

# DR. JUAN ROJAS

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## Education

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**Vanderbilt University**, Nashville, Tennessee

Ph.D., Department of Electrical and Computer Engineering, May 2009

**Thesis:** *Autonomous Cooperative Assembly by Force Feedback Using a Control Basis Approach.*

Advisor: Dr. Richard A. Peters II

**Vanderbilt University**, Nashville, Tennessee

M.S., Department of Electrical and Computer Engineering, May 2004

**Thesis:** *Sensory integration with articulated motion on a humanoid robot.*

Advisor: Dr. Richard A. Peters II

**Vanderbilt University**, Nashville, Tennessee

B.S., Electrical and Computer Engineering. Math Minor, May 2002.

## Professional Experience

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**Lipscomb University**

Assistant Professor at the Raymond B. Jones School of Engineering

Nashville, TN

Jan 2023 to Present

**Chinese University of Hong Kong**

Assistant Research Professor at the School of Mechanical Eng. & Aut.

Hong Kong, China

Aug 2020 to Present

**Guangdong University of Technology**

Associate Professor at the School of Electromechanical Eng.

Guangzhou, China

Aug 2018 to Jun 2020

**Guangdong University of Technology**

Associate Research Professor at the School of Electromechanical Eng.

Guangzhou, China

Aug 2015 to Aug 2018

**Sun Yat Sen University**

Assistant Professor at the School of Software

Guangzhou, China

Aug 2012 to Jul 2015

**National Institute of Advanced Industrial Science & Technology**

Post-Doctoral Fellow at the Task Manipulation and Vision Center

Tsukuba, Japan

Sept 2011- Aug 2012

**Sun-Yat Sen University**

Int'l Visiting Scholar at the School Engineering

Guangzhou, China

Sept. 2009 to Aug 2011

**Universal Robotics Inc.**

Robotacist

Nashville, TN, USA.

June 2009 to Aug 2009.

**Vanderbilt University**

Center for Teaching Fellow at the Center for Teaching

Nashville, TN, USA

Sept 2008 to May 2009

## **Publications**

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*For robotics publications rankings see Google's metrics [here](#)*

### **Books**

- B1. Zhou, Xuefeng and Wu, Hongmin and Rojas, Juan and Xu, Zhihao and Li, Shuai and Zhou, Xuefeng and Wu, Hongmin and Rojas, Juan and Xu, Zhihao and Li, Shuai; Nonparametric Bayesian Learning for Collaborative Robot Multimodal Introspection, Springer Nature 2020, 10.1007/978-981-15-6263-1.
- B2. R. Patrick Goebel, ROS By Example INDIGO - Volume 1, Translated by: J. Rojas, Peng YeYi, Huang Ling Ling, Liu Ke Shan, Liu Zhen Dong, Li Jia Neng, Liu Dong, and Wang Yaqian. SYSU Publisher, 2019.
- B3. R. Patrick Goebel, ROS By Example INDIGO - Volume 2, Translated by: J. Rojas, Liu Zhen Dong, Li Zi Ran, Huang Zhen Jie, Guo Li Wei, Chen Ya Xue, Luo Sheng, Lin Chen Yu, Cheng Yang Pu. SYSU Publisher, 2017.
- B4. R. Patrick Goebel, ROS By Example HYDRO - Volume 1, Translated by: J. Rojas, Peng YeYi, Huang Ling Ling, Liu Ke Shan, Liu Zhen Dong, Li Jia Neng. SYSU Publisher, 2015.

### **Peer Reviewed Journals**

- J1. Guanglin Ji, Junyan Yan, Jingxin Du, Wanquan Yan, Jibiao Chen, Yongkang Lu; Juan Rojas, Shing Shin Cheng, Towards Safe Control of Continuum Manipulator Using Shielded Multiagent Reinforcement Learning., Robotics and Automation Letters (RAL, vol. 6, no. 4, pp. 7461-7468, Oct. 2021, doi: 10.1109/LRA.2021.3097660.
- J2. Jiancong Huang\*, Juan Rojas\*, Matthieu Zimmer, Hongmin Wu, Yisheng Guan, and Paul Weng, Hyperparameter Auto-tuning in Self-Supervised Robotic Learning, Robotics and Automation Letters (RAL), Vol. 6:2, p. 3537-3544, doi: 10.1109/LRA.2021.3064509, March 2021.
- J3. Shuangqi Luo, Hongmin Wu, Shuangda Duan, Yijiong Lin, and Juan Rojas, Endowing Robots with Longer-term Autonomy by Recovering from External Disturbances in Manipulation

through Grounded Anomaly Classification and Recovery Policies, *Journal of Intelligent Robot Systems (JINT)*, 101, 51, Feb 2021, <https://doi.org/10.1007/s10846-021-01312-6>.

