

Rodrigo J S Jamisola
Professor
Mechanical, Energy & Industrial Engineering
Faculty of Engineering & Technology
Type of address: Postal address.
Botswana International University of Science and Technology
0000
Palapye
Botswana
Type of address: Postal address.
Botswana International University of Science and Technology
0000
Palapye
Botswana
Email: jamisolar@biust.ac.bw
Fax: (+267)4900102
Phone: (+267)4900117
Web address: <http://www.biust.ac.bw>, <http://www.biust.ac.bw>



Research interests

robotics
artificial intelligence
dual-arm manipulation
combined manipulators
build and control of cooperative drones
machine learning for interpretation of human and animal behavior
machine learning modelling of human emotion and addiction
robot exoskeleton for rehabilitation and walking augmentation

Qualifications

Robotics, PhD Electronics and Communications Engineering, Identifying Mass, Center of Mass, and Moment of Inertia through Natural Oscillations for Full-Dynamics Control of Robot Manipulators, De La Salle University-Manila
May 12 2008 → Dec 9 2009
Award Date: Dec 9 2009

Robotics, MSc in Electrical and Computer Engineering, Failure-Tolerant Path Planning for Kinematically Redundant Manipulators, Colorado State University
Aug 23 2001 → Sept 8 2006
Award Date: Sept 8 2006

Robotics, MEng (Research-Based) Mechanical Engineering, Full Dynamics Identification and Control of PUMA 560 and Mitsubishi PA-10 Robots, National University of Singapore
Jan 17 1997 → Sept 8 1999
Award Date: Aug 23 2001

BS Mechanical Engineering, University of the Philippines
Jun 17 1988 → Oct 14 1993
Award Date: Oct 14 1993

2020 → ... Regular Member, National Research Council of the Philippines

2020 → ... Senior Member, IEEE

2018 → ... Balik (Returning) Scientist, Dept of Science and Technology, Philippines

1995 → ... Registered Mechanical Engineer (4th Highest Place), Professional Regular Commission, Philippines

Employment

Professor
Mechanical, Energy & Industrial Engineering
Botswana International University of Science & Technology
May 12 2016 → present

Professor

Faculty of Engineering & Technology
Botswana International University of Science & Technology
May 12 2016 → present

Research outputs

Wildlife conservation using drones and artificial intelligence in Africa

Petso, T. & Jamisola, R. S., Dec 20 2023, In: *Science Robotics*. 8, 85, adm7008.

A novel approach to control four multi-rotor drones in cooperative paired control using relative Jacobian

Thebe, K. Z., Jamisola, R. S. & Ramalepa, L. P., Oct 5 2023, In: *Robotica*. 41, 10, p. 3004-3021 18 p.

Eeg-based human emotion classification from channel-wise feature extraction and feature selection

Mohutsiwa, L. O. & Jamisola, R. S., Aug 3 2023, *Affective Computing in Healthcare: Applications based on biosignals and artificial intelligence*. Institute of Physics Publishing

Africa region: Botswana

Kebaetse, M., Johnson, M. J., Tsimba, B., Ocampo, C., Nthitu, J. M., Mogorosi, N., Mbakile-Mahlanza, L., Ndlovu, K., Kommula, V. P., Jamisola, R. S. & Dillingham, T., Jan 1 2023, *Rehabilitation Robots for Neurorehabilitation in High-, Low-, and Middle-Income Countries: Current Practice, Barriers, and Future Directions*. Elsevier, p. 383-401 19 p.

A Review on Deep Learning on UAV Monitoring Systems for Agricultural Applications

Petso, T. & Jamisola, R. S., 2023, *Studies in Computational Intelligence*. Springer Science and Business Media Deutschland GmbH, p. 335-368 34 p. (Studies in Computational Intelligence; vol. 1093).

Enhancing Blast Design Efficiency for Rock Fragmentation with Gradient Descent and Artificial Neural Networks: An Optimization Study

Saubi, O., Gaopale, K., Jamisola, R. S., Suglo, R. S. & Matsebe, O., 2023, *2023 4th International Conference on Computers and Artificial Intelligence Technology, CAIT 2023*. Institute of Electrical and Electronics Engineers Inc., p. 1-5 5 p. (2023 4th International Conference on Computers and Artificial Intelligence Technology, CAIT 2023).

