects and Their Distances," $29,634, 8/7/2018-12/31/2018.
- PI, Alibaba Group Cainiao Smart Logistics Network, Gift fund, $55,000, 2018.
- Co-PI, National Center for Transit Research (NCTR), "Smartphone-based Connected Bicycle Prototype Development for Sustainable Multimodal Transportation System", $103,644, 1/1/2018/-12/31/2018

- Co-PI, NSF, "REU Site: An REU Site on Ubiquitous Sensing," $359,367, 1/1/2015-12/31/2017, PI: Miguel Labrador.
- Co-PI, USF Health, "Automated Neonatal Pain Assessment," $15,000, 7/1/2016-6/30/2017, PI: Terri Ashmead (USF Health)
- Senior Personnel, NSF, "MRI: Acquisition of a CAREN Virtual Reality System for Collaborative Research in Assistive and Rehabilitation Technologies," $450,000.00, 9/1/2012-8/31/2016, PI: Rajiv Dubey
- PI, NSF, "CPS: Small: Virtually Transparent Epidermal Imagery," $510,945.00, 9/15/2010-8/31/2015.
- PI, USF Proposal Enhancement Grant, $25,000, 5/1/2013-4/30/2014.
- PI, USF Neuroscience Collaborative Grant, "Robotics Modeling of Skilled Hand Tasks," $100,000, 10/1/2010-9/30/2012.

Awards and Honors

USF Excellence in Innovation Award, 2018
USF Neuroscience Collaborative Award, 2010

Contributions to Science and Technologies

Journal Papers:

1. Sakib, S., Paulius RD, **Sun, Y.** (2022) Approximate Task Tree Retrieval in a Knowledge Network for Robotic Cooking, RA-L/IROS, 1-8.
2. **Sun, Y.**, Falco, J., Roa, MA., Calli, B. (2022). Research Challenges and Progress in Robotic Grasping and Manipulation Competitions, IEEE Robotics and Automation Letters (RA-L), 7 (2), 874-881.
3. Liu, Z. Liu, W., Qin, Y.. Xiang, F. Xin, S., Roa, MA, Calli, B., Su, H., **Sun, Y.**, Tan, P. (2022). OCRTOC: A Cloud-Based Competition and Benchmark for Robotic Grasping and Manipulation, IEEE Robotics and Automation Letters (RA-L), 7 (1), 486-493
4. Huang, Y., Wilches, J. and **Sun, Y.** (2021). Robot Gaining Accurate Pouring Skills through Self-Supervised Learning and Generalization, Robotics and Autonomous Systems, 136, 103692, pp 1-15.
5. Salekin, S., Mouton, P., Zamzmi, G., Patel, R., Goldgof, F., Kneusel, M., Elkins, S., Murray, E., Coughlin, M., Maguire, D., Ho, T., & Sun, Y. (2021) Future roles of artificial intelligence in early pain management of newborns. Pediatric & Neonatal Pain, 3(3); 134-145.
6. Salekin, M., Zamzmi, G., Goldgof, D., Kasturi, R., Ho, T., and **Sun, Y.** (2021). Multimodal Neonatal Procedural and Postoperative Pain Dataset, Data in Brief, pp 1-6.
7. Salekin, M., Zamzmi, G., Goldgof, D., Kasturi, R., Ho, T., and **Sun, Y.** (2021). Multimodal Spatio-Temporal Deep Learning Approach for Neonatal Postoperative Pain Assessment, Computers in Biology and Medicine, pp. 1-11.
8. Kenneth Kimble, K., Karl Van Wyk, Joe Falco, Elena Messina, **Yu Sun**, Mizuho Shibata, Wataru Uemura, Yasuyoshi Yokokohji (2020). Benchmarking Protocols for Evaluating Small Parts Robotic Assembly Systems, IEEE Robotics and Automation Letters (RA-L), 5(2), 883-889.
9. Huang, Y. and **Sun, Y**. (2019). A Dataset of Daily Interactive Manipulation, International Journal of Robotics Research (IJRR), 38(8): 879-886.
10. Paulius, D. and **Sun. Y**. (2019). A Survey of Knowledge Representation in Service Robotics, Robotics and Autonomous Systems, 118: 13-30.
11. Babaeian, J.A., Paulius, D. and **Sun, Y.** (2019). Long Activity Video Understanding using Functional Object-Oriented Network, IEEE Transactions on Multimedia, 21(7): 1813-1824.
12. Zamzmi, G., Chih-Yun, P., Goldgof, D., Kasturi, R., Ashmeade, T., & **Sun, Y.** (2019). A Comprehensive and Context-Sensitive Neonatal Pain Assessment Using Computer Vision, IEEE Transactions on Affective Computing, pp 1-12.
13. Zamzmi, G., Paul, R., Salekin, M. S., Goldgof, D., Kasturi, R., Ho, T., & **Sun, Y.** (2019). Convolutional Neural Networks for Neonatal Pain Assessment. IEEE Transactions on Biometrics, Behavior, and Identity Science, 1(3):192-200.
14. Zhi, R., Ghada Zamzmi, Dmitry Goldgof, Terri Ashmeade, **Sun, Y.** (2018). Automatic Infants' Pain Assessment by Dynamic Facial Representation: Effects of Profile View, Gestational Age, Gender, and Race, Journal of clinical medicine, 7(7), 173 1-16.

