JORGE SOLIS-ALFARO, Ph.D.

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Karlstad University, Faculty of Health, Science and Technology, Department for Engineering and Physics
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Adjunct Researcher
Waseda University, Research Institute of Science and Engineering
3-4-1 Ookubo, Shinjuku-ku, 169-8555 Tokyo, JAPAN
E-mail: solis@ieee.org

Visiting Scholar
Tokyo Institute of Technology, Department of Mechanical Design and Engineering
2-12-1, Ookayama, Meguro-ku, Tokyo 152-8552, JAPAN

Visiting Researcher
Waseda University, Humanoid Research Institute
3-4-1 Ookubo, Shinjuku-ku, 169-8555 Tokyo, JAPAN

PROFESSIONAL SUMMARY

Jorge has over sixteen years of experience in both scientific and industrial oriented research projects in the EU as well as Japan. Seven years of experience as a Project/Scientific Leader in collaboration with different universities, and design engineers from highly regarded Japanese companies in the medical field such as Kyotokagaku Co. Ltd., Hitachi Aloka Medical Ltd., etc. Jorge's excellence has been also recognized by his promotion to docent in Electrical Engineering at Karlstad University. An extensive list of publication list with peer reviewed papers (22 international journals and 151 international conferences) and monograph books (3 edited volumes and 17 book chapters) with a total number of citations of 1878 (since 2020: 383), h-index: 24 (since 2020: 9) and i10-index: 64 (since 2020: 8) [source Google Scholar]. Jorge has obtained 3 finalist awards at International Conference on Robots and Intelligent Systems (2007 and 2009) and International Conference on Advanced Intelligent Mechatronics (2009), a best paper conference award at the 12th International Conference on Complex Medical Engineering and excellent paper award at icSmartGrid 2019. He has been the general co-chair of the 14th Mechatronics Forum International Conference and program co-chair for the 2026 IEEE/SICE International Symposium on System Integration. He is a senior member of the IEEE, member of the Robotics Commission for the IFToMM, the International Federation for the Promotion of Machine and Mechanism Science.

QUALIFICATIONS

2001 – 2004 **Ph.D. in Robotics** (graduated with honors)
Scuola Superiore Sant'Anna, Pisa, Italy

1994 – 1998 **BS in Electronic Systems (EE)** (graduated with honors)
ITESM, Toluca, Mexico

1998 – 2000 **Professional Development Program** (program for high-level potential industry leaders in Mexico)
IBM of Mexico

CURRENT RESEARCH FOCUS

Human-/environment-robot interaction, intelligent machines and automation systems, embedded and intelligent control, haptic rendering and multimodal feedback as well as biologically-inspired architecture design.

RESEARCH VISION

My research at the physically and cognitive embodied robotics and intelligent machines laboratory specializes in physically and cognitive embodied human-friendly robot systems with enhanced capabilities to interact with humans and/or the environment. This is an inter-disciplinary research field, which includes both basic and applied research on identifying novel applications of cutting-edge material science, sensor technology, advanced signal processing and advanced control. Exploring and proposing novel techniques for modelling and embedded advanced control in order to address the industrial needs is a central aspect of this research.

WORK EXPERIENCE

04/2012 - Current Associate Professor, Faculty of Technology and Science, Karlstad University, Karlstad, Sweden
2018-2023 Adjunct Associate Professor, Faculty of Engineering, University of Southern Denmark, Odense, Denmark

10/2017 - Current Visiting Scholar, Department for Mechanical Sciences and Engineering, Tokyo Institute of Technology, Tokyo, Japan
06/2011 - Current Adjunct Researcher, Research Institute for Sci. and Eng., Waseda University, Tokyo, Japan
06/2011 –03/2011 Senior Lecturer, Faculty of Technology and Science, Karlstad University, Karlstad, Sweden
04/2009 –05/2011 Assistant Professor, Research Institute for Science and Engineering, Waseda University, Tokyo, Japan
10/2009–11/2009 Visiting Professor, Warsaw University of Technology, Warsaw, Poland
04/2006 –03/2008 Research Associate, Department of Modern Mechanical Eng., Waseda University, Tokyo, Japan
07/2004 –03/2006 Post-Doctoral Researcher at Humanoid Robotics Institute, Waseda University, Tokyo, Japan
01/2001 –04/2004 Research Assistant, Perceptual Robotics Laboratory, Scuola Superiore Sant'Anna, Pisa, Italy
03/2000 –11/2000 Visiting Researcher at Cybernetics Division, Mechanical Engineering Laboratory, Tsukuba, Japan
12/1998 – 02/2000 RS/6000 Hardware Support Engineer, RS/6000 Support Division, IBM of Mexico, Mexico City, Mexico
06/1998 –07/1998 Visiting Researcher, Laboratoire d'Analyse et Architecture de systèmes (LAAS/CNRS), Toulouse, France

SELECTED ACADEMIC ACHIEVEMENTS

- **3 edited volumes, 17 book chapters**, **21 International Journals and 142 International Conferences** have been published as author and/or co-author.
- Invited to present over 30 lectures in well recognized universities in America (CMU, Georgia Tech, McGill Univ., and similar institutions), Europe (Leeds University, Karlsruhe University, Royal Institute of Technology), Asia (Waseda University, Tokyo Institute of Technology, etc.), and Oceania (University of Technology in Sydney, etc.)
- **1 best paper conference award at CME2012, 1 excellent paper award at icSmartGrid 2019, 3 finalist awards at IROS 2007, AIM 2009, IROS 2009 and a silver student paper award at ISRM 2024**
- Co-supervision of research of 2 Ph.D. Students, 29 Master Students, and 24 Undergraduate Students.
- Implementation of a new curriculum and textbook for the Mechatronics Laboratory 1 and 2 at the undergraduate level at the Department of Modern Mechanical Engineering of Waseda University; responsible for this class for four years, during which time my students gave me highly favourable evaluations for the content and presentation of lectures and experiments.

SCIENTIFIC RESEARCH FUNDS (Principal Investigator/Co-principal investigator)

- (Co-PI) Use of AI for development and condition monitoring of energy storage devices, Swedish Energy Agency, 2024-2026, Total Fund: 180 000 SEK
- (PI) Collaborative robots using mixed reality (MR) and artificial intelligence (AI), VINNOVA, 2021-2022, 148 285 SEK
- (PI) Development of intelligent control systems for greenhouse lighting system with a high proportion of local renewable energy, Swedish Energy Agency, 2020~2025, Total Fund: 3 515 486 SEK
- (PI) Assistive robot with a multi-gripper tool and vision system for frail elderlies independent lives, JST-VINNOVA Sweden Academia-Industry International Collaboration Program on Innovative Solutions, Community Design and Services for Elderly People, 2017~2019, Total Fund: 1 800 000 SEK
- (PI) Development of a human-friendly assistive robot vehicle for supporting physically elderly and assisting care givers for the ambient assisted living, Grant-in-aid for Associate Professor and Professor Research Support (LOPS14) from Karlstad University (Dnr C2014/633), 2015~2017,Total Fund: 800,000 SEK
- (PI) Human-Friendly Robotics, Japanese Ministry of Education, Culture, Sport, Science and Technology, 2011~2013,Total Fund: 3.3 million JPY
- (PI) Toward Enabling the Musical Interaction among Wind Playing-Instrument Anthropomorphic Robots, Research Institute for Science and Engineering (Waseda University), 2010,Total Fund: 1.0 million JPY
- (Co-PI) Development of an Inverted Pendulum Type Robotic Education Kit, Robotics Industry Development Council (Waseda University), 2008-2010,Total Fund: 10 million JPY
- (PI) Development of Hardware Components to Enhance the Expressiveness of Musical Performance Robots while Interacting in Musical Terms, Research Institute for Science and Engineering (Waseda University), 2009,Total Fund: 1.0 million JPY
- (PI) Study of Human Motor Control and Learning by Using Humanoid Robots as Transfer Skill Systems to Improve Learner's Performances and Understand the Parameters that May Lead or Break Down the Learning Process, Japanese Society for the Promotion of Science, 2004–2006,Total Fund: 2.4 million JPY

AWARDS AND RECOGNITIONS

2024 **Silver student paper award – International Symposium on Robotics and Mechatronics, Djerba, April 17-19**

Paper title: From Gestures to Behaviors: An empirical study on behavior-driven development scenarios to support end-users programming of collaborative robots

Authors: De la Rosa, J., Solis, J., Nakamori, K., Garcia, G., Silva, T., Stengaard, A., Håkansson, J.