- J4. Yijiong Lin, Jiancong Huang, Matthieu Zimmer, Yisheng Guan, Juan Rojas, and Paul Weng, Invariant Transform Experience Replay: Data Augmentation for Deep Reinforcement Learning, *Robotics and Automation Letters (RAL)*, Vol. 5, Issue 4, p. 6615-6622, Aug 2020, 10.1109/LRA.2020.3013937.
- J5. Hongmin Wu, Yisheng Guan, and Juan Rojas, A Latent State-based Multimodal Execution Monitor with Anomaly Detection and Classification for Robot Introspection, *Applied Science*, 9(6), 1072, 2019, <https://doi.org/10.3390/app9061072>.
- J6. Hongmin Wu, Yisheng Guan and Juan Rojas, Analysis of multimodal Bayesian nonparametric autoregressive hidden Markov models for process monitoring in robotic contact tasks, *International Journal of Advanced Robotics Systems*, 16.2, 2019, <https://doi.org/10.1177/172988141983>.
- J7. Peihao Shi, Kensuke Harada, Weiwei Wan, Ixchel G. Ramirez, Juan Rojas, Hiromu Onda, Optimizing the Motion for Robotic Snap Assembly Using FEM, *Journal of Robotics, Networking and Artificial Life (JRNAL)*, 5.2, p. 105-109, Sept. 2018.
- J8. Kensuke Harada, Kazuyuki Nagata, Juan Rojas, Ixchel G. Ramirez-Alpizara, Weiwei Wan, Hiromu Onda, and Tokuo Tsuji, Proposal of a Shape Adaptive Gripper for Robotic Assembly Tasks, *Journal of Advanced Robotics*, 30.17-28, p. 1186-1198, 2016.
- J9. J. Rojas, K. Harada, H. Onda, N. Yamanobe, E. Yoshida, K. Nagata, and Y. Kawai, Towards Snap Sensing, *Inderscience International Journal of Mechatronics and Automation*, 3.2, p. 69-93, April 22, 2013.
- J10. J. Rojas and R.A. Peters II, Analysis of Autonomous Cooperative Assembly By Force Feedback Using A Control Basis Approach, *Springer Journal of Autonomous Robots*, 32.4, p. 369-383, May 1, 2012.
- J11. J. Rojas and R.A. Peters II, Sensory integration with articulated motion on a humanoid robot, *Journal of Applied Bionics and Biomechanics (ABBI)*, 2.3, p. 171-178, March 01, 2005.

## Peer Reviewed Conference

- CC1. Hejun Lei, Paul Weng, Juan Rojas, Yisheng Guan, PlanQ: Planning with Q-values in Sparse Reward Reinforcement Learning, *International Conference on Intelligent Robotics and Applications (ICIRA)*, p. 603-614, Harbin, China, August 1-3, 2022, 10.1007/978-3-031-13844-7\_56.

- CC2. Syed Abdullah Nazir, PU XU, Juan Rojas, Jungwon Seo, Learning to Rock-and-Walk: Dynamic, Non-Prehensile, and Underactuated Object Locomotion through Reinforcement Learning, International Conference on Robotics and Automation (ICRA), Philadelphia, USA, p. 4487-4493, May 2022, 10.1109/ICRA46639.2022.9811554.
- CC3. Chao Zhao, Zhekai Tong, Juan Rojas, Jungwon Seo, Learning to Pick by Digging: Data-Driven Dig-Grasping for Bin Picking from Clutter, International Conference on Robotics and Automation (ICRA), Philadelphia, USA, p. 749-754, May 2022, 10.1109/ICRA46639.2022.9811736.
- CC4. Zhijun Liang, Junfa Liu, Yisheng Guan and Juan Rojas, Visual-Semantic Graph Attention Networks for Human-Object Interaction Detection, 2022 IEEE International Conference on Robotics and Biomimetics (ROBIO), p. 1441-1447, Dec. 2021, 10.1109/ROBIO54168.2021.9739429.
- CC5. Zhaolong Zhang, Yihui Li, Juan Rojas, and Yisheng Guan, Leveraging Expert Demonstrations in Robot Cooperation with Multi-Agent Reinforcement Learning, International Conference on Intelligent Robotics and Applications (ICIRA). Lecture Notes in Computer Science, vol 13014, p. 211-222, Springer, Cham. Yantai China, Oct 2021, 10.1007/978-3-030-89098-8\_20.
- CC6. Junfa Liu\*, Juan Rojas\*, Zhijun Liang, Yihui Li, and Yisheng Guan, A Graph Attention Spatio-temporal Convolutional Networks for 3D Human Pose Estimation in Video, IEEE International Conference on Robotics and Automation (ICRA), p. 3374-3380, May 2021, 10.1109/ICRA48506.2021.9561605.
- CC7. Yusuke Hayami, Weiwei Wan, Keisuke Koyama, Peihao Shi, Juan Rojas, Kensuke Harada, Error Identification and Recovery in Robotic Snap Assembly, 2021 IEEE/SICE International Symposium on System Integration (SII 2021), p. 46-53, Fukushima, Japan, Jan. 11-14, 2021. (***Best Paper Award Finalist***).
- CC8. Yanting Liu and Juan Rojas, Evaluation of the ROOT Robot System and Curriculum to Improve Computational Thinking in Young Children, IEEE Region 10 Humanitarian Technology Conference (HTC), Depok, Indonesia Nov. 12-14 2019, 10.1109/R10-HTC47129.2019.9042435.
- CC9. Yanting Liu and Juan Rojas, Evaluation of the ROOT Robot System and Curriculum to Improve Computational Thinking in Young Children, 2019 Do Good Robotics Symposium (DGRS), Maryland, USA, Oct. 3-4 2019.
- CC10. Shuangda Duan, Longxin Chen, Yaxiang Wang, Xuan Zhao, and Juan Rojas, Dynamic Interaction Probabilistic Movement Primitives, IEEE International Conference on Real-Time Computing and Robotics (RCAR), p. 98-105, Irkutsk, Russia, Aug. 5-10, 2019, 10.1109/RCAR47638.2019.9044120 (***Best Student Paper Award Finalist***).