15. Zhi, R., Goldgof, D., Ashmeade, T., Li, T. and **Sun, Y.** (2018). Infants' Pain Recognition based on Facial Expression: Dynamic Hybrid Descriptions, IEICE Transactions on Information and Systems, Vol.E101-D, No.7, 1-10.
16. Zamzmi, G, Kasturi, R, Goldgof, D, Zhi, R., Ashmeade, T., and **Sun, Y** (2018). A Review on Automated Pain Assessment for Infants: Features, Classification Tasks, and Databases, IEEE Reviews in Biomedical Engineering, Vol. 11, pp. 77-96.
17. Huang, Y, Bianchi, M, Liarokapis, M and **Sun, Y** (2016). Recent Data Sets on Object Manipulation: A Survey, Big Data, 4(4):197-216.
18. Lin, B., **Sun, Y.**, Qian, X., Goldgof, D., Gitlin, R., You, Y., (2016). Video Based 3D Reconstruction, Laparoscope, Localization, and Deformation Recovery for Abdominal Minimally Invasive Surgery: A Survey, International Journal of Medical Robotics and Computer Assisted Surgery, 12(2): 158-78.
19. Lin, B., **Sun, Y.**, Sanchez, J., and Qian, X. (2015). Efficient Vessel Feature Detection for Endoscopic Image Analysis, IEEE Transactions on Biomedical Engineering, 62(4): 1141-1150.
20. Lin, Y. and **Sun, Y.**, (2015). Grasp Planning to Maximize Task Coverage, Intl. Journal of Robotics Research (IJRR), 34(9): 1195-1210.
21. Lin, Y., and **Sun, Y.** (2015). Robot Grasp Planning Based on Demonstrated Grasp Strategies, Intl. Journal of Robotics Research (IJRR), 34(1): 26-42.
22. Coovert, M., Lee, T., Shindev, I., **Sun Y.** (2014). Spatial Augmented Reality as a Method for a Mobile Robot to Communicate Intended Movement, Computers in Human Behavior, 34:241-248.
23. **Sun, Y.**, Ren, S., Lin, Y., (2014). Object-Object Interaction Affordance Learning, Robotics and Autonomous Systems, 62(4): 487-496.
24. Anderson, A., Lin, B., **Sun, Y.**, (2013) .Virtually Transparent Epidermal Imagery (VTEI): On New Approaches to In Vivo Wireless High-Definition Video and Image Processing, IEEE Transactions on Biomedical Circuits and Systems, 7(6): 851-60.
25. Lin, B., **Sun, Y.**, Qian, X., (2013). Dense Surface Reconstruction with Shadows in MIS, IEEE Transactions on Biomedical Engineering, 60(9): 2411-20.
26. Castro, C.A., Smith, S., Alqassis, A., Ketterl, T., **Sun ,Y.**, Ross, S., Rosemurgy, A., Savage, P.P., and Gitlin, R.R., (2013). A Wireless Robot for Networked Laparoscopy, IEEE Transactions on Biomedical Engineering, vol. 60, No. 4, pp. 930 - 936.
27. Alqassis, A., Ketterl, T., Castro, C., Gitlin, R., Ross, S., **Sun, Y.**, and Rosemurgy, A. (2012). MARVEL In Vivo Wireless Video System, Journal of Technology and Innovation, vol. 14, no. 3, pp. 329-340.
28. Agrawal, A, **Sun, Y,** Barnwell, J, Raskar, R (2010). Vision Guided Robot System for Picking Objects by Casting Shadows. Intl. Journal of Robotics Research (IJRR), Vol. 29, No. 2-3, pp. 155-173.
29. **Sun, Y**, Hollerbach, JM, Mascaro, S.A (2009). Finger force direction estimation with computer vision. IEEE Transactions on Robotics (T-RO), Vol. 25, pp. 1356-1369.
30. **Sun, Y**, Hollerbach, JM, Mascaro, S.A (2008). Predicting fingertip forces by imaging coloration changes in the fingernail and surrounding skin. IEEE Transactions on Biomedical Engineering, Vol. 55, pp. 2363-2371.
31. **Sun, Y**, Jiang, CL, Dong, M (2001). A skew-correction algorithm for Chinese characters in electronic maps of GIS, Journal of Dalian University of Technology, Vol. 42, No. 1, pp. 118-121. (in Chinese)
32. **Sun, Y**, Yin, F (2001). Using Genetic Algorithms to Design Buffers in Production Lines, Acta Automatica Sinica, Vol. 27, No. 6, Nov. pp. 863-866. (in Chinese)
33. **Sun, Y**, Jiang, CL, Yin, F (2000). A Method of Improving Image Processing Speed in Windows, Microcomputer Applications, Vol. 21, No. 4, July, pp. 211-214. (in Chinese)

Conference Papers:

34. Adheesh Shenoy, Tianze Chen, Yu Sun (2022) Multi-Object Grasping -- Efficient Robotic Picking and Transferring Policy for Batch Picking, IROS, 1-7.
35. Md Sirajus Salekin, Ghada Zamzmi, Dmitry Goldgof, Peter Mouton, Kanwaljeet Anand, Terri Ashmeade, Stephanie Prescott, Yangxin Huang, **Yu Sun** (2022). Attentional Generative Multimodal Network for Neonatal Postoperative Pain Estimation, MICCAI, 1-11.
36. Chen, Y., Paulius, D. **Sun, Y.**, Jia, Y. (2022) Robot Learning of Assembly Tasks from Non-expert Demonstrations using Functional Object-Oriented Network, International Conference on Automation Science and Engineering (CASE), 1-8.
37. **Sun, Y.**, Amatova, E., Chen. T., (2022). Multi-Object Grasping -- Types and Taxonomy, ICRA, 1-7.

38. Chen, Tianze, Adheesh Shenoy, Anzhelika Kolinko, Syed Mutahar Shah, **Sun, Y.** (2021). Multi-Object Grasping -- Estimating the Number of Objects in a Robotic Grasp, IROS, pp 1-7.
39. Williams, Troi and **Sun, Y.** (2021). Learning State-Dependent Sensor Measurement Models with Limited Sensor Measurements, IROS, pp. 1-7
40. Paulius, David Andres, Dong, Kelvin Sheng Pei, **Sun, Y.** (2021). Task Planning with a Weighted Functional Object-Oriented Network, ICRA, 1-7.
41. Paulius, David, Agostini, Alejandro, **Sun, Y.**, Lee, Dongheui (2021). A Road-Map to Robot Task Execution with the Functional Object-Oriented Network, UR, pp 1-4.
42. Sakib, Md Sadman, Baez, Hailey, Paulius, David, **Sun, Y.** (2021). Evaluating Recipes Generated from Functional Object-Oriented Network, UR, pp 1-4.
43. Sribhashyam, S., Salekin,M.S., Goldgof, D., Zamzmi, G., Sun, Y. (2021). Pattern Recognition in Vital Signs using Spectrograms, IEEE International Conference on Systems, Man, and Cybernetics (SMC) pp. 1-6. (in press)
44. Alibayev, M., Paulius, D.A., **Sun, Y.** (2020). Developing Motion Code Embedding for Action Recognition in Videos, 25th International Conference on Pattern Recognition (ICPR), 1-8.
45. Wilches, J. Huang, Y., **Sun, Y.** (2020). Generalizing Learned Manipulation Skills in Practice, IROS, 1-7.
46. Alibayev, M., Paulius, D.A., **Sun, Y.** (2020). Estimating Motion Codes from Demonstration Videos, IROS, 1-6.
47. Paulius, D., Eales, N., and **Sun, Y.** (2020). A Motion Taxonomy for Manipulation Embedding, Robotics: Science and Systems (RSS), 1-9.
48. Salekin, M., Ghada Alzamzmi, Dmitry Goldgo, Rangachar Kasturi, Thao Ho, and **Sun, Y.** (2020). A First Investigation Into the Use of Deep Learning for Standardized and Continuous Assessment of Neonatal Post-Operative Pain, 15th IEEE International Conference on Automatic Face and Gesture (FG), pp. 1-5.
49. Salekin, M., Zamzmi, G., Paul, R., Goldgof, D., Kasturi, R., Ho, T., and **Sun, Y.** (2019). Harnessing the Power of Deep Learning Methods in Healthcare: Neonatal Pain Assessment from Crying Sound, IEEE Healthcare Innovations and Point of Care Technologies Conference (HI-POCT), 1-4.
50. Paulius, D., Huang, Y., Melancon, J., **Sun, Y.** (2019). Manipulation Motion Analysis & Taxonomy in Cooking, International Conference on Intelligent Robots (IROS), 1-6.
51. Williams, T. and **Sun, Y.** (2019). Learning State-Dependent Sensor Measurement Models for Localization, IROS, 1-8.
52. Chen, T., Huang, Y., **Sun, Y.** (2019). Accurate Pouring using Model Predictive Control Enabled by Recurrent Neural Network, IROS, 1-7.
53. Jelodar, B., and **Sun, Y.** (2019). Joint Object and State Recognition Using Language Knowledge, IEEE ICIP 2019, pp. 3352-3356.
54. Salekin, M., Zamzmi, G., Goldgof, D., Kasturi, R., Ho, T., and **Sun, Y.** (2019). Multi-channel Neural Network for Assessing Neonatal Pain from Videos, IEEE International Conference on Systems, Man, and Cybernetics (SMC), 1-6.
55. Zamzmi, G., Paul, R., Goldgof, D., Kasturi, R., Ho, T., and **Sun, Y.** (2019). Automatic Pain Assessment From Facial Expression: Neonatal Convolutional Neural Network (N-CNN), International Joint Conference on Neural Networks (IJCNN), 1-6.
56. Paulius, D., Jelodar, B., and **Sun, Y.** (2018). Functional Object-Oriented Network: Construction & Expansion, ICRA 2018, pp 5935-5941.
57. Zamzmi, G., Goldgof, D., Kasturi, R., and **Sun, Y.** (2018) .Toward Ubiquitous Assessment of Neonates' Health Condition, ACM Conference on Pervasive and Ubiquitous Computing (UbiComp 2018), 952-955.
58. Zamzmi, G., Pai, C., Goldgof, D., Kasturi, R., and **Sun, Y.**, Terri Ashmeade (2017). Automated Pain Assessment in Neonates, Scandinavian Conference on Image Analysis 2017, pp 350-361.
59. Huang, Y. and **Sun, Y.** (2017). Learning to Pour, IROS, pp 7005-7010.
60. **Sun, Y.**, Yun Lin, and Yongqiang Huang (2016). Robotic Grasping for Instrument Manipulations, UR, pp. 1-3 (Invited).
61. Paulius, D. Huang, Y., Milton, R., Buchanan, W.D., Sam J., and **Sun, Y.** (2016). Functional Object-Oriented Network for Manipulation Learning, IROS, 3655-3662.
62. Zamzmi, G. Dmitry Goldgof, Rangachar Kasturi, Terri Ashmeade, Chih-Yun Pai, **Yu Sun** (2016). An Approach for Automated Multimodal Analysis of Infants' Pain, 1-6, 23rd International Conference on Pattern Recognition (ICPR).