Machine Learning Prediction of the Load Evolution in Three-Point Bending Tests of Marble

Kaklis, K., Saubi, O., Jamisola, R. & Agioutantis, Z., Oct 2022, In: *Mining, Metallurgy and Exploration*. 39, 5, p. 2037-2045 9 p.

Editorial: Control of cooperative drones and their applications

Jamisola, R. S., Sept 29 2022, In: *Frontiers in Robotics and AI*. 9, 1014510.

Cooperative Control of Fixed-wing Drones Using Relative Jacobian with Obstacle Avoidance

Elijah, T., Ramalepa, L. P., Thebe, K. Z. & Jamisola, R. S., 2022, In: *Procedia Computer Science*. 215, p. 731-741 11 p.

Review on methods used for wildlife species and individual identification

Petso, T., Jamisola, R. S. & Mpoeleng, D., Dec 13 2021, In: *European Journal of Wildlife Research*. 68, 1, 3.

Automatic animal identification from drone camera based on point pattern analysis of herd behaviour

Petso, T., Jamisola, R. S., Mpoeleng, D., Bennitt, E. & Mmereki, W., Dec 2021, In: *Ecological Informatics*. 66, 101485.

Correction to: Bio-Inspired Modular Relative Jacobian for Holistically Controlled Four-Arm Manipulators Using Opposite and Adjacent Dual-Arm Pairs (*Arabian Journal for Science and Engineering*, (2021), 10.1007/s13369-021-06046-z)

Jamisola, R. S. & Roberts, R. G., Nov 16 2021, In: *Arabian Journal for Science and Engineering*.

Bio-Inspired Modular Relative Jacobian for Holistically Controlled Four-Arm Manipulators Using Opposite and Adjacent Dual-Arm Pairs

Jamisola, R. S. & Roberts, R. G., Aug 30 2021, In: Arabian Journal for Science and Engineering. 47, 2, p. 1777-1789 13 p.

An approach to drastically reduce the required legs DOFs for bipedal robots and lower-limb exoskeletons

Jamisola, R. S. & Roberts, R. G., Aug 16 2021, In: Robotica. 40, 4, p. 1-15 15 p.

Design Optimization of Wingtip Devices to Reduce Induced Drag on Fixed-Wings

Makgantai, B., Subaschandar, N. & Jamisola, R. S., Jun 15 2021, *2021 International Conference on Unmanned Aircraft Systems, ICUAS 2021*. Institute of Electrical and Electronics Engineers Inc., p. 1459-1465 7 p. 9476801. (2021 International Conference on Unmanned Aircraft Systems, ICUAS 2021).

Feedback State Estimation for Multi-rotor Drones Stabilisation Using Low-Pass Filter and a Complementary Kalman Filter

Kangunde, V., Mohutsiwa, L. O. & Jamisola, R. S., Jun 15 2021, *2021 International Conference on Unmanned Aircraft Systems, ICUAS 2021*. Institute of Electrical and Electronics Engineers Inc., p. 188-194 7 p. 9476809. (2021 International Conference on Unmanned Aircraft Systems, ICUAS 2021).

Thrust-to-Weight Ratio Optimization for Multi-Rotor Drones Using Neural Network with Six Input Parameters

Mogorosi, T. O., Jamisola, R. S., Subaschandar, N. & Mohutsiwa, L. O., Jun 15 2021, *2021 International Conference on Unmanned Aircraft Systems, ICUAS 2021*. Institute of Electrical and Electronics Engineers Inc., p. 1194-1199 6 p. 9476744. (2021 International Conference on Unmanned Aircraft Systems, ICUAS 2021).

Relative Position Control in 3D Space of Cooperating Multirotor UAVs Using Modular Relative Jacobian

Jamisola, R. S., Ramalepa, L. P., Thebe, K. Z. & Mbedzi, O., Jun 11 2021, *2021 5th International Conference on Robotics and Automation Sciences, ICRAS 2021*. Institute of Electrical and Electronics Engineers Inc., p. 99-105 7 p. 9476522. (2021 5th International Conference on Robotics and Automation Sciences, ICRAS 2021).

