Faculty of Applied Science

Department of Mechanical Engineering

CLARENCE DE SILVA

Professor and Senior Canada Research Chair

in Mechatronics and Industrial Automation

B.Sc. Eng. (Hon 1, Ceylon); M.A.Sc. (Toronto); Ph.D. (MIT); Ph.D. (Cambridge); D.Eng. (Hon, Waterloo); D.Sc. (Hon, OUSL); Fellow of IEEE, ASME, ASI, CAE, & Royal Society of Canada; Distinguished Visiting Fellow of Royal Academy of Engineering

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Research Interests

- Multi-robot Systems and Applications including Homecare
- Process Automation
- Mechatronics; Integrated and Automated Design
- Control Sensors and Actuators
- Automated Machine Monitoring, Diagnosis, and Repair
- Telemedicine
- Environmental Monitoring

Current Research

- Cooperative mobile robots for human rescue
- Haptic teleoperation and autonomous mobile robots in homecare applications
- Telehealth, telemedicine, and IMAGINE
- Intelligent sensor fusion for machine health monitoring and supervisory control
- Instrumentation of processes for monitoring and control (sensors, actuators, etc.)
- Computer vision applications in process control, and robotics
- Formal techniques for mechatronic system design and evaluation (Mechatronic Design Quotient or MDQ; Automated design evolution, etc.)
- Automated spatio-temporal monitoring of the quality of water sources
- Diagnosis and automated repair of pipelines

Editorial

- *Journal of Control and Intelligent Systems (http://www.actapress.com/Content_of_Journal.aspx?journalID=85)* , Editor-in-Chief
- *International Journal of Hybrid Intelligent Systems,* Book Review Editor
- *International Journal of Information Acquisition,* Editorial Board

Selected Publications

Papers:

- Xia, T. Li, L. Xu, L. Liu, C.W. de Silva, "Fault Diagnosis in Rotating Machinery through Multiple Sensors and Convolutional Neural Networks," *IEEE/ASME Transactions on Mechatronics*, 2017
- Khoshnoud, I.I. Esat, C.W. de Silva, M.M. McKerns, H. Owhadi, "Self-powered Dynamic Systems in the Framework of Optimal Uncertainty Quantification," *Journal of Dynamic Systems, Measurement, and Control, Transactions of ASME*, 2017.
- A. Saliba, C.W. de Silva, "Quasi-dynamic Analysis, Design Optimization, and Evaluation of a Two-finger Underactuated Hand," *Mechatronics*, vol. 33, pp. 93-107, 2016.
- M.K. Tabatabaei, S. Behbahani, C.W. de Silva, "Design Evolution and Synthesis of Multi-domain Engineering Systems Using Artificial Immune System," *Mechatronics*, vol. 39, pp. 103-112, 2016.
- Samarakoon, L. Gamage, C.W. de Silva, "Design Evolution of Engineering Systems Using Bond Graphs and Genetic Programming," *Mechatronics*, vol. 33C, pp. 71-83, 2016.

Books:

- De Silva, C.W., *MODELING OF DYNAMIC SYSTEMS—With Engineering Applications*, Taylor & Francis/CRC Press, Boca Raton, FL, 2017.
- De Silva, C.W., *SENSOR SYSTEMS—Fundamentals and Applications*, Taylor & Francis/CRC Press, Boca Raton, FL, 2017.
- De Silva, C.W., *SENSORS AND ACTUATORS—Engineering System Instrumentation*, 2nd Edition, Taylor & Francis/CRC Press, Boca Raton, FL, 2016.
- De Silva, C.W., *Mechanics of Materials*, Taylor & Francis/CRC Press, Boca Raton, FL, 2014.
- De Silva, C.W., *Mechatronics—A Foundation Course*, Taylor & Francis/CRC Press, Boca Raton, FL, 2010.

For a full list of publications, visit my profile on:

Google scholar (https://scholar.google.ca/citations?hl=en&user=l9zjA3cAAAAJ)

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