63. Alzamzmi, G., Goldgof, D., Kasturi, R., **Sun, Y.**, Asmeade T. and Ruiz, G. (2015). Pain Assessment in Infants: Towards Spotting the Pain Expression Based on the Facial Strain, 3rd International Workshop on Emotion Representation, Analysis and Synthesis in Continuous Time and Space, pp 1-4.
64. Huang, Y. and **Sun, Y.** (2015). Generating Manipulation Trajectories Using Motion Harmonics, IROS, 4949-4954.
65. Lin, Y. and **Sun, Y.** (2015). Task-Based Grasp Quality Measures for Grasp Synthesis, IROS, 485-490.
66. Lin, Y., **Sun, Y.** (2014) Grasp Planning Based on Grasp Strategy Extraction from Demonstration, IROS, pp. 4458-4463.
67. Cooke, C., Anderson, A. L., & **Sun, Y.** (2014). Instantaneous Frequency-division Multiplexing (IFDM): An Analog Multicarrier Approach to Wireless in Vivo Video, Proceedings of the International Conference on Biomedical Engineering and Systems, Prague, Czech Republic, pp 1-8.
68. Johnson, A. S., Sanchez, J., French, A., & **Sun, Y**. (2014). Unobtrusive Augmentation of Critical Hidden Structures in Laparoscopy, Medicine Meets Virtual Reality 21: NextMed/MMVR21, 185-191.
69. Lin, B., **Sun, Y.**, Sanchez, J., & Qian, X. (2014). Vesselness based feature extraction for endoscopic image analysis, IEEE 11th International Symposium on Biomedical Imaging (ISBI), 1295-1298.
70. Johnson, A. S., & **Sun, Y.** (2013). Exploration of spatial augmented reality on person. In IEEE Virtual Reality (VR), pp. 59-60.
71. Alqassis, A., Castro, C., Ketterl, T., **Sun, Y.**, Gitlin, R., Smith ,S., and Savage, P. (2013). Laparo-Endoscopic Single Site Surgery using MARVEL--- a Novel Wireless Robotic Video Platform, IEEE Workshop in Robot Vision (WoRV)/Winter Vision Meeting (WVM), pp. 1-6.
72. Lin, B., **Sun, Y.**, Qian, X., (2013). Thin Plate Spline Feature Point Matching for Organ Surfaces in Minimally Invasive Surgery Imaging, SPIE Medical Imaging, pp. 867112-8.
73. Sarah Tudor, Stephanie Carey, Sang-Hie Lee, **Yu Sun**, and Yun Lin (2013). "Comparison of Motion Data Analysis of a Healthy and an Injured Pianist." PAMA 2013 Symposium ~ Medical Problems of Performing Artists, pp.96-98.
74. Lin, Y., **Sun, Y.** (2013). Task-Oriented Grasp Planning Based on Disturbance Distribution, ISRR, pp 1-16.
75. Dai, W., **Sun, Y.**, Qian, X., (2013) Functional Analysis of Grasping Motion, IROS, pp. 3507-3513.
76. Bringes, C., Lin, Y., **Sun, Y.**, Alqasemi R. (2013). Determining the Benefit of Human Input in Human-in-the-Loop Robotic Systems, IEEE ROMAN 2013, pp. 210-215.
77. Lin Y., **Sun, Y.** (2013). Grasp Mapping Using Locality Preserving Projections and KNN Regression, IEEE Intl. Conference on Robotics and Automation (ICRA), pp. 1068-1073.
78. Ren ,S., **Sun, Y.** (2013). Human-Object-Object-Interaction Affordance, IEEE Workshop in Robot Vision (WoRV)/Winter Vision Meeting (WVM), pp. 1-6.
79. Pence, W.G., Farelo, F., Alqasemi, R., **Sun, Y.**, and Dubey, R. (2012). Visual Servoing Control of a 9-DoF WMRA to Perform ADL Tasks, IEEE Intl. Conference on Robotics and Automation (ICRA), pp. 916-922.
80. Lin Y., Ren S., Clevenger M., and **Sun Y.** (2012) Learning Grasping Force from Demonstration, IEEE Intl. Conference on Robotics and Automation (ICRA), pp. 1526-1531.
81. Castro ,C.A., Smith, S., Alqassis, A., Ketterl ,T., **Sun, Y**, Ross, S., Rosemurgy, A., Savage, P.P., and Gitlin, R.D., (2012). MARVEL: A Wireless Miniature Anchored Robotic Videoscope for Expedited Laparoscopy, IEEE Intl. Conference on Robotics and Automation (ICRA), pp. 2926-2931.
82. Shindev, I., **Sun, Y.**, Coovert, M., Pavlova, J., Lee, T. (2012). Exploration of Intention Expression for Robots, HRI, pp. 1-2, Boston, MA.
83. **Sun, Y**, Anderson, A, Castro, C, Lin ,B, Gitlin, R (2011). Virtually Transparent Epidermal Imagery for Laparo-Endoscopic Single-Site Surgery, International Conference of the IEEE Engineering in Medicine and Biology Society (EMBC'11), Boston, MA, USA, August 30 - September 3, 2011, 2107-2110.
84. Neninger C, **Sun Y**, Lee SH, and Chodil J (2011). A Complete Motion and Music Capture System to Study Hand Injuries among Musicians, Emergency Management & Robotics for Hazardous Environments, Knoxville, TN, Aug. 7-10, 2011, 1-11.
85. Lee, Sang-Hie, **Yu Sun**, Jeffrey Chodil, BM, and Carlos Neninger, BS (2011). Abstract, "Pianists' Hand Tasks in Preparation for Robotics Modeling" in in "Meetings" Medical Problems of Performing Artists, Snowmass, Colorado, July 21-24, 2011. Twenty-ninth Annual Symposium of the Performing Arts Medicine Association. MPPA vol.26, No.3. 176-177.
86. Lee, Sang-Hie, **Sun**, **Y**., Carlos Neninger, and Jeff Chodil (2011). "Robotic Modeling of Skilled Hand Tasks." Twenty-Ninth Annual Symposium on Medical Problems of Performing Artists, July 21-24. Snowmass, Colorado.