- CC11. Juan Rojas. Plastic Waste is Exponentially Filling Our Oceans, but Where are the Robots? IEEE Region 10 Humanitarian Technology Conference (HTC), p. 1-6, Colombo, Sri Lanka, Dec. 6-8 2018, 10.1109/R10-HTC.2018.8629805.
- CC12. Hongmin Wu, Dong Liu, Shuangda Duan, Yisheng Guan, and Juan Rojas, Multimodal Sparse Representation for Anomaly Classification in A Robot Introspection System, IEEE International Conference on Robotics and Biomimetics (ROBIO), p. 1594-1600, Kuala Lumpur, Malaysia, Dec. 12-15 2018, 10.1109/ROBIO.2018.8665206.
- CC13. Xuan Zhao, Sakmongkon Chumkamon, Shuanda Duan, Juan Rojas, and Jia Pan, Collaborative Human-Robot Motion Generation using LSTM-RNN, IEEE-RAS International Conference on Humanoid Robotics (Humanoids), p. 1-9, Beijing, China, Nov. 6-9, 2018.
- CC14. Shuangqi Luo, Hongmin Wu, Hongbin Lin, Shuangda Duan, Yisheng Guan, and Juan Rojas, Fast, Robust and Versatile Event Detection through HMM Belief State Gradient Measures, IEEE Robots Man Systems Interactions Conference (RO-MAN), p. 1-8, Nanjing, China, Aug. 27-31 2018, 10.1109/ROMAN.2018.8705268.
- CC15. Hongmin Wu, Hongbin Lin, Shuangqi Luo, Shuangda Duan, Yisheng Guan, and Juan Rojas, Recovering from External Disturbances in Online Manipulation through State-Dependent Revertive Recovery Policies, IEEE Robots Man Systems Interactions Conference (RO-MAN), p. 166-173, Nanjing, China, Aug. 27-31, 2018, 10.1109/ROMAN.2018.8525771.
- CC16. Peihao Shi, Kensuke Harada, Weiwei Wan, Ixchel G. Ramirez, Juan Rojas, and Hiromu Onda, Motion Selection for 3D Robotic Snap Assembly, International Conference on Artificial Life and Robotics (ICAROB), Oita, Japan, Feb. 1-4, 2018.
- CC17. Shichao Gu, Manjia Su, Haifei Zhu, Yisheng Guan, Juan Rojas, and Hong Zhang. Efficient pole detection and grasping for autonomous biped climbing robots, IEEE International Conference on Robotics and Biomimetics (ROBIO), pp. 246-251. IEEE, 2017.
- CC18. Ruotao He, Juan Rojas, Yisheng Guan, A 3D Object Detection and Pose Estimation Pipeline Using RGB-D Images, IEEE International Conference on Robotics and Biomimetics (ROBIO), p. 1527-1532, Macau, Dec. 5-8, 2017.
- CC19. Chen Longxin, Juan Rojas, and Yisheng Guan, Fusion of Muscle Activity with Interaction Movement Models for Learning Human-Robot Collaboration Insights, IEEE International Conference on Humanoid Robots (Humanoids), p. 491-496, Birmingham, United Kingdom, Nov. 15-17, 2017.
- CC20. Hongmin Wu, Juan Rojas, Hongbin Lin, and Kensuke Harada, Robot Introspection using Hierarchical Dirichlet Processes and the Vector Autoregressive Hidden Markov Model, IEEE International Conference on Humanoid Robots (Humanoids), p. 882-888, Birmingham, United Kingdom, Nov. 15-17, 2017.