Relative Jacobian-Based Cooperative Control of Multi-Rotor Drones

Jamisola, R. S., Thebe, K. Z., Ramalepa, L. P. & Mbedzi, O., Jun 5 2021, *International Conference on Communication and Information Technology, ICICT 2021*. Institute of Electrical and Electronics Engineers Inc., p. 208-214 7 p. (International Conference on Communication and Information Technology, ICICT 2021).

A Review on Cooperative Robotic Arms with Mobile or Drones Bases

Ramalepa, L. P. & Jamisola, R. S., May 19 2021, In: International Journal of Automation and Computing. 18, 4, p. 536-555 20 p.

EEG-Based human emotion classification using combined computational techniques for feature extraction and selection in six machine learning models

Mohutsiwa, L. O. & Jamisola, R. S., May 6 2021, *Proceedings - 5th International Conference on Intelligent Computing and Control Systems, ICICCS 2021*. Institute of Electrical and Electronics Engineers Inc., p. 1095-1102 8 p. 9432207. (Proceedings - 5th International Conference on Intelligent Computing and Control Systems, ICICCS 2021).

YOLOv3-Based Human Activity Recognition as Viewed from a Moving High-Altitude Aerial Camera

Mmereki, W., Jamisola, R. S., Mpoeleng, D. & Petso, T., Feb 4 2021, *2021 International Conference on Automation, Robotics and Applications, ICARA 2021*. Institute of Electrical and Electronics Engineers Inc., p. 241-246 6 p. 9376435. (2021 International Conference on Automation, Robotics and Applications, ICARA 2021).

A review on drones controlled in real-time

Kangunde, V., Jamisola, R. S. & Theophilus, E. K., Jan 5 2021, In: International Journal of Dynamics and Control. 9, 4, p. 1-15 15 p.

A preliminary application of a machine learning model for the prediction of the load variation in three-point bending tests based on acoustic emission signals

Kaklis, K., Saubi, O., Jamisola, R. & Agioutantis, Z., 2021, In: Procedia Structural Integrity. 33, C, p. 251-258 8 p.

Cooperative Orientation Control of Fixed-Wing Drones Using Relative Jacobian

Jamisola, R. S., Elijah, T. & Mbedzi, O., 2021, *Proceedings - 2nd International Conference on Smart Electronics and Communication, ICOSEC 2021*. Institute of Electrical and Electronics Engineers Inc., p. 566-573 8 p. (Proceedings - 2nd International Conference on Smart Electronics and Communication, ICOSEC 2021).

Individual Animal and Herd Identification Using Custom YOLO v3 and v4 with Images Taken from a UAV Camera at Different Altitudes

Petso, T., Jamisola, R. S., Mpoeleng, D. & Mmereki, W., 2021, *2021 6th International Conference on Signal and Image Processing, ICSIP 2021*. Institute of Electrical and Electronics Engineers Inc., p. 33-39 7 p. (2021 6th International Conference on Signal and Image Processing, ICSIP 2021).

A review on control and maneuvering of cooperative fixed-wing drones

Elijah, T., Jamisola, R. S., Tjiparuro, Z. & Namoshe, M., Nov 3 2020, In: *International Journal of Dynamics and Control*. 9, 3, p. 1332-1349 18 p.

Design and Analysis of Hip Joint DOFs for Lower Limb Robotic Exoskeleton

Gwebu, Z., Moruti, K. & Jamisola, R. S., Nov 2019, *2019 IEEE 11th International Conference on Humanoid, Nanotechnology, Information Technology, Communication and Control, Environment, and Management, HNICEM 2019*. Institute of Electrical and Electronics Engineers Inc., 6 p. 9073479. (2019 IEEE 11th International Conference on Humanoid, Nanotechnology, Information Technology, Communication and Control, Environment, and Management, HNICEM 2019).

EEG-based Control of a 3D Game Using 14-channel Emotiv Epoc+

Malete, T. N., Moruti, K., Thapelo, T. S. & Jamisola, R. S., Nov 2019, *Proceedings of the IEEE 2019 9th International Conference on Cybernetics and Intelligent Systems and Robotics, Automation and Mechatronics, CIS and RAM 2019*. Institute of Electrical and Electronics Engineers Inc., p. 463-468 6 p. 9095807. (Proceedings of the IEEE 2019 9th International Conference on Cybernetics and Intelligent Systems and Robotics, Automation and Mechatronics, CIS and RAM 2019).