87. Pence, W, Farelo, F, **Sun, Y**, Alqasemi, R, and Dubey, R (2011). Autonomous Mobility & Manipulation of a 9-DoF WMRA, RSS workshop on Mobile Manipulation, USC, 2011,1-4.
88. Lin, Y, **Sun, Y** (2011). 5-D Force Control System for Fingernail Imaging Calibration, IEEE Intl. Conference on Robotics and Automation (ICRA), pp. 1374-1379.
89. **Sun, Y** (2011). Fingertip Force and Contact Position and Orientation Sensor, IEEE Intl. Conference on Robotics and Automation (ICRA), pp. 1114-1119.
90. Grieve, T, Lincoln, L, **Sun, Y**, Hollerbach, JM, Mascaro, SA (2010). 3D Force Prediction Using Fingernail Imaging with Automated Calibration, Proc Intl. Symposium on Haptic Interfaces for Virtual Environment and Teleoperator Systems, pp. 113-120.
91. Grieve ,T, **Sun, Y**, Hollerbach, JM, Mascaro ,S.A (2009) .3-D Force control on the human fingerpad using a magnetic levitation device for fingernail imaging calibration. World Haptics Conference, pp. 411-416.
92. **Sun, Y**, Hollerbach, JM (2008) Observability index selection for robot calibration. IEEE Intl. Conference on Robotics and Automation (ICRA), pp. 831-836.
93. **Sun, Y**, Hollerbach, JM (2008). Active robot calibration algorithm. IEEE Intl. Conference on Robotics and Automation (ICRA), pp. 1276-1281.
94. **Sun, Y**, Hollerbach JM, Mascaro, SA (2007). Imaging the finger force direction. IEEE Computer Society Conference on Computer Vision and Pattern Recognition (CVPR), pp. 1-6.
95. **Sun, Y**, Hollerbach, JM, Mascaro, SA (2007). Eigennail for finger force direction recognition. IEEE Intl. Conference on Robotics and Automation (ICRA), pp. 3251-3256.
96. **Sun, Y**, Hollerbach, JM, Mascaro, SA (2007) .Finger force direction recognition by principal component analysis of fingernail coloration pattern. World Haptics Conference, pp. 90 – 95.
97. **Sun, Y**, Hollerbach, JM, Mascaro, SA (2006) Measuring finger forces by imaging the fingernail. Proc 14th Intl. Symposium on Haptic Interfaces for Virtual Environment and Teleoperator Systems, pp. 125-131.
98. **Sun, Y**, Hollerbach, JM, Mascaro, S.A (2006). Dynamic features and prediction model for imaging fingernail to measure finger forces. IEEE Intl. Conference on Robotics and Automation (ICRA), pp. 2813-2818.

Book Editing

99. **Sun, Y.**, Behal, A., Chung, C.R. (editors), New Development in Robot Vision, ISBN 978-3-662-43859-6, Springer, 2015.
100. **Sun, Y.**, Falco, J. (editors), Robotics Grasping and Manipulation Challenge, Springer, 2016.