- CC21. Juan Rojas, Shuangqi Luo, Dingqiao Zhu, Yunlong Du, Hongbin Lin, Zhengjie Huang, Wenwei Kuang, and Kensuke Harada, Online Robot Introspection via Wrench-based Action Grammars, IEEE International Conference on Robotics and Systems (IROS), p. 5429-5436, Vancouver, Canada, Sept. 24-28, 2017.
- CC22. Kewei Lin, Juan Rojas, Yisheng Guan, A Vision-based Scheme for Kinematic Model Construction of Re-configurable Modular Robots, IEEE International Conference on Robotics and Systems (IROS), p. 2751-2757, Vancouver, Canada, Sept. 24-28, 2017.
- CC23. Juan Rojas, Zhenjie Huang, and Kensuke Harada, Robot Contact State Estimation via Position-based Action Grammars., IEEE International Conference on Humanoid Robots (Humanoids), p. 249-256, Cancun, Mexico, Nov. 15-17, 2016.
- CC24. Juan Rojas, Wyatt Newman, Huangzhen Jie and Qiming Liu, A Steering Wheel Manipulation Scheme by an Anthropomorphic Humanoid Robot in a Constrained Vehicle Environment, IEEE International Conference on Robotics and Biomimetics (ROBIO), p. 1566-1571, Zhuhai, China, Dec 6 – Dec 9, 2015.
- CC25. Juan Rojas, Kensuke Harada, Hiromu Onda, Natsuki Yamanobe, Eiichi Yoshida, and Kazuki Nagata, Contextualized Early Failure Characterization of Cantilever Snap Assemblies, IEEE International Conference on Humanoid Robots (Humanoids), p. 380-387, Madrid, Spain, Nov. 18-20, 2014.
- CC26. J. Rojas, TianQiang Guan, Weiqiang Luo, and K. Harada, Strategies, Controllers, and Coordination: Bi-Manual Snap Assembly Automation, IEEE International Conference on Robotics and Biomimetics (ROBIO), p. 1266-71, Bali Indonesia, Dec. 5-10, 2014.
- CC27. Zhengwei Hui, Juan Rojas, Li Lin, Ho Leung Ting, ChenYu Zhao, A Swarm Framework for Teaching Elementary Addition Operations, IEEE International Conference on Robotics and Biomimetics (ROBIO), Bali Indonesia, p. 1027-1032, Dec. 5-10, 2014.
- CC28. Weiqiang Luo, J. Rojas, K. Harada, Cantilever Snap Assemblies Failure Detection using SVMs and the RCBHT, IEEE International Conference on Mechatronics and Automation (ICMA), p. 384-389, Tianjin, China, Aug. 2-5, 2014.
- CC29. J. Rojas, K. Harada, H. Onda, N. Yamanobe, E. Yoshida, and K. Nagata, Early Failure Characterization of Cantilever Snap Assemblies using the PA-RCBHT, IEEE International Conference on Robotics and Automation (ICRA), p. 3370-3377, Hong Kong, China, May 31-Jun 5, 2014.
- CC30. J. Rojas, K. Harada, H. Onda, N. Yamanobe, E. Yoshida, K. Nagata, and Y. Kawai, A Gradient Calibration for the RCBHT Cantilever Snap Verification System, IEEE International Conference on Robotics and Biomimetics (ROBIO), p. 984-990, Guangzhou, China, Dec. 11-14, 2012.

- CC31. J. Rojas, K. Harada, H. Onda, N. Yamanobe, E. Yoshida, K. Nagata, and Y. Kawai, Probabilistic State Verification for Snap Assemblies using the Relative-Change-Based Hierarchical Taxonomy, IEEE International Conference on Humanoid Robots (Humanoids), Osaka, Japan, Nov. 29 – Dec. 1, 2012.
- CC32. J. Rojas, K. Harada, H. Onda, N. Yamanobe, E. Yoshida, K. Nagata, and Y. Kawai, A Relative-Change-Based Hierarchical Taxonomy for Cantilever-Snap Assembly Verification, IEEE International Conference on Intelligent Robots and Systems (IROS), p. 356-363, Vilamoura, Portugal, Oct. 7-12, 2012.
- CC33. J. Rojas, K. Harada, H. Onda, N. Yamanobe, E. Yoshida, K. Nagata, and Y. Kawai, A Constrain-Based Motion Control Strategy for Cantilever Snap Assemblies, IEEE International Conference on Mechatronics and Automation (ICMA), p. 1815 – 1821, Chengdu, China, Aug. 5-8, 2012.
- CC34. J. Rojas and R.A. Peters II, Automating Short-Term Insertion of Parts for Heterogeneous Robots Using a Control Basis Approach, IEEE Conference on Humanoid Robots (Humanoids), p. 551-556, Bled, Slovenia, Oct. 26-28, 2011.
- CC35. J. Rojas, Assessment of a Proprietary Online Smart-Family-Matching Tool to Reunite Lost Families, 10th IEEE AFRICON Conference in Africa, p. 1-6, Livingstone, Zambia, Sept. 13-15, 2011.
- CC36. J. Rojas and R. A. Peters II, Preliminary results in force-guided assembly for teams of heterogeneous robots, Proceedings of the SPIE Conference on Defense and Security, Unmanned Systems Technology, 7332.2, Orlando, USA, Apr. 13-1, 2009.
- CC37. J. Rojas and R.A. Peters II, “Sensory integration with articulated motion on a humanoid robot,” Proceedings International Symposium on Robotics and Automation, Queretaro, Mexico, Aug. 25-27, 2004.