2021 **Best paper finalist award – International Conference on Smart Grid, Setubal, June 29 – July 1**
Paper Title: Analyzing the effect of snow in PV regulator response in a PV solar park

Authors: Solis, J., Råberg, A., André, J., Nilsson, M.

2019 **Excellent paper award – International Conference on Smart Grid, Newcastle, December 9– 11**
Paper Title: Forecasting of Electric Energy Consumption for Housing Cooperative with a Grid Connected PV System
Authors: Solis, J., Tomohiro, O., Ericson, J., Nilsson, M.

2017 **IEEE Senior Member**

2012 **Best conference paper award – International Conference on Complex Medical Engineering, Kobe, July 1– 4**
Paper Title: Development of Airway Management Training System WKA-4: Provide Useful Feedback of Trainee Performance to Trainee during Airway Management
Authors: Yohan, N., Wang, C., Tokumoto, M., Solis, J., Ishii, H., Takanishi, A..

2009 **Finalist for the Award on Entertainment Robots and Systems – IROS 2009 / New Technology Foundation, St. Louis, October 11– 15**
Paper Title: Development of Anthropomorphic Musical Performance Robots: From Understanding the Nature of Music Performance to Its Application to Entertainment Robotics
Authors: Solis, J., Petersen, K., Ninomiya, T., Takeuchi, M., Takanishi, A.
Best Student Paper Award – AIM2009, Singapore, July 14–17
Paper Title: Development of a Robotic Carotid Blood Measurement WTA-1RII: Mechanical Improvement of the Gravity Compensation Mechanism and Optimal Link Position of the Parallel Manipulator Based on GA.
Authors: Nakadate, R., Uda, H., Hirano, H., Solis, J., Takanishi, A., et al.

2007 **Finalist for the Award on Entertainment Robots and Systems – IROS 2007 / New Technology Foundation, San Diego, October 29–November 2**
Paper Title: The Waseda Flutist Robot No. 4 Refined IV: Enhancing the sound clarity and the articulation between notes by improving the lips and tonguing mechanisms
Authors: Solis, J., Taniguchi, K., Ninomiya, T., Yamamoto, T., Takanishi, A.

2004 – 2006 **Postdoctoral Fellowship**
Japan Society for Promotion of Science (JSPS)
Tokyo, Japan

2001 – 2004 **Scholarship for Ph.D. Research**
Scuola Superiore Sant'Anna / Perceptual Robotics Laboratory
Pisa, Italy

2000 **Scholarship for postgraduate studies**
Embassy of Japan in Mexico / JICA
Mexico City, Mexico

1994 – 1998 **Scholarship for Academic Excellence and Achievement**
Monterrey Institute of Technology, Toluca Campus
Toluca, Mexico

RESEARCH PROJECTS (Principal Investigator/Co-principal investigator)

- (Co-PI) Anthropomorphic Flutist Robot, Project Leader, 2004–2010
  - Research supported (in part) through a grant in aid from Gifu Prefecture for the WABOT-HOUSE Project
  - (http://www.wabot-house.waseda.ac.jp/html/e-house.htm)
  - Total Funding (2004–2010): 10 million JPY
  - Humanoid Robot consisting of 41 DOFs that mechanically emulate the physiology and anatomy of the organs of the body involved in playing the flute .
- (Co-PI) Anthropomorphic Saxophonist Robot, Project Leader, 2007–2010
  - Project supported (in part) by HRI (http://www.humanoid.waseda.ac.jp/)
  - Total Funding (2007–2010): 7 million JPY

  - Humanoid Robot consisting of 15 DOFs that mechanically emulate the physiology and anatomy of the organs involved in playing the saxophone.
- (Co-PI) Two-Wheeled Type Inverted Pendulum Mobile Robot, Project Leader, 2008–2010
  - Project supported by a grant in Aid from the Robotics Industry Development Council (http://www.joho-fukuoka.or.jp/robot/english/).
  - Total Funding (2008–2010): 10 million JPY
  - Mechatronic system designed as an educational tool to introduce undergraduate students the principles of robot technology (sensor, control, and actuator).
- (Co-PI) Airway Management and Suture/Ligature Training Systems, Scientific Leader, 2006–2008
  - Project supported by the Knowledge Cluster Initiative, a project of the Ministry of Education, Culture, Sports, Science, and Technology (http://www.mext.go.jp/english/) coordinated by Prof. Atsuo Takanishi.
  - Total Funding (2006–2008): 20 million JPY
  - Medical Training systems designed toward enhancing the understanding of the learning process while performing medical procedures by developing a Patient Robot (Active Training).
- (Co-PI) Musical-Based Interaction System (MbIS), Scientific Leader, 2008–2009
  - Project supported by Waseda University program on Global Center of Excellence (http://www.rt-gcoe.waseda.ac.jp/) coordinate by Prof. Atsuo Takanishi.
  - Total Funding: 1.3 million JPY
  - The MbIS is designed to enable musical robots to interact with musicians and aural processing is based on harmony/rhythm pattern tracking and visual processing is based on motion/particle tracking
- (Co-PI) Oral Rehabilitation Robot, Scientific Leader, 2006–2008
  - Project supported by the Knowledge Cluster Initiative, a project of the Ministry of Education, Culture, Sports, Science and Technology (http://www.mext.go.jp/english/) coordinated by Prof. Atsuo Takanishi.
  - Total Funding: 70 million JPY
  - Robot designed to provide massage of the maxillofacial region as a form of therapy for patients with temporomandibular joint disorders
- (PI) General Transfer Skill System (GTSS), Project Leader, 2004–2006
  - Project supported by the Japanese Society for the Promotion of Science (http://www.jsps.go.jp/english)
  - Total Funding (2004–2006): 2.4 million JPY
  - The GTSS is designed to enable MPRs to transfer skills to unskilled subjects and includes a melody recognition system (based on HMM), an evaluation module (based on harmonic analysis), and an interaction module to maintain eye contact with the robot's partner.
- (PI) Handwriting Transfer Skill System, Project Leader, 2001–2004
  - Project supported under a Ph.D. fellowship
  - Total Funding (2001–2004): 3,000 EUR
  - The proposed handwriting transfer skill system is based on a desktop haptic interface and the proposed system has been designed to provide multimodal feedback to unskilled users
- BODY EXTENDER, Research Collaborator, 2004
  - Project supported by the Italian Ministry of Defense coordinated by Prof. Massimo Bergamasco (http://www.percro.org/index.php?pageId=BodyExtender_0)
  - Total Funding (2003–2005): 3,000 EUR
  - Development of a teleoperation system composed by a manipulator controlled by a master interface
- ENACTIVE, Research Collaborator, 2004
  - Project supported by European Union under the IST 6th European Framework Program, (http://www.percro.org/index.php?pageId=ENACTIVENetwork) coordinated by Prof. Bergamasco
  - Total Funding (2004–2007): 5 million EUR
  - Development of teleoperation systems using a haptic interface and development of the control system for a 2-DOF novel haptic desktop oriented to automation of office procedures and education
- VIRTUAL, Research Collaborator, 2002
  - Project supported by European Commission "GROWTH" Program Research Project "Virtual" (http://www.percro.org/index.php?pageId=VIRTUAL) under contract 1999-RD. 11 030 coordinated by Prof. Massimo Bergamasco
  - Total Funding (2000-2002): 4 million EUR
  - The main goal of the "Virtual" project was to develop and test different kinds of virtual reality (VR)-driving simulators for the purpose of performing ergonomic evaluations and training of novice drivers based on haptic interface technology
- SINTESIS, Research Collaborator, 2002–2003
  - Project supported by Centre Richerce Fiat (http://www.crf.it/en-us/pages/default.aspx) coordinated by Prof. Massimo Bergamasco