Book Chapters

101. **Sun Y**, Falco J, Cheng N, Choi HR, Engeberg ED, Pollard N, Roa M, Xia Z. Robotic Grasping and Manipulation Competition: Task Pool. In Robotic Grasping and Manipulation Challenge 2016 (pp. 1-18). Springer, Cham.
102. Falco J, **Sun Y**, Roa M. Robotic Grasping and Manipulation Competition: Competitor Feedback and Lessons Learned. In Robotic Grasping and Manipulation Challenge 2016 (pp. 180-189). Springer, Cham.
103. Lin, Y. and **Sun, Y.**, 2016. Task-oriented grasp planning based on disturbance distribution. In Robotics Research (pp. 577-592). Springer International Publishing.
104. **Sun, Y.**, and Y. Lin. (2015) Modeling Paired Objects and Their Interaction. In New Development in Robot Vision, pp. 73-87. Springer Berlin Heidelberg.
105. Lin, B., Johnson, A., Qian, X., Sanchez, J., & **Sun, Y.** (2013). Simultaneous Tracking, 3D Reconstruction and Deforming Point Detection for Stereoscope Guided Surgery. In Augmented Reality Environments for Medical Imaging and Computer-Assisted Interventions, pp. 35-44. Springer Berlin Heidelberg.
106. Johnson, A. S., and **Sun, Y.** (2013) Spatial Augmented Reality on Person: Exploring the Most Personal Medium, In Virtual Augmented and Mixed Reality. Designing and Developing Augmented and Virtual Environments, pp. 169-174. Springer Berlin Heidelberg.
107. Grieve, T., **Sun Y.**, Hollerbach, J.M., and Mascaro, S.A. (2011) Force prediction using fingernail imaging: an overview, Informatics in Control, Automation, and Robotics, pp. 37-48, J. Andrade Cetto, J.-L. Ferrier and J. Filipe (eds), Springer.

Patents and Patents Pending

Patents:

1. Sun, Yu, and Yongqiang Huang. "Systems and methods for learning and generating movement policies for a dynamical system." U.S. Patent 11,298,821, issued April 12, 2022.
2. G. A. Alzarnzmi, D. Goldgof, R. Kasturi, T. Ashmeade, **Y. Sun**, Comprehensive and context-sensitive neonatal pain assessment system and methods using multiple modalities, Patent # 11,202,604, issued on 12/21/2021
3. G. A. Alzarnzmi, D. Goldgof, **Y. Sun**, R. Kasturi, T. Ashmeade, Machine-Based Infants Pain Assessment Tool, Patent #10827973, issued on 11/10/2020.
4. **Y. Sun**, Functional Object-Oriented Networks for Manipulation Learning, US Patent #10,789,543, issued on 9/29,2020
5. **Y. Sun**, Y. Huang, Systems and methods for learning and generating movement policies for a dynamical system, US Patent #10,611,026, issued on 04/07/2020.
6. **Y. Sun**, T. Williams, Learning State-Dependent Sensor Measurement Models for Localization, US Patent # 10,572,802, Issued on 02/25/2020.
7. **Y. Sun** and Y. Huang, Generating Robotic Trajectories with Motion Harmonics, US Patent # 9,764,469, Issued on September 19, 2017
8. **Y. Sun**, M. Coovert, and I. Shindev, Techniques to Enable Robot Intention Expression**,** US Patent #9,744,672, Issued on August 29, 2017
9. **Y. Sun**, Y. Lin, Systems and Methods for Planning a Robot Grasp That Can Withstand Task Disturbances, US patent # 9,649,764, Issued on May 16, 2017
10. **Y. Sun**, J.E. Sanchez, X. Qian, B. Lin, Systems and Methods for Providing Augmented Reality in Minimally Invasive Surgery, US patent # 9,646,423, Issued on May 9, 2017.
11. **Y. Sun**, J.E. Sanchez, X. Qian, B. Lin, Systems and Methods for Providing Augmented Reality in Minimally Invasive Surgery, US patent # 9,547,940, Issued on January 17, 2017.
12. **Y. Sun** and A. Johnson, Systems and Methods for Projecting Images onto an Object, US patent #9,520,072, Issued on December 13, 2016.
13. **Y. Sun**, Y. Lin, Systems and Methods for Planning a Robot Grasp Based upon a Demonstration Grasp, US patent # 9,321,176 Issued on April 26, 2016.
14. **Y. Sun**, Fingertip, Force, Location, and Orientation Sensor, US patent, US patent #8,724,861, Issued on May 13, 2014
15. **Y. Sun**, Richard D. Gitlin, Adam Anderson, Alexander Rosemurgy, and Sharona Ross, See-through Abdomen Display for Minimally Invasive Surgery, US patent #8,504,136, Issued on August 6, 2013. (Licensed)

Pending:

16. **Y. Sun**, D. Paulius, and M. Alibayev, Motion Taxonomy and Manipulation Embedding
17. Peter Mouton, Md Sirajus Salekin, Dmitry Goldgof, **Y. Sun**, Thao TB Ho, Ghada Zamzmi, Early Detection of Prolonged Procedural Pain in Neonates
18. **Y. Sun**, David Paulius, Maxat Alibayev, Motion Taxonomy and Motion Code Embedding
19. **Y. Sun** and Juan Wilches, Generalizing Learned Manipulation Skills in Practice

Plenary/Keynote Talks:

- Plenary Talk, 8th International Conference on Mechatronics System and Robots, Singapore
- Plenary Talk, Exploring Robotic Cooking, Southeast Robotics Symposium, Georgia Tech, 10/12/2019
- Keynote Talk**,** "Cooking Robotics: AI Meets Physical World," i-Create, Shanghai, 7/15/2018
- Keynote Talk, "Renaissance of Robotic Grasping," CCF Global Artificial Intelligence & Robotics Summit, Shenzhen, China, 8/13/2016

Contributions to Education

Advising

Ph.D. students:

Current (6): Tianze Chen (2017), Md Sirajus Salekin (2017, co-advisor), Juan Wilches (2019), Hailey Baez (Female/Minority, 2019), Md Sadman Sakib (2019), Nhan Dang (Female, 2022).

Graduated (9): Yun Lin (Female, 2014), Bingxiong Lin (2015), Yueng Delahoz (Co-advisor, Minority, 2018), Yongqiang Huang (2019), John Rippetoe (Co-advisor, 2019), David Paulius (Minority, 2020), Yi Li (Female, 2020, co-advise), Ahmad Babaeian Jelodar (2021), Troi Williams (Minority, 2021).

Master thesis students:

Current (3): Zihe Ye (2021), Sainath Reddy Bobbala (2021), Kejvi Cupa (2022)
Graduated (6): Carlos Neninger (Minority, 2011), William Pence (2012), Wei Dai (2013), Christine Bringes (Female, 2013), Maxat Alibayev (2020), Tsing Wai Tsow (2021), Haoxuan Li (2022), Utkarsh Tamrakar (2022).

Undergrad research students:

Current (1) : Jonathan Koch.
Graduated (21): Nhan Dang (Female), Noah Grzywacz, Eliza Amatova (Female), Syed Shah, Adheesh Shenoy, Qi Zheng (Female), Haoxuan Li, Patrick Grycuk, Kelvin Dong, Sanjeeth Bhat, Jean-Luc Hayes (Minority), Sara Savitz (Female), Anthony Cope, Alexander French (Minority), James Robe, Justin Fouts, Ivan Shindev, Matthew Clevenger, Emmanuel Stinson (Minority), Michael Habashy, William Buchanan, Sarthak Sidana, Michael Quintero, Jeanine Sam (Minority Female)

Teaching

Year	Spring	Fall
2022	CIS 6930 Advanced Robotics	CAP 5625 Introduction to A.I. CAP 4660 Intro to Robotics
2021	CIS6930 Deep Learning	CAP 5625 Introduction to A.I. CIS 4930 Deep learning fundamentals
2020	CIS6930 Advanced Deep Learning	CIS 4930/6930 Intro to CSE Research Seminar CAP 4660/CIS6930 Intro to Robotics
2019	CIS6930 Neural Networks and Deep Learning	CAP 4660 Intro to Robotics
2018	CIS6930 Neural Networks and Deep Learning	CAP 4660 Intro to Robotics
2017	Sabbatical leave	COP3331 Object Oriented Design
2016	CIS6930 Neural Networks and Deep Learning CAP 4660 Intro to Robotics	Sabbatical leave
2015	CAP 4660 Intro to Robotics COP3331 Object Oriented Design	CIS6930 Robotics Seminar
2014	CAP 4660 Intro to Robotics COP3331 Object Oriented Design	CIS6930/4930 Algorithms for Robotics CIS6930 Robotics Seminar
2013	CAP 4660 Intro to Robotics COP3331 Object Oriented Design	CIS6930/4930 Algorithms for Robotics
2012	CAP 4660 Intro to Robotics COP3331 Object Oriented Design	CIS6930/4930 Algorithms for Robotics
2011	CAP 4660 Intro to Robotics COP3331 Object Oriented Design CIS6930 Robotics Seminar	CIS6930/4930 Algorithms for Robotics
2010	COP3331 Object Oriented Design	CIS6930/4930 Algorithms for Robotics CIS6930 Robotics Seminar
2009		CAP4660 AI Robotics

Contributions to Societies

Institutional Service

- Associate Chair of Graduate Affairs, Department of Computer Science & Eng (CSE) (2018-2020)
- Concentration Director, Cybersecurity Master Program Computer Security Fundamentals Concentration (2018-2020)
- Member, Graduate Council, USF (2019-2022)
- Member, Faculty Evaluation Committee of CSE Department (2022)
- Member, Faculty Search Committee of CSE Department (2017-2022)
- Member, Faculty Search Committee of Electrical Engineering (EE) Department (2018-2019)
- Member, USF Learning Assistants Work Group (2019)
- Member, USF International Risk and Security Advisory Committee (2018-2020)
- Member, Tenure and Promotion Committee of CSE (2015-)
- Member, Award Committee of CSE (2014-2016)