Investigating Modular Relative Jacobian Control for Bipedal Robot

Jamisola, R. S., Mbedzi, O., Makati, T. & Roberts, R. G., Nov 2019, *Proceedings of the IEEE 2019 9th International Conference on Cybernetics and Intelligent Systems and Robotics, Automation and Mechatronics, CIS and RAM 2019*. Institute of Electrical and Electronics Engineers Inc., p. 428-432 5 p. 9095768. (Proceedings of the IEEE 2019 9th International Conference on Cybernetics and Intelligent Systems and Robotics, Automation and Mechatronics, CIS and RAM 2019).

An automated solar-powered aquaponics system towards agricultural sustainability in the Sultanate of Oman

Nagayo, A. M., Mendoza, C., Vega, E., Al Izki, R. K. S. & Jamisola, R. S., Sept 14 2017, *2017 IEEE International Conference on Smart Grid and Smart Cities, ICSGSC 2017*. Institute of Electrical and Electronics Engineers Inc., p. 42-49 8 p. (2017 IEEE International Conference on Smart Grid and Smart Cities, ICSGSC 2017).

Cloud-based Wireless Monitoring System and Control of a Smart Solar-Powered Aquaponics Greenhouse to Promote Sustainable Agriculture and Fishery in an Arid Region

Nagayo, A. M. & Jamisola, R., Jun 12 2017.

A review on quality factor enhanced on-chip microwave planar resonators

Kobe, O. B., Chuma, J., Jamisola, R. & Chose, M., 2017, In: *Engineering Science and Technology, an International Journal*. 20, 2, p. 460-466 7 p.

A Survey in the Different Designs and Control Systems of Powered Exoskeleton for Lower Extremities

Baldovino, R. G. & Jamisola, R., 2017, In: *Journal of Mechanical Engineering and Biomechanics*. 1, 4, p. 109-115 13 p.

A Survey on Management of Upstream Land Use and its Impact on Downstream Water Quality Parameters

Patella, W., Jamisola, R., Letswenyo, M. W. & Nagayo, A. M., 2017, In: *Journal of Computational Innovations and Engineering Applications*. 2, 1, p. 1-11 11 p.

Bio-inspired holistic control through modular relative Jacobian for combined four-arm robots

Jamisola R.S., J. & Mastalli, C., 2017, *2017 18th International Conference on Advanced Robotics, ICAR 2017*. Institute of Electrical and Electronics Engineers Inc., p. 346-352 7 p.

BIUST Research & Innovation Symposium 2017: RDAIS 2017

Jamisola, R. (ed.), 2017

Modeling high-Q square spiral with variable segment width and spacing

Kobe, O. B., Chuma, J. M., Jamisola, R. S. & Chose, M., Dec 5 2016, *2016 IEEE Radio and Antenna Days of the Indian Ocean, RADIO 2016*. Institute of Electrical and Electronics Engineers Inc., 7772019. (2016 IEEE Radio and Antenna Days of the Indian Ocean, RADIO 2016).

Task-Space Modular Dynamics for Dual-Arms Expressed through a Relative Jacobian

Jamisola, R. S., Kormushev, P. S., Roberts, R. G. & Caldwell, D. G., Aug 1 2016, In: *Journal of Intelligent and Robotic Systems: Theory and Applications*. 83, 2, p. 205-218 14 p.

Bio-inspired holistic control for a combined four-Arm robot through relative Jacobian of opposite and adjacent dual-Arm pairs

Jamisola, R. S., Jul 26 2016, *Proceedings of the IEEE RAS and EMBS International Conference on Biomedical Robotics and Biomechanics*. IEEE Computer Society, p. 132 1 p. 7523610. (Proceedings of the IEEE RAS and EMBS International Conference on Biomedical Robotics and Biomechanics; vol. 2016-July).

Conceptualizing a Questionnaire-Based Machine Learning Tool that Determines State of Mind and Emotion

Jamisola, R., 2016, In: *Lovotics*. 4, 1

Investigating task prioritization and holistic coordination using relative Jacobian for combined 3-arm cooperating parallel manipulators

Jamisola, R. S. & Ibikunle, F. A., 2016, *Journal of Advanced Computational Intelligence and Intelligent Informatics*. Fuji Technology Press, p. 117-123 7 p. 7393169. (Journal of Advanced Computational Intelligence and Intelligent Informatics; vol. 20).