  - Total Funding (2002–2003): 5,000 EUR
  - Technical management of the motion capture subsystem and development of an acquisition system for a driving simulator for the FIAT Company.
- Tele-operation System, Research Assistant, 2000
  - Project supported by the Japan International Cooperation Agency (www.jica.go.jp/english/) coordinated by Prof. Kiyoshi Komoriya.
  - Total Funding (2000): 2.5 million JPY
  - Development of a teleoperation system for a noholomic mobile base based on a haptic interface

ACADEMIC APPOINTMENTS

- Programme coordinator for the Bachelor of Science in Electrical Engineering (2015-)
- International coordinator for the Department of Engineering and Physics (2013-)

TEACHING

- Embedded Control System (ELGB25) , Bachelor in Electrical Engineering, Karlstad University (2016-)
- Project course in Electrical Engineering (ELGB24) , Bachelor in Electrical Engineering, Karlstad University (2016-)
- Automatic Control Civ. (ELGB11), Master of Science in Engineering, Karlstad University (2012-)
- Digital Electronics (ELGA02), Master of Science in Engineering, Karlstad University (2015-2017)
- Wave Physics and Electric Circuits (FYGA17), Master of Science in Engineering, Karlstad University (2015-2017)
- Hydraulic and Pneumatic (MSGB24), Bachelor in Mechanical Engineering, Karlstad University (2015)
- Technology and Technology education (FYGT05), Teacher Education, Karlstad University (2015-2016)
- Teacher education in Technology for grades 7-9 (LLGB09), Special Teacher Education Programme, Karlstad University (2013-2015)
- Mechatronics E (ELGB06), Bachelor in Electrical Engineering, Karlstad University (2014-2015)
- Automatic Control (ELGB03), Bachelor in Mechatronics, Karlstad University (2012-2014)
- Robotics and Embedded Control (ELAD15), Master of Science in Engineering, Degree Programme in Electrical Engineering, Karlstad University (2011-2012)
- Advanced Robotics and Intelligent Control (ELAD16), Master of Science in Engineering, Degree Programme in Electrical Engineering (2011-2012)
- Robotics Course, European Master on Advanced Robotics, Warsaw University of Technology (2009, 15hrs)
- Responsible: Prof. Solis
- Mechatronics Laboratory 1, School of Creative Science and Engineering, Waseda University (2006–2010)
- Responsibles: Prof. Sugano, Prof. Solis, Prof. Takanishi, Prof. Fujie
- Mechatronics Laboratory 2**,** School of Creative Science and Engineering, Waseda University (2006–2009)
- Responsibles: Prof. Iwata, Prof. Sugano, Prof. Solis, Prof. Takanishi, Prof. Fujie

CO-DIRECTION OF THESIS & EXAMINATION

Ph.D. Students

1. Name: Akihiro Funaki, Tokyo Institute of Technology (internship)
   Title: Intelligent battery control for greenhouses with PV and battery energy storage
   Year: 02/2024 – 04/2024
2. Name: Jose Pablo de la Rosa, University of Southern Denmark (internship)
   Title: An empirical study on behaviour-driven development scenarios to support end-user programming of collaborative robots
   Year: 01/2023 – 03/2023
3. Name: Dwinanri Egyna, Tokyo Institute of Technology (internship)
   Title: AI-based Solar Power Production Forecasting
   Year: 02/2022 – 03/2022
4. Name: Juan Manuel Jacinto Villegas, Scuola Superiore Sant'Anna – PERCRO (evaluation committee)
   Title: Teleoperation, Teleoperation-Robotics and Industrial Context
   Year: 03/2017
5. Name: Daniel R. Ramirez Rebollo, ITESM – Campus Cd. De Mexico (internship)
   Title: System integration of a multipurpose human-friendly assistive robot vehicle
   Year: 08/2016 – 01/2017
6. Name: Erfan Shojaei Barjuei, Università degli studi di Udine (internship)
   Title: Control design of a human-friendly walking assist robot vehicle
   Year: 08/2015 – 12/2016

7. Name: Marina Vela, Scuola Superiore Sant'Anna – PERCRO (evaluation committee)
   Title: Localization and modeling of human motion for the mapping and control of autonomous, virtual and robotic agents
   Year: 01/2012
8. Name: Yohan Noh, Waseda University (co-supervision)
   Title: Study on the Development of an Airway Training Management System
   Year: 03/2011
9. Name: Klaus Petersen, Waseda University (co-supervision)
   Title: Study on Musical Performance Robots: Enhancing the Interaction with Human Players within the context of musical-band and Its Applications
   Year: 03/2011

Master Students

1. Eden Martin (UC Louvain, Reader)
   Title: Task planning system using foundation models in multimodal human-robot collaboration
   Year: 2024
2. Brieuc Bastin (UC Louvain, Reader)
   Title: GPTAlly: A safety-oriented system for human-robot collaboration based on foundation models
   Year: 2024
3. Koyu Nakamori (Karlstad University, Internship)
   Title: Gesture Recognition System for Collaborative Robots
   Year: 10/2023– 12/2023
4. Haruki Kohata (Karstad University, Internship)
   Title: Cost benefit analysis and prediction of parameters for optimal battery use in energy storage system
   Year: 06/2021– 09/2021
5. Sebastian Lind (Karlstad University; Supervisor)
   Title: Ensemble approach to prediction of initial velocity centered around random forest regression and feed forward deep neural networks
   Year. 2020
6. Chihiro Kato (Karlstad University; Supervisor)
   Title: Cost benefit analysis for business model in Energy Storage System
   Year: 2019
7. Tomohiro Oka (Karlstad University; Supervisor)
   Title: LSTM Neural Network Model for Electricity Consumption Prediction
   Year: 2019
8. Barkman, Richard Dan William (Karlstad University; Supervisor)
   Title: Object Tracking Achieved by Implementing Predictive Methods with Static Object Detectors Trained on the Single Shot Detector Inception V2 Network
   Year: 2019
9. Khajo, Gabriel (Karlstad University; Supervisor)
   Title: Region Proposal Based Object Detectors Integrated With an Extended Kalman Filter for a Robust Detect-Tracking Algorithm
   Year: 2019
10. Simon Johansson (Karlstad University; Supervisor)
    Title: Control of a drone with weight load
    Year: 04/2018 – 06/2018
11. Simon Johansson (internship)
    Title: Control of a unmanned aerial vehicle
    Year: 02/2018 – 03/2018
12. Baltej Singh (internship)
    Title: Variable stiffness mechanism of a human-friendly walking assist robot vehicle
    Year: 08/2017 – 11/2017
13. Thitipong Sansanayuth (internship)
    Title: Navigation control of an intelligent carrying-medical tool assistant robot
    Year: 09/2016-02/2017
14. Owais Arshad Sohail (Karlstad University; Supervisor)
    Title: Object Oriented Failure Modes & effect Analysis : Climate System of Hybrid Vehicles
    Year: 03/2015