## **Workshops, Talks, Tutorials, and Late Breaking Results**

- W1. Juan Rojas, AI and the Road Ahead: Challenges, Opportunities, and Considerations; Christian Scholar’s Conference, Houston, TX, June 6-9, 2023.
- W2. Jiancong Huang, Juan Rojas, Matthieu Zimmer, Hongmin Wu, Yisheng Guan, Paul Weng, Hyperparameter Auto-tuning in Self-Supervised Robotic Learning, NeurIPS 2020 Deep RL Workshop, Virtual, Dec. 11, 2020.
- W3. Yijiong Lin, Jiancong Huang, Matthieu Zimmer, Yisheng Guan, Juan Rojas, and Paul Weng, Towards More Sample Efficiency in Reinforcement Learning with Data Augmentation, 2019 NeurIPS Workshop on Robot Learning, Vancouver, Canada, Dec. 01, 2019.

- W4. Yijiong Lin, Jiancong Huang, and Juan Rojas, Half-Day Tutorial I: Introduction to ROS and Deep Reinforcement Learning Frameworks, IEEE International Conference on Real-Time Computing and Robotics (RCAR), Irkutsk, Russia, Aug. 5-10, 2019.
- W5. Sakmongkon Chumkamon, Shuangda Duan, and Juan Rojas Full Day Tutorial on Motion Skill Generation and Classification for Human Robot Interaction, IEEE International Conference on Robotics and Biomimetics (ROBIO), Kuala Lumpur, Malaysia, Dec. 12-15, 2018.
- W6. Hongmin Wu, Shuangda Duan, and Juan Rojas, Full Day Tutorial on Motion Skill Generation and Classification for Human Robot Interaction, IEEE International Conference on Robot and Human Interactive Communication (RO-MAN), Nanjing, China, August 27-21, 2018.
- W7. Hongmin Wu, Hongbin Lin, Shuangqi Luo, Shuangda Duan, Chen Xiang, Bo Zhao, and Juan Rojas, Learning Robot Introspection Dynamics for Error Learning and Prevention, IEEE International Conference on Robots and Systems (IROS) Workshop: Introspective Methods for Reliable Autonomy, Vancouver Canada, Sept. 24-28, 2017.
- W8. Sakmongkon Chumkamon, Eiji Hayashi and Juan Rojas, Robot Sharing Human Emotion for Improving Relationship base on Facial Expression Recognition, Proceedings of Robotics, Science, and Systems (RSS) Workshop: Morality and Social Trust in Autonomy, Boston, July 12-16, 2017.
- W9. Juan Rojas, Shuangqi Luo, Hongmin Wu, Hongbin Lin, Dingqiao Zhu, Online Decision Making, IEEE International Conference on Robotics and Automation (ICRA) Workshop: AI in Automation, Singapore, Jun. 2, 2017.
- W10. Juan Rojas, Zhengjie Huang, Dingqiao Zhu, Shuangqi Luo, and Kensuke Harada, Robot Introspection, IEEE International Conference on Robots and Systems (IROS) Workshop: See, Touch and Hear: 2nd Workshop on Multimodal Sensor-based Robot Control for HRI and Soft Manipulation, Daejeon, S. Korea, Oct. 10, 2016.
- W11. Juan Rojas, Manipulation Behaviors and Skill Learning, Proceedings of Robotics, Science, and Systems (RSS) Workshop: Bootstrapping Manipulation Skills, Ann Arbor, Michigan, June 18-22, 2016.
- W12. Juan Rojas, Contact-Guided Snap Assemblies, IEEE Conference on Robotics and Automation (ICRA) Workshop: Exploiting contact and dynamics in manipulation, Stockholm, Sweden, May 16-21, 2016.
- W13. Juan Rojas, Wen Wei Kuang, Kensuke Harada, A High-Level State Estimation and Verification Scheme for Dual Armed Humanoids performing Assembly Tasks, IEEE Conference on Intelligent Robots and Systems (IROS) Late Breaking Results, Hamburg, Germany, Sept 28 – Oct 2, 2015.