- Member, College of Engineering Design-for-X Lab Committee (2013-2015)
- Member, Graduate Committee of CSE (2009-2015,2018-)
- Advisor, Google Developer Student Club (2019-)

Professional Service

Editorial Board:

- Editor, IROS (2019-2021), ICRA (2020-2022), UR (2020-2022)
- Associate Editor, IEEE Robotics and Automation Letters (RA-L) (2021-)
- Guest Editor, IEEE Robotics and Automation Letters (RA-L) Special Issue on Robotic Grasping and Manipulation Challenges and Progress, 2021
- Guest Editor, IEEE Robotics and Automation Letters (RA-L) Special Issue on Benchmarking in Manipulation, 2020
- Associate Editor, IEEE Transactions on Robotics (TRO) (2015-2019)
- Associate Editor, IEEE Robotics and Automation Magazine (RAM) (2012-2015)
- Associate Editor, Assembly Automation (2015-2016)
- Associate Editor, ICRA 2014, IROS 2015, ICRA 2016, IROS 2016, ICRA2019

IEEE Robotics and Automation Society:

- Co-Chair, Competitions Committee, IEEE RAS Conference Activity Board (2017-)
- Board Member, IEEE RAS Member Activity Board (2013-2019)
- Steering Committee, IEEE RAS Technical Committee on Robotic Hands, Grasping, and Manipulation (2017-)
- Co-Chair, Membership, Admissions and Retention Committee, IEEE RAS Member Activity Board (2018-2019)
- Co-Chair, Membership Services Committee, IEEE RAS Member Activity Board (2013-2017)
- Founding Co-Chair, IEEE RAS Technical Committee on Robotic Hands, Grasping, and Manipulation (2014-2017)

Conference and Workshop:

- Panel Chair, IEEE ICRA 2021 Best Student Paper Award Selection Panel
- Program Chair, IEEE International Conference on Multisensor Fusion and Integration for Intelligent Systems (MFI), 2020
- Chair, IROS Robotic Grasping and Manipulation Competition (RGMC), (2016-)
- Co-Chair, IROS Open Cloud Robot Table Organization Challenge (OCRTOC), 2020-
- Co-Chair, Workshop on Humanoid Grasping and Manipulation, at Humanoids, 2019
- Co-Chair, ICRA Workshop on Benchmarks for Robotic Manipulation, 2019
- Organizing committee member, Industrial Robotics Category, World Robot Challenge (WRC), World Robot Summit 2018. 2019
- Chair, IROS Workshop on Experimental Robotic Grasping and Manipulation -- Benchmarks, Datasets, and Competitions, 2018
- Program Committee, RSS 2017
- Organizing Committee, Global Artificial Intelligence and Robotics, CCF-GAIR 2017
- Program Committee, 28th International IEEE Conference on Tools with Artificial Intelligence, 2016
- Competition Co-Chair, IROS 2016
- Award Committee Member, IROS Travel Grant 2016
- Chair, NSF Doctoral Consortium @ IROS 2016
- Organizing Co-Chair, ICRA Workshop on grasping, and manipulation datasets, 2016.
- Program Committee, ROBIO 2015
- Program Committee, IEEE MFI 2015
- Organizing Co-Chair, RSS Workshop on Bridging the Gap between Data-Driven and Analytical Physics-based Grasping and Manipulation, 2015
- Organizing Co-Chair, ICRA Workshop on Robotic Hands, Grasping, and Manipulation, 2015.
- Program Committee, RSS Workshop on grasping and manipulation 2014
- Organizing Committee, Invited Sessions Chair, International Conference on Robotics, Vision and Signal Processing (2013)

- Program Co-Chair, Workshop on Robot Vision 2013
- Organizing Committee, Invited Sessions Chair, International Conference on Robotics, Vision and Signal Processing (2011)
- Program Committee, ICNC 2013 Workshop on Cyber-Physical System
- Program Committee, IEEE International Conference on Multisensor Fusion and Integration for Intelligent Systems (MFI), Salt Lake City, UT, 2010
- Local Arrangements Chair, World Haptics Conference 2009

Contributor, Next Generation Robotics, CRA-CCC whitepaper, 2016

Grant Proposal Reviewer/Panelist:
U.S. NSF 2011, 2015, 2016, 2018, 2019, 2020, 2021
NIH National Institute of Neurological Disorders and Stroke, 2022
French National Research Agency 2018
Kingdom of Saudi Arabia RDO's International Collaboration Grant Program 2019
European Research Council (ERC) 2020

IEEE Admission & Advancement (A&A) Senior Member Application Review Panel 2019

Volunteer:
Volunteer staff for Making exhibitions, SIGGRAPH 2015
Student volunteer, ICML 2006
Student volunteer, CVPR 2006

Public Service

Volunteer, USF Ybor Covid-19 Testing Site, July 2020
Volunteer, Feeding Tampa Bay, December 2019
Teacher, USF STEM for Scholars (Summer program for bright, ambitious high school students) 2016
Judge, Florida VEX State Robotics Championship (K12) 2014
Judge, 56 Annual State Science and Engineering Fair of Florida (K12) 2011
Judge, Hillsborough County Regional Science Fair (K12) 2010