15. Waqas Ahmad (Karlstad University; Examiner)
    Title: Development of algorithm for li-ion batteries in electric vehicles, taking into account SOC, charge control, cell balancing and SOF.
    Year: 06/2014
16. Florian Markus Faessler (Karlstad University; Supervisor)
    Title: Iterative Learning Control of Fast Switching On/Off Valves in Digital Hydraulic Drives
    Year: 03/2014
17. Muhammad Awais (Karlstad University; Examiner)
    Title: Simulative comparison of Kalman filters for state estimation of Li-ion batteries in electric vehicles
    Year: 02/2014
18. Faisal Mahmood Ahmed (Karlstad University; Supervisor)
    Title: Estimated Droop Control for Parallel Connected Voltage Source Inverters
    Year: 12/2013
19. Md Mafizul Islam and Md Abdul Salam (Karlstad University; Supervisor)
    Title: Modelling and Control System design to control Water temperature in Heat Pump
    Year: 12/2013
20. Syed Hammad Zafar (Karlstad University; Supervisor)
    Title: Modelling and Control of Large Wind Turbin
    Year: 10/2013
21. Kaviraj Murugesan (Karlstad University; Supervisor)
    Title: Damage detection on railway bridges using system identification
    Year: 06/2013
22. Zeeshan Iqbal (Karlstad University; Supervisor)
    Title: Wireless Sensor and Actuator Networks for Real-time Communication
    Year: 08/2012
23. TAKEUCHI Masaki (Waseda University; Co-supervisor)
    Title: Research on the Anthropomorphic Saxophone Robot: Implementation of a pitch control system for a MIMO system based on FB Error Learning (in Japanese)
    Year: 02/2010
24. YAMAMOTO Tetsuro (Waseda University; Co-supervisor)
    Title: Research on the Anthropomorphic Saxophone Robot: Implementation of an air pressure control and false tone removal system based on the FB Error Learning (in Japanese)
    Year: 02/2009
25. SHIMOMURA Akihiro (Waseda University; Co-supervisor)
    Title: Implementation of an Airway Management Scenario Training: Development of Supporting System for the construction of training scenario (in Japanese)
    Year: 02/2009
26. KOGA Hiroki (Waseda University; Co-supervisor)
    Title: Development of an Oral-Rehabilitation Robot: Development of an automatic palpate algorithm for detection of massage treatment position (in Japanese)
    Year: 02/2009
27. NINOMIYA Takeshi (Waseda University; Co-supervisor)
    Title: Research on the Anthropomorphic Saxophonist Robot: Development of an air pressure control and performance system (in Japanese)
    Year: 02/2008
28. OSHIMA Nobuki (Waseda University; Co-supervisor)
    Title: Research on the Virtual Patient Robot and Training System: Development of a Suture Training System (in Japanese)
    Year: 02/2008
29. NOH Yohan (Waseda University; Co-supervisor)
    Title: Development of an Airway Training Management System (in Japanese
    Year: 08/2007
30. TANIGUCHI Koichi (Waseda University; Co-supervisor)
    Title: Research on the Anthropomorphic Flutist Robot: Implementation of an air flow control and aural feedback performance system (in Japanese)
    Year: 02/2007
31. SUEFUJI Kei (Waseda University; Co-supervisor)
    Title: Research on the Anthropomorphic Flutist Robot: Generation of musical performance data to produce a intonated performance (in Japanese)
    Year: 02/2006

Undergraduate Students

1. Samuel Persson, (Karlstad University; Supervisor)
   Title: Analysis of a simulated battery energy storage system used for frequency containment reserve during low and high grid inertia
   Year: 2025
2. Oskar Vägermark (Karlstad University; Supervisor)
   Title: Identification of incipient contact faults in low-voltage networks using smart meters
   Year: 2025
3. Carl Tornberg (Ritsumeikan University; External Supervisor)
   Title: Multi-modal Human-Robot Co-adaptive Planning for Collaborative Tasks using Mixed Reality and Artificial Intelligence – Mixed Reality to convey robot plan and status
   Year: 06/2023– 09/2023
4. Carl Tornberg (Ritsumeikan University; External Supervisor)
   Title: Multi-modal Human-Robot Co-adaptive Planning for Collaborative Tasks using Mixed Reality and Artificial Intelligence – Mixed Reality to convey robot plan and status
   Year: 01/2023– 04/2023
5. Mohammad Roeintan (Karlstad University; Supervisor)
   Title: Korttidsprediktering av producerad energi från solcellsanläggning
   Year: 2021
6. Tobias Nordlund (Karlstad University; Supervisor)
   Title: Jämförelse av upplösning i lastprediktering med Deep Learning
   Year: 2021
7. Joel André (Karlstad University; Supervisor)
   Title: Modular Battery Management System interface to integrated Vehicle Control Unit: Creating a BMS playground using Arduino
   Year: 2020
8. Ericson, Johan (Karlstad University; Supervisor)
   Lastprediktering: Med Neuralt Nätverk och Support Vector Regression
   Year: 2019
9. Karlsson, Christoffer (Karlstad University; Supervisor)
   Title: Vision based control and landing of Micro aerial vehicles
   Year: 2019
10. Pontus Stoltz (Karlstad University; Supervisor)
    Title: Analysis of cluster mounted MEMS-Gyroscopes curcuitboard of cluster mounted gyroscopes
    Year: 2018
11. Mikael Ogenvall (internship)
    Title: Assistive Eating Device – Vision System to keep track of user food intake
    Year: 05/2017 – 12/2017
12. Christoffer Karlsson (internship)
    Title: Assistive Eating Device – Vision System to keep track of user food intake
    Year: 05/2017 – 12/2017
13. Fernanda Amaral Melo (internship)
    Title: 3D gesture recognition of an intelligent carrying-medical tool assistant robot
    Year: 08/2016 – 12/2016
14. Jose Pablo de la Rosa (internship)
    Title: System integration of a walking assistive robot vehicle
    Year: 08/2014 – 12/2014
15. Tommie Hilmersson (Karlstad University; Supervisor)
    Title: Uppbyggnad och reglering av en pumpstation till ett injektionssystem (in *Swedish*)
    Year: 10/2014
16. Johan Hansson (Karlstad University, Supervisor)
    Title: Systemanalys flingtork : Produktionseffektivisering (in *Swedish*)
    Year: 09/2014
17. Per-Martin Häggström (Karlstad University; Supervisor)
    Title: Omkonstruktion av treaxlig plockrobot och dess plockverktyg (in Swedish)
    Year: 09/2014
18. KUSANO Takafumi (Waseda University; Co-supervisor)
    Title: Development of new mouth and finger mechanisms for the Anthropomorphic Saxophone Robot (in Japanese)
    Year: 02/2010

19. SUGITA Yoshihisa (Waseda University; Co-supervisor)
    Title: Development of an embedded-sensor lips and the lips/mouth mechanisms for saxophone sound production for the Anthropomorphic Flute Robot (in Japanese)
    Year: 02/2010
20. ISHIKAWA Shimpei (Waseda University; Co-supervisor)
    Title: Development of an Anthropomorphic Saxophone Performance Robot: Development of a new mouth mechanism to increase the sound rage and a new hand mechanism (in Japanese)
    Year: 02/2009
21. SATO Kei (Waseda University; Co-supervisor)
    Title: Development of an Airway Management Training Model (in Japanese)
    Year: 02/2009
22. KIKUTA Go (Waseda University; Co-supervisor)
    Title: Development of an 3D simulator as a training tool for the Airway Management (in Japanese)
    Year: 02/2009
23. EGUCHI Koichi (Waseda University; Co-supervisor)
    Title: Development of an Oral-Rehabilitation Robot: Design and construction of an optimal manipulator for the maxillofacial massage (in Japanese)
    Year: 02/2009
24. TAKEUCHI Maasaki (Waseda University; Co-supervisor)
    Title: Development of the Anthropomorphic Saxophonist Robot: Design/development of a compact air pump and lip/mouth mechanisms (in Japanese)
    Year: 02/2008
25. YAMAMOTO Tetsuro (Waseda University; Co-supervisor)
    Title: Development of the Anthropomorphic Flutist Robot: Development of a new mouth and tonguing mechanism (in Japanese)
    Year: 02/2007
26. NINOMIYA Takeshi (Waseda University; Co-supervisor)
    Title: Development of a new mouth and lung mechanism for an Anthropomorphic Flutist Robot (in Japanese)
    Year: 02/2006

CONFERENCES ACTIVITIES

2026 PC Co.-chair, IEEE/SICE International Symposium on System Integration

2015-current Associate Editor, International Conference Automation in Science and Engineering
Editor Reviewer, Frontiers in Robotics and AI, Humanoid Robotics

2014-current Associate Editor, International Conference in Control, Automation and Robotics
Associate Editor, Robotics Science and Systems