- W14. Kensuke Harada, Kazuyuki Nagata, Juan Luis Rojas, Natsuki Yamanobe, Hiromu Onda, Tokuo Tsuji, Universal Hand for Parts Assembly Based on Granular Jamming, IEEE Conference on Robotics and Automation (ICRA) Late Breaking Results Session, Seattle, USA, May 26-30, 2015.
- W15. Kensuke Harada, Juan Rojas, and Eiichi Yoshida, Control and Motion Planning for Flexible Parts Assembly, IEEE Conference on Robotics and Automation (ICRA) Workshop, May 31-Jun 5, 2014.
- W16. Juan Rojas and Richard Allan Peters II, Cooperative and Coordinated Assembly for Heterogeneous Robots via Distributed Mobile Agents, IEEE Conference on Robotics and Automation (ICRA) Workshop, Shanghai, China, May 2011.

## **Domestic Journals**

- DJ1. Hongmin Wu, GuoYing Zhang, Yisheng Guan, and Juan Rojas, Multimodal Time Series Modeling-based Robot Safety Surveillance, Journal of Harbin Institute of Technology, 52(1), p. 1-7, Jan 2020. DOI:10.11918/201809143.

## **Domestic Conferences**

- DC1. Kensuke Harada, Kazuyuki Nagata, Juan Rojas, Natsuki Yamanobe, and Hiromu Onda, A Universal Hand for Assembly of Multiple Shape of Objects, IEEE Conference of System Integration, Tokyo, Japan, Dec. 16-18, 2014 (Japanese Domestic Conference).
- DC2. Kensuke Harada, Juan Rojas, Hiromu Onda, Natsuki Yamanobe, Eiichi Yoshida, Kazuyuki Nagata, Yoshihiro Kawai, "Force Controlled Assembly of Parts with Snap Joints," JSME Conference on Robotics and Mechatronics, 2P1-K03, Tsukuba, Japan, May 22-25, 2013.
- DC3. Kawai Yoshihiro, Kensuke Harada, Satoshi Kawabata, Kenichi Maruyama, Takashi Yoshimi, Takase Ryuichi, Nozaki Shunsuke, Juan Rojas, Ryo Hanai, Miura Jun, Atsushi Konno, Open-source integration and Verification of Intelligent Palletizing using a dual-arm robot platform, "The next generation robot Intelligent technology Development Project" Results Briefings, Kawasaki, Feb. 24, 2012 (Japanese Domestic Conference).
- DC4. Kawai Yoshihiro, Kensuke Harada, Satoshi Kawabata, Kenichi Maruyama, Takashi Yoshimi, Takase Ryuichi, Nozaki Shunsuke, Juan Luis Rojas, Kazuhiko Yokoyama (Yaskawa Electric), Masaru Adachi (Yaskawa Electric), Ken Ohashi (Kyushu Institute of Technology), Tsutomu Hasegawa (Kyushu University), Matsuzaka Yosa, Tsuji Norio (Kyushu University), Hajime Asama (University of Tokyo), Atsushi Konno (Tohoku University), Toru Yamaguchi (Tokyo Metropolitan University), Ogawa Hideki (Toshiba); Intelligent Task Development (Social and

Living Habitats), , “The next generation robot Intelligent technology Development Project” results briefings, Kawasaki, Feb. 24, 2012 (Japanese Domestic Conference).

## Ph.D. Dissertation and Master’s Thesis

J. Rojas, Autonomous Cooperative Assembly by Force Feedback Using a Control Basis Approach, Dissertation, Vanderbilt University, April 2009.

J. Rojas, Sensory integration with articulated motion on a humanoid robot, Master’s Thesis, Vanderbilt University, April 2004.

## Patents

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- Lin Yijiong, Juan Rojas, Guan Yisheng, Wu Hongmin, Luo Shuangqi. (2022). 机器人修复方法及装置 Method and device for repairing robot (China, Patent No. 201910671929), 11227 北京集佳知识产权代理有限公司(11227 Beijing Jijia Intellectual Property Agency Co., Ltd.). <http://www.soopat.com/Patent/201910671929>

## Awards and Fellowships

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- 2021 IEEE/SICE Int’l Symposium on System Integration Best Paper Award Finalist
- 2019 IEEE Int’l Conf. Realtime Computing & Robotics Best Student Paper Finalist
- 2018 IEEE Senior Member Award
- 2008-2009 Graduate Teaching Fellow, Center for Teaching VU.
- 2007 Dissertation Enhancement Grant, Vanderbilt Graduate School.
- 2000-2002 Paul Harrawood Academic Honors Undergraduate Scholarship, Vanderbilt U.
- 2002 Best Student-Athlete Award, Vanderbilt Varsity Football Team.