Modular relative jacobian for combined 3-arm parallel manipulators

Jamisola, R. S., Mastalli, C. & Ibikunle, F., 2016, In: *International Journal of Mechanical Engineering and Robotics Research*. 5, 2, p. 90-95 6 p.

On Modelling Wisdom, Intuition, and Reason

Jamisola, R., 2016, In: *Lovotics*. 4, 1

Modular relative Jacobian for dual-arms and the wrench transformation matrix

Jamisola, R. S., Kormushev, P., Caldwell, D. G. & Ibikunle, F., Sept 23 2015, *Proceedings of the 2015 7th IEEE International Conference on Cybernetics and Intelligent Systems, CIS 2015 and Robotics, Automation and Mechatronics, RAM 2015*. Institute of Electrical and Electronics Engineers Inc., p. 181-186 6 p. 7274617. (Proceedings of the 2015 7th IEEE International Conference on Cybernetics and Intelligent Systems, CIS 2015 and Robotics, Automation and Mechatronics, RAM 2015).

A more compact expression of relative Jacobian based on individual manipulator Jacobians

Jamisola, R. S. & Roberts, R. G., Jan 1 2015, In: *Robotics and Autonomous Systems*. 63, P1, p. 158-164 7 p.

Learning reactive robot behavior for autonomous valve turning

Ahmadzadeh, S. R., Kormushev, P., Jamisola, R. S. & Caldwell, D. G., Jan 1 2015, *2014 IEEE-RAS International Conference on Humanoid Robots, Humanoids 2014*. IEEE Computer Society, Vol. 2015-February. p. 366-373 8 p. 7041386

A Survey On Management of Upstream Land Use as a Direct Input to Energy Requirements in Water Purification Processes

Patella, W., Jamisola, R. & Letswenyo, M. W., 2015.

Energy Requirements in Cryptographic Mechanisms for Secure Wireless Sensor Networks: An Overview
Pule, M., Jamisola, R. & Ibikunle, F., 2015.

Haptic exploration of unknown surfaces with discontinuities

Jamisola, R. S., Kormushev, P., Bicchi, A. & Caldwell, D. G., Oct 31 2014, *IROS 2014 Conference Digest - IEEE/RSJ International Conference on Intelligent Robots and Systems*. Institute of Electrical and Electronics Engineers Inc., p. 1255-1260 6 p. 6942718. (IEEE International Conference on Intelligent Robots and Systems).

Relative impedance control for dual-arm robots performing asymmetric bimanual tasks

Lee, J., Chang, P. H. & Jamisola, R. S., Jul 2014, In: *IEEE Transactions on Industrial Electronics*. 61, 7, p. 3786-3796 11 p., 6523093.

Of Love and Affection and the Gaze Sensor

Jamisola, R., 2014, In: *Lovotics*. 1, 1

Relative task prioritization for dual-arm with multiple, conflicting tasks: Derivation and experiments

Lee, J., Chang, P. H. & Jamisola, R. S., 2013, *2013 IEEE International Conference on Robotics and Automation, ICRA 2013*. p. 1928-1933 6 p. 6630833. (Proceedings - IEEE International Conference on Robotics and Automation).

Guaranteeing task prioritization for redundant robots given maximum number of tasks and singularities

Jamisola, R. S., Chang, P. H. & Lee, J., 2012, *IEEE TENCON 2012: Sustainable Development Through Humanitarian Technology*. 6412276. (IEEE Region 10 Annual International Conference, Proceedings/TENCON).

A Novel Dynamics Identification Method for Rigid-Body Manipulators

Jamisola, R. & Dadios, E. P., 2011.

A Study on the State of Powered-Exoskeleton Design for Lower Extremities

Baldovino, R. G. & Jamisola, R., 2011. 7 p.

A Survey on Current Developments in Tactile Sensing Technology for Robotic Surgery and other Biomedical Applications

Nagayo, A. M. & Jamisola, R., 2011.

Experimental identification of manipulator dynamics through the minimization of its natural oscillations

Jamisola, R. S. & Dadios, E. P., Jan 2010, In: *Journal of Advanced Computational Intelligence and Intelligent Informatics*. 14, 1, p. 39-45 7 p.