2013-current Associate Editor, International Journal on Advanced Robotic Systems

2010-current Guest Editor**,** IEEE-RAS Robotics and Automation Magazine
Associate Editor, IEEE-RAS&EMBS International Conference on Biomedical Robotics and Biomechatronics
Associate Editor, IEEE International Conference on Robotics and Automation
Associate Editor, IEEE/RSJ International Conference on Intelligent Robots and Systems
Associate Editor, IEEE/ASME International Conference on Advanced Intelligent Mechatronics
Associate Editor, IEEE International Symposium in Robot and Human Interactive Communication
Co-Organizer, IEEE/RSJ International Conference on Intelligent Robots and Systems , Workshop on Robots and Musical Expressions, Taiwan, October 18

2009 Session Chairman, Eighteenth International IEEE Symposium on Robot and Human Interactive Communication: Robots in Art, Education, and Entertainment. Toyama, Japan, September 27–October 1
Co-Organizer, IEEE International Conference on Intelligent Robots and Systems, Workshop on Biologically-Inspired Robotics, St. Loius, USA, October 11
Session Chairman, International IEEE Conference on Intelligent Mechatronics: Service Robots. Singapore, July 13–17
Co-Organizer, IEEE International Conference on Robotics and Automation, Workshop on Roboethics, Kobe, Japan, May 17
Co-Chair, IEEE-RAS TC on Biologically Inspired Robots
Chair, 5th Asia-Pacific Computing and Philosophy Conference, Robo Ethics Session, Tokyo, Japan, October 1–2

PUBLICATIONS (INTERNATIONAL, PEER REVIEWED)

Edited Volumes

1. De Vin, L., Solis, J., **Proceedings of the 14th Mechatronics Forum International Conference Mechatronics 2014** (ISBN 978-91-7063-564-9)
2. Solis, J., Kia, N. (Eds.) (2011). **Musical Robots and Interactive Multimodal Systems,** Springer (Tract in Advanced Robotics): Heidelberg, Germany (ISBN 978-3-642-22290-0).
3. Gianmarco, V., Solis, J., Van der Loos, M. (2011). **RoboEthics**. IEEE Robotics & Automation Magazine, Vol. 18(1) : NY : USA.

Book Chapters (peer reviewed)

1. Solis, J., Karlsson, C., Richardsson, K. (2020). Development of an Off-board Vision-Based Control for a Micro Aerial Vehicle, **ROMANSY 23 - Robot Design, Dynamics and Control,** Venture, G., Solis, J., Takeda, Y., Konno, A. (Eds.) pp. 387-395.
2. Solis, J., (2016). "Pilot Experiments with a Human-friendly Walking Assisting Robot Vehicle," **ROMANSY 21 - Robot Design, Dynamics and Control,** Schiehlen, W., Parenti-Castelli, V. (Eds.), pp. 395-402.
3. Solis, J., Takanishi, A. (2015) "Human-Friendly Robots for Entertainment Purposes and Their Possible Implications", **Evolutionary Robotics, Organic Computing and Adaptive Ambience**: **Epistemological and ethical implications of technomorphic descriptions of technologies**, Michael Decker, Mathias Gutmann, Julia Knifka (Eds.), Berlin/Münster: Lit-Verlag
4. Solis, J. (2015) "Robot Education with mobile robots'', **Designs and Prototypes of mobile robots**, Emin Faruk Kekeci and Marco Ceccarelli (Eds.), ASME, pp. 167-188
5. Solis, J., Takanishi, A., (2014) "Understanding the feasibility and applicability of the musician-humanoid interaction research: A study of the impression of the musical interaction," **Robotics in Germany and Japan: Cultural and Technical Perspectives**, Funk, M. and Bernhard, I. (Eds.), Peter Lang: Frankfurt am Main, Germany, Vol. 5, pp. 125-153.
6. Solis, J., Takanishi, A., (2013) "Anthropomorphic Musical Robots Designed to Produce Physically-Embodied Expressive Music Performances", **Guide to Computing for Expressive Music Performance**, Kirke A., Miranda, R.E. (Eds.), Springer-Verlag: Heidelberg, Germany, pp 235-255.
7. Solis, J., Takanishi, A., (2011) "Human-Friendly Robots for Entertainment and Education", **Service Robots and Robotics Design and Application**, " Ceccarelli, M. (Eds.), IGI Global: Heidelberg, Germany, pp. 130-153.
8. Solis, J., Takanishi, A., (2011) "Wind Instrument Playing Humanoid Robots," **Musical Robots and Interactive Multimodal Systems**, Solis, Jorge and Ng, Kia (Eds.), Springer (Tract in Advanced Robotics): Heidelberg, Germany, pp. 195-213,
9. Solis, J., Takanishi, A., (2011) "Interactive Musical System for Multimodal Musician-Humanoid Interaction," **Musical Robots and Interactive Multimodal Systems**, Solis, Jorge and Ng, Kia (Eds.), Springer (Tract in Advanced Robotics): Heidelberg, Germany, pp. 253-268.
10. Solis, J., Takanishi, A., (2011) Robotic-Assisted Technology for Medical Training Purposes", **Biomechatronics in Medicine and Health Care**, Le Li and Kai-Yu Tong (Eds.), PanStanford, pp. 171-186.
11. Solis, J., Takanishi, A., Hashimoto, K. (2010) "Development of an Anthropomorphic Saxophone-Playing Robot," **Brain, Body and Machine**, Angeles, J. Boulet, B., Clark, J., Kovecses, J. Siddiqi K. (Eds.), Springer-Verlag (Advances in Intelligent and Soft Computing 83): Heidelberg, Germany, pp. 175-186.
12. Solis J., Petersen, K., Yamamoto, T., Takeuchi, M., Ishikawa, S., Takanishi, A., Hashimoto, K. (2010). "Development of the Anthropomorphic Waseda Saxophonist Robot," **ROMANSY 18 - Robot Design, Dynamics, and Control**, CISM Lecture Note #524, Schiehlen, W., Parenti-Castelli, V. Eds., Springer, pp. 209-216.
13. Nakadate, R., Solis, J., Takanishi, A., Minagawa, E., Sugawara, M., Niki, K. (2010). Implementation of an Automated Scanning Method of the Carotid Artery using a Assisted-Robotic System based on Ultrasound Image Feedback," **ROMANSY 18 - Robot Design, Dynamics, and Control**, CISM Lecture Note #524, Schiehlen, W., Parenti-Castelli, V. Eds., Springer, pp. 359-366.
14. Petersen, K., Solis. J., Takanishi, A. (2010). Development of the Waseda Flutist Robot Toward Enhancing the Interaction with Human Musical Partners," **ROMANSY 18 - Robot Design, Dynamics, and Control**, CISM Lecture Note #524, Schiehlen, W., Parenti-Castelli, V. Eds., Springer, pp. 233-240.
15. Noh Y., Sato, K., Shimomura, A., Segawa, M., Ishii, H., Solis, J., Takanishi, A., Hatake, K. (2010). Development of the Airway Management Training System WKA-3 which Enables Trainees to Effectively Train Airway Management," **ROMANSY 18 - Robot Design, Dynamics, and Control**, CISM Lecture Note #524, Schiehlen, W., Parenti-Castelli, V. Eds., Springer, pp. 183-190.
16. Solis, J., Suefuji, K., Chida, K., Taniguchi, K., Takanishi, A. (2008). "The mechanical improvements of the anthropomorphic flutist robot WF-4RII to increase the sound clarity and to enhance the interactivity with humans," **ROMANSY 17 - Robot Design, Dynamics and Control**, Takanishi, A.; Nakamura, Y.; Heimann, B. (Eds.), Kamiya Publishing, pp. 247–254.
17. Solis, J., Taniguchi, K., Ninomiya, T., Yamamoto, T., Takanishi, A. (2006). "The Mechanical Improvements of the Waseda Flutist Robot and the Implementation of an Auditory Feedback Control System," **ROMANSY 16 - Robot Design, Dynamics and Control**, CISM Lecture Note #487, Zielinska, T.; Zielinski, C. (Eds.), SpringerWienNewYork ed., pp. 217–224.