## Sponsored Research

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- F1. Development and Application of an Efficient Disordered Mixed Code Robot System for Highly Dynamic Software Packages  
(面向高动态软包件的高效无序混码机器人系统研发与应)  
- 2021 International Science and Technology Cooperation Project of Guangzhou Development Zone, Huangpu District, Guangzhou City  
(2021 广州市黄埔区广州开发区国际科技合作项目)

- Co-PI, Project No: 2021GH05
  - Total funding ¥2,000,000RMB, ¥500,000RMB for CUHK
  - 2021.12-2023.11
- F2. Research on Equivariant Transformations and its Applications in Deep Reinforcement Learning (深度学习强化中的等变性挖掘及其应用机理研究).
- National Natural Science Foundation of China, General Program.
  - Co-PI, Project No: 62176154
  - ¥670,000RMB
  - 2022.01-2025.12
- F3. Efficient and Robust Large-Scale Bin-Picking via Invariant Transformations of Reinforcement Learning Experiences
- The Chinese University of Hong Kong Direct Grant
  - PI, Project No 4055141
  - ¥HKD 150,000
  - 2021.03-2022.02
- F4. Physical Human Robot Interaction via Deep Mimicked Multi-Agent Reinforcement Learning
- National Natural Science Foundation of China
  - PI, Project No: 61950410758
  - ¥203,300RMB
  - 2020.01-2021.12
- F5. Research and Application of Key Technologies of Human-Robot Interaction and Multi-Robot Collaboration Based on Deep Reinforcement Learning (基于深度强化学习的人机协作与多机协作关键技术研究及应用).
- 2019 Guangdong Science and Technology Projects – International Scientific Cooperation (广东省科技厅-国际科技合作领域)
  - PI, Project No: 2019A050510040
  - ¥1,000,000RMB,
  - 2019.09-2021.08
- F6. Young Faculty Development Award (青年教师培育基金,)
- 2019 Guangdong University of Technology, High-Level University Construction Platform (广东工业大学, 高水平大学建设-机电平台建设)
  - PI
  - ¥100,000RMB
  - 2018.01-2019.12
- F7. Predicting Human Behavior for Efficient Physical Human-Robot Interaction
- National Natural Science Foundation of China
  - PI, Project No: 61750110521.
  - ¥320,000RMB
  - 201801-201912.

- F8. Production Line for 3C Industry Collaboration, Robot R&D, and Industrialization;  
 - Guangdong Science & Technology Special Fund: Cutting-Edge Key Tech & Innovation  
 (广东省科技计划项目, 专项资金类别: 前沿与关键技术创新)  
 - GDUT-PI, Project No: 2016B0911006  
 - ¥5,000,000RMB Total, ¥1,000,000RMB for my team.  
 - 2015.08-2019.12.
- F9. Precise Robot Perception, Recognition and Integration of Complex Information Technology and its Applications (机器人精准感知、识别与复杂信息融合技术及其应用)  
 - Guangdong Science & Tech Special Fund: The forefront of Technology and Innovation  
 (广东省科技计划项目, 专项资金类别: 前沿与关键技术创新)  
 - GDUT-PI, Project No: 2014B090919002  
 - ¥3,000,000RMB, Total, ¥1,000,000RMB for my team.  
 - 2015.06-2018.5
- F10. SYSU Experimental Teaching Reform Project  
 (中山大学实验教学研究(改革)项目立项申请表)  
 ¥25,000RMB, 2014Spring -2014Fall.
- F11. SYSU Lab Teaching & Research IT Fund  
 (中山大学信息技术国家教学示范中心教学研究)  
 ¥50,000RMB, 2013Sept. – 2014Aug.
- F12. SYSU: Young Researcher Start-up Funds  
 (中山大学青年教师起步计划)  
 985 工程: 62000-1188140  
 ¥20,000RMB, 2012Dec. – 2013Nov.

## Teaching Experience

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### AI

- Intro to AI (U/G) 2021-present

### Robot Courses - University

- ROS: Robotic Middleware (U/G) 2013-2019
- Introduction to Robotics (U) 2012/13/14
- Advanced Robot Behavior Development (G) 2014
- Robotic Manipulation (G) 2015-2021

### Programming

- Intro to C++ (U) 2010/13/14/15
- Intro to Matlab (U) 2010/11

### *Math*

- Engineering Applied Math (U) 2007/09/10
- Linear Algebra (U) 2010/11

### *Physics*

- Classical Physics and Electromagnetism (U) 2010/11
- Statics and Dynamics (U) 2009

### *Other*

- Scientific Communication (U) 2010/13/14

## **Professional Organization Memberships**

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- 2002-Present IEEE Institute of Electrical and Electronics Engineers.
- 2009-Present IEEE Institute of Robotics and Automation (IEEE-RAS)
- 2013-Present IEEE Special Interest Group on Humanitarian Technology (SIGHT).
- 2023-Present American Society of Electrical Engineers (ASEE).