Optimization of Failure-Tolerant Workspaces for Redundant Manipulators

Jamisola, R., 2010, In: *Philippine Science Letters*. 3, 1, p. 66-75 10 p.

Dynamics Parameters Identification of Rigid-Body Manipulators through Natural Oscillations

Jamisola, R., Dadios, E. P. & Ang, M. H., 2009, In: *Philippine Computing Journal*. 4, 2, p. 10-18 9 p.

Full Dynamics Identification and Control of PUMA 560 and Mitsubishi PA-10 Robots

Jamisola, R. & Dadios, E. P., 2009.

Identifying Mass, Center of Mass, and Moment of Inertia through Natural Oscillations for Full-Dynamics Control of Robot Manipulators

Jamisola, R., 2009, De la Salle University.

Identifying Moments of Inertia Parameters for Rigid-Body Manipulators

Jamisola, R. & Dadios, E. P., 2009.

Using Metaheuristic Computations to Find the Minimum-Norm-Residual Solution to Linear Systems of Equations
Jamisola, R., Dadios, E. P. & Ang, M. H., 2009, In: *Philippine Computing Journal*. 4, 2, p. 1-9 9 p.

A Comparison between Probabilistic Artificial Neural Network and Simulated Annealing in Finding the Minimum-Norm Residual Solution to Linear Systems of Equations
Jamisola, R., Dadios, E. P. & Ang, M. H., 2008.

A Probabilistic Computation of Artificial Neural Network and Genetic Algorithm in Finding the Minimum-Norm-Residual Solution to Linear Systems of Equations
Jamisola, R. & Dadios, E. P., 2008.

Identifying the failure-tolerant workspace boundaries of a kinematically redundant manipulator
Roberts, R. G., Jamisola, R. S. & Maciejewski, A. A., 2007, *2007 IEEE International Conference on Robotics and Automation, ICRA'07*. p. 4517-4523 7 p. 4209793. (Proceedings - IEEE International Conference on Robotics and Automation).

Failure-tolerant path planning for kinematically redundant manipulators anticipating locked-joint failures
Jamisola, R. S., Maciejewski, A. A. & Roberts, R. G., Aug 2006, In: *IEEE Transactions on Robotics*. 22, 4, p. 603-612 10 p.

Failure-Tolerant Path Planning for Kinematically Redundant Manipulators
Jamisola, R., 2006

Compliant motion using a mobile manipulator: An operational space formulation approach to aircraft canopy polishing
Jamisola, R. S., Oetomo, D. N., Ang, M. H., Khatib, O., Lim, T. M. & Lim, S. Y., 2005, In: *Advanced Robotics*. 19, 5, p. 613-634 22 p.

A computational feasibility study of failure-tolerant path planning
Jamisola, R. S., Maciejewski, A. A. & Roberts, R. G., 2004, In: *Conference on Robotics and Remote Systems- Proceedings*. 10, p. 233-239 7 p.

Failure-tolerant path planning for the PA-10 robot operating amongst obstacles
Jamisola, R. S., Maciejewski, A. A. & Roberts, R. G., 2004, In: *Proceedings - IEEE International Conference on Robotics and Automation*. 2004, 5, p. 4995-5000 6 p.

A Path Planning Strategy for Kinematically Redundant Manipulators Anticipating Joint Failures in the Presence of Obstacles
Jamisola, R. S., Maciejewski, A. A. & Roberts, R. G., 2003, p. 142-148. 7 p.

The operational space formulation implementation to aircraft canopy polishing using a mobile manipulator
Jamisola, R., Ang, M. H., Oetomo, D., Khatib, O., Ming, T. & Lim, S. Y., May 2002, In: *Proceedings - IEEE International Conference on Robotics and Automation*. 1, p. 400-405 6 p.

Integration of Torque Controlled Arm with Velocity Controlled Base for Mobile Manipulation: An Application to Aircraft Canopy Polishing
Oetomo, D., Ang, M. H., Jamisola, R. & Khatib, O., 2002, *International Centre for Mechanical Sciences : Courses and Lectures*. Bianchi, G., Guinot, J.C. & Rzymkowski, C. (eds.). Vienna: Springer Nature, p. 189-199

Dynamics Identification and Control of an Industrial Robot
Jamisola, R., Ang, M. H., Lim, T. M., Khatib, O. & Lim, S. Y., 1999.

Grant Funding Awards

Projects