Journals (peer reviewed)

1. Silahli, A., De la Rosa, J., Solis, J., Garcia, G., El Hafi, L., Håkansson, J, Stengaard, A. Rocha, T. (2025). A Gesture-Based Behaviour-Driven Development Approach for End-User Cobot Programming, Robotica (in Press)
2. Solis, J., Karlsson, C., Johansson, S., Richardsson, K. (2021). Towards the Development of an Automatic UAV-Based Indoor Environmental Monitoring System: Distributed Off-Board Control System for a Micro Aerial Vehicle, Applied Sciences, Special Issue on Modelling and Control of Mechatronic and Robotic Systems, Vol. 11(5), 2347
3. Oka, T., Solis, J., Lindborg, A.L., Matsuura, D., Sugahara, Y., Takeda, Y. (2020). Kineto-elasto-static Design of Underactuated Chopstick-type Gripper Mechanism for Meal-Assistance Robot, Robotics, Special Issue on Kinematics and Robot Design III, Vol. 9 (3).

4. Solis, J., Sugita, Y., Peterssen, P., Takanishi, A. (2016). "Development of an anthropomorphic musical performance robot capable of playing the flute and saxophone: Embedding pressure sensors into the artificial lips as well as the re-designing of the artificial lips and lung mechanisms," Robotics and Autonomous Systems, doi: 10.1016/j.robot.2016.08.024
5. Solis, J., Takanishi, A. (2014). "Biologically-inspired control architecture for musical performance robots, " International Journal of Advanced Robot Systems, 11:172, pp. 1-11, doi: 10.5772/59232
6. Nakadate, R., Matsunaga, Y., Solis, J., Takanishi, A., Minagawa E., Sugawara M., Niki K. (2011) "Development of a Robotic-Assisted Carotid Blood Flow Measurement System," Mechanism and Machine Theory Journal, Vol. 46(8), pp. 1066-1083.
7. Solis, J., Takanishi, A. (2010). "Recent trends in humanoid robotics research: scientific background, applications and implications," in Accountability in Research, Vol. 17:278–298.
8. Carbone G., Nakadate R., Solis J., Ceccarelli M., Takanishi A., Minagawa E., Sugawara M., Niki K., (2010). "Workspace Analysis and Design Improvements on a Carotid Blood Flow Measurement System," in Journal of Engineering in Medicine, Vol. 244, pp. 1311-1323.
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10. Petersen, K., Solis, J., Takanishi, A., (2010). "Musical-Based Interaction System for the Waseda Flutist Robot: Implementation of the Visual Tracking Interaction Module," Autonomous Robots Journal, Vol. 28(4), pp. 439-455.
11. Solis, J., Taniguchi, K., Ninomiya, T., Petersen, K., Yamamoto, T., Takanishi, A. (2009) "Implementation of an Auditory Feedback Control System on an Anthropomorphic Flutist Robot Inspired by the Performance of a Professional Flutist," Advanced Robotics Journal, Vol. 23, pp. 1849-1871.
12. Ishii H., Koga H., Obokawa Y., Solis J., Takanishi A., Katsumata A. (2009). "Path generator control system and virtual compliance calculator for maxillofacial massage robots," International Journal of Computer Assisted Radiology and Surgery, Vol. 5(1), pp. 71-84.
13. Ishii, H., Koga, H., Obokawa, Y, Solis, J., Takanishi, A., Katsumata, A. (2009). "Development and Experimental Evaluation of Oral Rehabilitation Robot That Provides Maxillofacial Massage to Patients with Oral Disorders," International Journal of Robotics Research, Vol. 28(9), pp. 1228–1239.
14. Solis, J., Taniguchi, K., Ninomiya, T., Takanishi, A. (2008) "Understanding the Mechanisms of the Human Motor Control by Imitating Flute Playing with the Waseda Flutist Robot WF-4RIV," Mechanism and Machine Theory (Special Issue on Bio-Inspired Mechanism Engineering), Vol. 44 (3), pp. 527—540.
15. Solis, J., Oshima, N., Ishii, H., Matsuoka, N., Hatake, K., Takanishi, A. (2008). "Towards an understanding of the suture/ligature skills during the training process by using the WKS-2RII," International Journal of Computer Assisted Radiology and Surgery, Vol. 3(3-4), pp. 231–239.
16. Noh, Y., Segawa, M., Shimomura, A., Ishii, H., Solis, J., Hatake, K., Takanishi, A. (2008). "WKA-1R robot-assisted quantitative assessment of airway management," International Journal of Computer Assisted Radiology and Surgery, Vol. 3(6), pp. 543-550.
17. Koga H., Usuda Y., Matsuno M., Ogura Y., Ishii H., Solis J., Takanishi A., Katsumata A. (2008). "Development of an Oral Rehabilitation Robot," Gerontechnology, Vol. 7(2), pp. 142-142.
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19. Solis, J., Marcheschi, S., Frisoli, A., Avizzano, C.A., Bergamasco, M. (2007). "Reactive Robots System: an active human/robot interaction for transferring skill from robot to unskilled persons, International Advanced Robotics Journal, Vol. 21(3), pp. 267–291.
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21. Solis, J., Chida, K.; Suefuji, K., Taniguchi, K., Hashimoto, S.M., Takanishi, A. (2006). "The Waseda Flutist Robot WF-4RII in Comparison with a Professional Flutist," Computer Music Journal, Vol. 30(4), pp. 12–24.
22. Solis, J., Chida, K.; Suefuji, K., Takanishi, A. (2006). "The Development of the anthropomorphic flutist robot at Waseda University," International Journal of Humanoid Robots (IJHR), Vol. 3(2), June, pp. 127–151.

International Conferences (peer reviewed)

1. Zanol, G.C., Solis, J., Bergstrand, K.J. (2025) Intelligent lighting control system for greenhouses with a high proportion of local renewable energy, Proc. IS on Robotics, Mechanization and Smart Horticulture, Eds. L. Manfrini, K. Biegert and M.G. Matache, Acta Horticulturae, Vol. 1433, doi 10.17660/ActaHortic.2025.1433.3
2. Solis, J., Rahm, J., Arnesson, S., Andersson, I., Nilsson, M. (2025) LED lighting with a Photovoltaic System and Energy Storage for a Jogging Track in the Countryside, 3rd IFToMM for Sustainable Development Goals Conference (in Press)
3. Solis, J., Funaki, A., Husseiny, M. (2025) Challenges for autonomous monitoring systems in indoor farming: from system integration, monitoring and optimization of energy storage, 3rd IFToMM for Sustainable Development Goals Conference (in Press)
4. Bastin, B., Hasegawa, S., Solis, J., Ronsse, R., Macq, B., Hafi, L., Garcia, G.,Ricardez, Taniguchi, T. (2025) GPTAlly: A Safety-Oriented System for Human-Robot Collaboration based on Foundation Models, 2025 IEEE/SICE International Symposium on System Integration (in Press).
5. Martin, E., Hasegawa, S., Solis, J., Macq, B., Ronsse, R., Garcia, G. Hafi, L., Taniguchi, T. (2025) Integrating Multimodal Communication and Comprehension Evaluation during Human-Robot Collaboration for Increased Reliability of Foundation Model-based Task Planning Systems, 2025 IEEE/SICE International Symposium on System Integration (in Press).
6. Solis, J., Arnesson, S., Andersson, I.M., Nilsson, M., Rahm, J., Burman, S.P (2025) Towards the Development of an Intelligent Control for LED lighting with Solar Energy and Energy Storage for a Jogging Track in the Countryside 2025 IEEE/SICE International Symposium on System Integration (in Press).
7. Zanol, G.C., Solis, J., Bergstrand, K.J. (2025) Intelligent Lighting Control System for Greenhouses with a High Proportion of Local