## **Professional Activities and Service**

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### **Societies and Committees Board Member**

- IEEE Medal for Environmental and Safety Technologies Committee  
2021-2022

### **Editorial Boards**

- Associate Editor, IEEE Robotics and Automation Letters (RAL)  
2020-present
- Associate Editor, Advanced Robotics Journal  
2019-present.
- Associate Editor, IEEE International Conference on Intelligent Robots and Systems (IROS)  
2017-2022
- Associate Editor, IEEE International Conference on Robotics and Automation (ICRA)  
2020-2023
- Associate Editor, IEEE-RAS International Conference on Humanoid Robots (Humanoids)  
2016-2020

- Associate Editor, IEEE International Conference on Robotics and Biomimetics (ROBIO) 2016-2019.
- Associate Editor, IEEE Intl Conf on the Robotics & Human Interactive Comm. (RO-MAN) 2018.

### **International Conference Committees**

- 2020 International Joint Conference on Artificial Intelligence and the Pacific Rim International Conference on Artificial Intelligence (IJCAI-PRICAI): Program Committee Member
- 2018 International Symposium on Robot and Human Interactive Communication (RO-MAN): Workshops Chair.
- 2018 IEEE-RAS Conference on Humanoid Robots (Humanoids): Workshop Chair.
- 2018 IEEE International Conference on Robotics and Biomimetics (ROBIO): Publicity Chair
- 2017 IEEE International Conference on Robotics and Automation (ICRA): Travel Grant Committee.
- 2017 IEEE International Conference on Robots and Systems (IROS) Workshop on: Introspective Methods for Reliable Autonomy, Program Committee Member.

### **Peer-Reviewing** (since 2010)

- Books:
  - CRC Press, Robotics Division.
- Journals:
  - IEEE Transactions on Robotics
  - IEEE RA-Letters
  - International Journal of Humanoid Robotics
  - Springer Journal of Autonomous Robots
  - IEEE Transactions on Control Systems Technology
  - IEEE Transactions on Automation Science and Engineering

- Journal of Advanced Robotics
- Journal of Robotics and Autonomous Systems
- Conferences:
  - Conference on Robotic Learning (CoRL)
  - IEEE International Conference on Robotics and Automation (ICRA)
  - IEEE International Conference on Intelligent Robots and Systems (IROS)
  - IEEE-RAS International Conference on Humanoid Robots (Humanoids)
  - International Joint Conference on Artificial Intelligence (IJCAI)
  - IEEE International Conference on Robotics and Biomimetics (ROBIO)
  - IEEE International Conference on the Robotics & Huma Interactive Communication (RO-MAN)
  - IEEE International Conference on Information, Communication, and Automation Technologies (ICAT)
  - International Conference on Emerging Technologies and Factory Automation (ETFa)

## **International Research Collaboration**

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- RC1. Paul Weng, Shanghai Jiaotong University  
DRL Manipulation, 2016 Sept – Present .
- RC2. Harada, Osaka U  
Anomaly Identification, 2015-2022
- RC3. Jungwon Seo, HKUST  
Non-prehensile Manipulation, 2022
- RC4. Shing Shin Cheng, CUHK  
Control of a Continuum Robot via DRL, 2021
- RC5. David Alarcon, Poly U  
Human-Robot Collaboration, 2019-2020
- RC6. Dinesh Manocha, UMCP  
DRL Manipulation, 2017-2018

- RC7. Jia Pan, City U  
Human-Robot Collaboration. June, 2017-2018.
- RC8. AIST-SYSU School of Software (<http://www.aist.go.jp/>)  
Snap Sensing. Co-PI's: J. Rojas and K. Harada. 2013 Sept – 2015 Sept.
- RC9. Gaitech International-SYSU School of Software (<http://www.gaitech.hk>)  
Baxter Research Robot Collaboration Agreement. Expanding ROS-based Baxter Educational Resources. 2014-2015.
- RC10. DRC Challenge: Team HKU-SYSU School of Software (<http://engg.hku.hk/home/robotics>).  
Development of Atlas Skills to semi-autonomously drive vehicle for Task 1. 2014 May – 2015 July.

## **Programming, Middleware, Simulators, and OS**

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- Deep Reinforcement Learning: OpenAI, GYM, Mujoco, Robosuite.
- Deep Learning: Pytorch (NN, CNNs, RNNs, AEs, Temporal Conv Nets, Graph Nets)
- Programming: Excellent command of C/C++, Python. Jupyter.
- Mathematical Programs: Matlab and Mathematica, BLAS, Lapack, Eigen.
- Robot Middleware and Simulation: Excellent command of ROS, OpenRTM.
- Vision: Working knowledge of OpenCV and Open PCL.
- Simulation Programs: OpenHRP, Gazebo, and Mujoco.
- OS: Excellent command of Linux & Windows.
- Typesetting: Office, Latex, LibreOffice.

## **Foreign Studies**

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- Fluent in English, Spanish, working proficiency in French; and limited working proficiency in Mandarin, basic Japanese and Cantonese.

## **Athletic Experience**

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**Vanderbilt University**

*Varsity* (American) Football Player, SEC Division I

Nashville, TN, USA

1999-2002

**(American) Football Coach**

Coached secondary level competitively, won 2 national championships.

Mexico City, Mexico

1993-1998