Renewable Energy. International Symposium on Robotics, Mechanization and Smart Horticulture for publication in Acta Horticulturae, vol 433, p. 19-29 (DOI: 10.17660/ActaHortic.2025.1433.3)
8. Funaki, A., Solis, J., Olsson, D., Nilsson, M. (2024) Intelligent Control Strategy of a Battery Energy Storage for a Climate-Controlled Greenhouse with a High Proportion of Local Renewable Energy, International Photovoltaic Science and Engineering Conference (PVSEC-35), Mo2e-Oc2-04.
9. Solis, J., Olsson, D., Nilsson, M. (2024) Cost benefit analysis for a climate-controlled greenhouse with a high proportion of local renewable energy, International Photovoltaic Science and Engineering Conference (PVSEC-35), Th2-P11-10.
10. De la Rosa, J.P., Solis, J., Nakamori, K., Garcia, G., Rocha, T., Stengaard, A., Håkansson, J., (2024) From Gestures to Behaviors: An Empirical Study on Behaviour-Driven Development Scenarios to Support End-User Programming of Collaborative Robots, International Symposium on Robotics & Mechatronics, pp. 369-381.
11. Tornberg, C., El Hafi, L., Miguel P., Yamamoto, M., Garcia, G. Solis, J., Taniguchi, T. (2024) Mixed Reality-based 6D-Pose Annotation System for Robot Manipulation in Retail Environments, 2024 IEEE/SICE International Symposium on System Integration, pp. 1425-1432.
12. Zanol, G.C., Solis, J., Bergstrand, K.J. (2024), Intelligent Lighting Control System for Greenhouses with a high proportion of local renewable energy, European Horticulture Congress, p. 14.
13. Solis, J., Nakamori, K., Garcia, G., Håkansson, J. (2023). Body gesture recognition for collaborative robots, 16th IFToMM World Congress, pp. 61-62.
14. Garcia, G., Törnberg, C., El Hafi, L., Solis, J., Taniguchi, T. (2023) Toward safe and efficient human-robot teams: Mixed reality-based robot motion and safety index visualization, 16th IFoMM World Congress, pp. 53-54.
15. Solis, J., Kohata, H., Ericson, J., Nilsson, M. (2023). Cost benefit analysis and forecasting of parameters for optimal battery use in energy storage system, 36th International Conference on Efficiency, Cost, Optimization, Simulation and Environmental Impact of Energy Systems, pp. 662-672.
16. Solis, J., Bergstrand, K.J., Egyna, D., Andersson Myrén, I,., Nilsson, M., Zanol, G.C., Burman, Su-Ping (2023). System integration of an intelligent lighting control system for greenhouses with a high proportion of local renewable energy, 2023 IEEE/SICE International Symposium on System Integration, pp. 600-605.
17. Solis, J., Egyna, D., Myrén Andersson, I., Nilsson, M., Bergstrand, K.J. (2022) Intelligent Lighting Control of Greenhouses with a PV system with battery energy storage: Forecasting of solar power production, 33rd International Photovoltaic Science and Engineering Conference, TuP-12-01
18. Solis, J., Roeintan, M., Nilsson, M., Ericson, J. (2022). Short-time Forecasting of Electric Energy Production for Housing Cooperative with a Grid Connected PV System, 35th International Conference on **E**fficiency, **C**ost, **O**ptimization, **S**imulation and Environmental Impact of Energy Systems, pp. 1713-1721.
19. Solis, J., Råberg, A., André, J., Nilsson, M. (2021). Analyzing the effect of snow in PV regulator response in a PV solar park, International Conference on Smart Grid
20. Solis, J., Sjöberg, D., Nilsson, M., Ericson, J. (2021). Performance Analysis for the Forecast of Electric Energy Consumption in a Cooperative House Based on LSTM, 14th IEEE International Conference on Automation Science and Engineering
21. Garcia, G., Solis, J., Takamatsu, J., Ogasawara, T. (2020). Dynamics Estimation Using an IMU in Physical Human-Robot Interaction. ICRA 2020 workshop on Unconventional Sensor in Robotics
22. Solis, J., Karlsson, C, Richardsson, K., (2020) Development of an Off-Board Vision-based control for a Micro Aerial Vehicle, 23rd CISM IFToMM Symposium on Robot Design, Dynamics and Control.
23. Solis, J., Kato, C., Ericson, J., Nilsson, M. (2019). Cost benefit analysis for business model in a grid connected PV system with energy storage, 36th European PV Solar Energy Conference and Exhibition.
24. Solis, J., Tomohiro, O., Ericsson, J., Nilsson, M. (2019) Forecasting of Electric Energy Consumption for Housing Cooperative with a Grid Connected PV System, International Conference on Smart Grid, pp. 118-125.
25. Garcia, G.A. Solis, J., Takamatsu, J., Ogasawara, T. (2019) Quantitative Comfort Evaluation of Eating Assistive Devices based on Human Effort Estimation using an Accelerometer, HRI 2019 Workshop on Bolidly Human Robot Interaction.
26. Zhang, C., Ohashi, T., Saijo, M., Solis, J., Takeda, Y., Lindborg, A.N., Takeda, R., Tanaka, Y. (2018). A Monte Carlo based Computation Offloading Algorithm for Feeding Robot IoT System, The 3rd International Conference on Smart Computing and Communication, Lecture Notes in Computer Science, vol. 11344, pp. 163-177.
27. Solis, J., Hamanee, S., Nilsson, M. (2018). Analysing the effect of snow on the PV regulator response in a simple PV system. 35th European PV Solar Energy Conference, 1948-1987
28. Solis, J. (2018). Implementation of Industrial Oriented Project-Based Learning in Undergraduate Engineering Education at Karlstad University.In A. Jobér, M. Andrée . and M. Ideland (Eds). *Future Educational Challenges from Science and Technology Perspectives. XVIII IOSTE Symposium Book of Proceeding.* (pp. 288-293). Malmö: Malmö University
29. Solis, J., Karlsson, K., Lindborg, A.L. (2018). Vision-based Detection and Target Positioning for Mobile Robotic Devices, 16th Mechatronics Forum International Conference
30. Oka, T. Matsuura, D., Sugahara, Y., Solis, J., Lindborg, A.L., Takeda, Y. (2018). Chopstick-type Gripper Mechanism for Meal-Assistance Robot Capable of Adapting to Size and Elasticity of Foods, 4th IFToMM Symposium on Mechanism Design for Robotics, pp. 284–292.
31. Solis, J., Karlsson, C., Ogenvall, M., Lindborg, A.L., Takeda, J., Zhang, C. (2018) Development of a vision-based feature extraction for food intake estimation for a robotic assistive eating device, Proc. of the 14th IEEE International Conference on Automation Science and Engineering, 1105-1109.
32. Garcia, G., Solis, J., Takamatsu, J., Ogasawara, T. (2018) Interaction Force Estimation of an Eating Assistive Device for Quantitative Comfort Evaluation, 13th Annual ACM/IEEE International Conference on Human Robot Interaction, pp. 909-914.
33. Solis, J. and Amaral, F. (2017). 3D gesture recognition system for a dynamically-stable human-friendly, 11th International collaboration Symposium on Information, Production and Systems.
34. Solis, J. and Takanishi, A. (2017) Challenges on Humanoid-Musician Interaction: From Biologically-Inspired Design to

Impressions from Musicians, IEEE RO-MAN 2017 Workshop on The Barriers of Social Robotics take-up by Society.

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36. Solis, J., Amaral, F. (2017). Denoising of human motion data for a 3D gesture recognition system for a two-wheeled inverted pendulum robot, IEEE International Conference on Advanced Intelligent Mechatronics, pp. 43-44
37. Lindborg, A.L., Solis, J., Saijo, M., Takeda, Y., Zhang, C. Takeda, R. (2017). Robotic assistive device with multi-grip tools and vision system for frail elderly's independent life, ICRA2017 Workshop on Advances and challenges on the development, testing and assessment of assistive and rehabilitation robots.
38. Solis, J., Sansanayuth, T., Shojaei, E. (2016). Velocity control improvement for the Human-Friendly Assist Robot Vehicle, 2016 IEEE/SICE International Symposium on System Integration, pp. 331-336.
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41. Petros Sebhatu, S.; Solis, J.; Gebauer, H. (2016), Value co-creation in a complex service system: A case of Building Robots to innovate service, 7th International Research Symposium in Service Management, pp. 256-263
42. Solis, J. (2016) Pilot experiments and velocity control system improvements for the assistive robot vehicle hWALK, in Proc. of the ICRA2016 Workshop on Human-Robot Interfaces for Enhanced Physical Interactions.
43. Solis, J., De la Rosa, J.P. (2015). Development of a human-friendly walking assist robot vehicle: System Integration and Preliminary Stability Tests, 14th World Congress in Mechanism and Machine Science, DOI: 10.6567/IFToMM.14TH.WC.OS13.118
44. Solis, J., (2015). Development of a Human-Friendly Walking Assistive Robot Vehicle, IEEE/RSJ International Conference on Intelligent Robots and System: Workshop on Cognitive Mobility Assistance Robots: Scientific Advances and Perspectives, pp. 57-60.
45. Solis, J., Teshome, D. T., De la Rosa, J.P. (2015). Towards the development of multipurpose assistive vehicle robot for the ambient assisted living, International Conference on Automation Science and Engineering, pp. 1145-1150.
46. Solis, J., Teshome, D. T. (2014). Development of a human friendly robot vehicle for carrying-medical tools: Embodying perceptual capabilities, 14th Mechatronics Forum International Conference Mechatronics, pp. 370-376
47. Solis, J., Ozawa, K., Petersen, K., Takanishi, A. (2014) Development of automatic system to optimize the sound quality and sound pressure of the Waseda Flutist Robot, 14th Mechatronics Forum International Conference Mechatronics, pp. 377-383
48. Solis, J., Petersen, K., Takanishi, A. (2014) Biologically-inspired mechanism design for anthropomorphic musical performance robots, 14th Mechatronics Forum International Conference Mechatronics, pp. 549-554
49. Solis, J., Larsson, L., Bodén, A., Flognman, J. (2014) Introducing the principles of robot technology to compulsory school teachers at Karlstad University, The XVI International Organization of Science and Technology Education Symposium, pp. 40
50. Solis, J., Petersen, K., and Takanishi, A. (2013) Design and development of a new biologically-inspired mouth mechanism and musical performance evaluation of the WF-4RVI, IEEE Workshop on Advanced Robotics and its Social Impacts, pp. 200-205
51. Solis, J. (2012) "Introduction of Robotics to Master Students at Karlstad University", in Proceedings of the 2nd IFToMM Asian Conference in Mechanism and Machine Science, ID83
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53. Solis, J. (2012) "Introducing Practical Issues of Robotics to Master Students", in Proceedings of the 13th Mechatronics Forum International Conference
54. Yohan, N., Wang, C., Tokumoto, M., Solis, J., Ishii, H., Takanishi, A. (2012) Development of Airway Management Training System WKA-4: Provide Useful Feedback of Trainee Performance to Trainee during Airway Management," in Proc. of the International Conference on Complex Medical Engineering, pp. 423 – 428.
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Patents

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2. WO/2009/118933: Massage robot and control program thereof. Takanishi, A., Katsumata, A.; Koga, H., Ishii, H.; Solis, J.; Obokawa, Y. (patentscope.wipo.int/search/en/detail.jsf?docId=WO2009118933)
3. WO/2008/041457: Massage robot and control program therefor and robot for specifying portion of human body. Takanishi, A., Katsumata, A.; Usuda, Y.; Koga, H.; Matsuno, M.; Ogura, Y.; Ishii, H.; Solis, J. (patentscope.wipo.int/search/en/detail.jsf?docId=WO2008041457)
4. WO/2008/041456: Medical technique evaluation system, technique evaluation device, technique evaluation device program. Takanishi, A.; Aizdin, M.; Oshima, N.; Midorikawa, R.; Solis, J.; Ogura, Y.; Ishii, H.0 (patentscope.wipo.int/search/en/detail.jsf?docId=WO2008041456)

INVITED LECTURES & INTERVIEWS (Selected)

1. Invited talk on Challenges towards Industry 5.0 in controlled environment plant production systems with high proportion of local renewable energy: From system integration to optimization of techno-economical intelligent control systems. JSME TC on Robotics and Mechatronics, Tohoku University, November 19th 2024, Sendai, Japan
2. Invited talk on Challenges within Industry 5.0 from research and education perspective. University of Southern Denmark, July 1st, 2022, Odense, Denmark
3. Invited talk on Biologically-Inspired Design of Musical Humanoid Robots and Its Applications to Human-Robot Interaction, 1st IFToMM Japan International Summer School on Mechanical Science and Robotics: Mechanisms, Actuators and Control for Robotics, July 24th, 2018, Tokyo / Yamanashi, Japan
4. Invited talk on Robotic assistive device with multi-grip tools and vision system for frail elderly´s independent life, Symposium on Working together for solutions to societal challenges through innovation - Swedish and Japanese academia and industry in collaboration for an active and healthy ageing, June 13th, 2018. Tokyo, Japan
5. Invited talk on Biologically-Inspired Machine Learning for Humanoid Robots and its Applications, Human-Machine Interaction Summer School, Maratea, Italy, September 21st 2017.
6. Invited talk on Towards the introduction of multimodal welfare robot systems: Development of an assistive mobile robot system, 3rd Research Meeting of the Japanese Society of Regenerative medicine and Rehabilitation, Tokyo Institute of Technology, Tokyo Japan, December 10th 2017.
7. Seminar on the Development of human-friendly assistive robot vehicles for the ambient assisted living at Karlstad University, Waseda University, Tokyo Japan, November 2nd, 2015
8. Seminar on Towards the development of a multi-purpose assistive robot vehicle in the ambient assisted living, Jc-IFToMM, Tokyo, Japan, November 6th, 2015.
9. Seminar on Development of human-friendly assistive robot vehicle for the ambient assisted living, Tokyo Institute of Technology, Tokyo, Japan, November 12th, 2014
10. Seminar on Some issues in the development of human-friendly robots and their applications, Örebro University, Örebro, Sweden, March 3rd, 2013
11. Seminar on Biologically-Inspired design and control of musical robots to enable physically-embodied expressive musical performances to interact with musicians, Royal Institute of Technology, Stockholm, Sweden, December 7th, 2013
12. Invited talk on Some Issues on Humanoid Robotics Research: Applications and Implications, Evolutionary Robotics, Organic Computing and Adaptive Ambience: Epistemological and Ethical Implications of Technomorphic Descriptions of Technologies, Karlsruhe Institute of Technology, Karlsruhe, Germany, October 22nd, 2011
13. Invited talk on Humanoid Robot Research in Japan: Some Issues on Human Robotic Science and Social Acceptability, International Workshop "Future of Robotics in Germany and Japan: Intercultural Perspectives and Technical Opportunities, Dresden University of Technology, Dresden, November 10th, 2010
14. Seminar on Research Challenges on Human-Robot Interaction and Robotic Human Science, Université de Technologie de Compiègne, Compiègne, France, December 4th, 2009.
15. Challenges of Human-Robot Interaction, University Technology of Sydney (UTS), Sydney, Australia, September 28, 2009.
16. The Development of Anthropomorphic Musical Performance Robots and Their Applications, Carnegie Mellon University, Pittsburgh, Pennsylvania, USA, June 4, 2009.
17. From Understanding the Nature of Human Skills to Their Applications to Robotics in Japan, National Taiwan University of Science and Technology, Taipei, Taiwan, April 9, 2009.
18. Can a Humanoid Robot Display Motor Skills for Playing Instruments Like Musicians? Karlsruhe University, Karlsruhe, Germany, September 2008.
19. Current Robotics Research Topics in Japan: From Medical Robotics to Humanoid Robots, McGill University, Montreal, Canada, October 2008.
20. The Development of the Flutist Robot and its Applications, Georgia Institute of Technology, Atlanta, Georgia, USA, August 2008.
21. Haptic Interfaces: Collocation and Coherence Issues. Multipoint interaction in Robotics and Virtual Reality, Workshop given at the International Conference on Robotics and Automation (ICRA), New Orleans, Louisiana, USA, April 27, 2004.

LANGUAGES

Spanish – Mother Tongue
Italian –Advanced Level
French – Basic Level
English – Advanced Level
Swedish – Intermediate Level
Japanese –Intermediate Level
Portuguese – Basic Level