

# S Z Sayed Hassen, Ph.D.

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## Employment History

- 2024 – 2025    ■ **Visiting Professor of Control and Computation.** Institut für Automatik, Dept. Inf. Tech. and Electrical Engineering, ETH Zürich, Switzerland
- 2018 – Pres.    ■ **Associate Professor.** Dept. of Electrical & Electronic Engineering, University of Mauritius
- 2012 – 2017    ■ **Senior Lecturer.** Dept. of Electrical & Electronic Engineering, University of Mauritius
- 2012 – 2012    ■ **Research Associate.** University of New South Wales, Canberra, Australia (Jan. 2012 – Aug. 2012)
- 2011 – 2011    ■ **Lecturer.** Dept. of Electrical & Electronic Engineering, University of Mauritius (Jan. 2011 – Dec. 2011)
- 2010 – 2010    ■ **Research Associate.** University of New South Wales, Canberra, Australia (Aug. 2010 – Dec. 2010)
- 2007 – 2010    ■ **Tutor.** University of New South Wales, Canberra, Australia
- 2002 – 2007    ■ **Lecturer.** Dept. of Electrical & Electronic Engineering, University of Mauritius
- 2001 – 2002    ■ **Electronic Design Engineer.** Australian Arrow Pty. Ltd, Carrum Downs, VIC 3201, Australia (Oct. 2001 – Aug. 2002)
- 2000 – 2001    ■ **Dimensional Engineer.** Edag Future Pty. Ltd, Dingley, VIC 3172, Australia (Jan 2000 – Sep 2001.)

## Education

- 1980 – 1985    ■ **Certificate of Primary Education, Notre-Dame de la Paix RCA School, Port-Louis, Mauritius**
- 1986 – 1993    ■ **School Certificate & Higher School Certificate, Royal College Port-Louis, Mauritius, Science Side.**
- 1994 – 1997    ■ **B.Eng. Electrical Engineering, Monash University, Australia. First Class Honours.**
- 1998 – 2000    ■ **M.EngSc., Monash University, Australia** in Electrical Engineering  
Thesis title: *Robust and Gain-Scheduled Control using Linear Matrix Inequalities.*
- 2007 – 2010    ■ **Ph.D., University of New South Wales, Australia** in Electrical Engineering.  
Thesis title: *Optimal and Robust Feedback Control of Quantum Systems.*

## Research Activities

### MPhil/PhD Supervision

- 2015 – 2018    ■ V. Oree, Ph.D, *A multi-criteria decision making framework for the integration of variable renewables in Generation Expansion Planning*
- 2016 – 2023    ■ A. Murdan, Ph.D, *Frequency and Voltage Control in Power Systems with Integrated Wind and Solar Energy Sources*

## Research Activities (continued)

2018 – 2025    ■ H. Shamachurn, *Building Energy Management Control*

### Research Projects

- 2014 – 2015    ■ **Principal Investigator** Development and Control of an Experimental Testbed for a Microgrid using LabVIEW, Duration: 1 year
- 2018 – 2019    ■ **Principal Investigator** Automatic Detection of Electrical Appliances using Machine Learning Techniques with a view to improve Household Energy Savings, Duration: 1 year
- 2018 – 2021    ■ **Co-Investigator** Sustainable Homes for Mauritius: Research into intelligent, eco-friendly, energy and water efficient, healthy and aesthetic solutions, Duration: 3 years
- 2020 – 2021    ■ **Co-Investigator** Improving Energy Efficiency in single-phase electric motor driven water pumps with variable speed drives, Duration: 1 year

### Other Research Activities

- Reviewer for *IEEE Transactions Automatic Control, Systems and Control Letters, International Journal of Electrical Power and Energy Systems, Control and Decision Conference, American Control Conference, IEEE Multi-systems Conference, IEEE Industrial Electronics Conference*
- Session Chair for *IEEE Int. Conf. Industrial Technology, International Federation Automatic Control, Control Conference Africa*
- 2015    ■ Invited participant of the Mauritius Machine Learning Joint Exchange Development Initiative 2015
- 2016    ■ Setting up of University of Mauritius as the Center for High Performance Computing
- Member of International Advisory Committee of Virtual Conference on Computational Science 2016
- 2017    ■ Invited International Programme Committee Member for Control Conference Africa 2017
- Participant in *Renewable Energy Integration Simulation Studies Workshop*
- 2016/18    ■ Chairperson of the Technical Programme Committee for International Conference ELECOM 2016/2018/2020
- 2014/18    ■ Organiser of LabVIEW workshop at University of Mauritius
- 2018    ■ External Examiner for MPhil/PhD thesis for Université des Mascareignes
- 2020    ■ Program Committee of 17th IEEE International Conference on Networking, Sensing and Control
- Co-Chair of National Organising Committee of Control Conference Africa (CCA) 2021
- 2022    ■ Short course run by Australian National University on *Grid Integration of Renewable Energy in Africa*, Awarded: 25 July 2022.
- 2024    ■ Member of IEEE Quantum Computing Systems and Control (QCSC) Committee

## Administrative Contribution

### Departmental Administration

2012 – 14    ■ Head of Electrical and Electronic Engineering Department

## Administrative Contribution (continued)

2014 – 2024    ■ Accreditation Coordinator and Asst. Accreditation Coordinator

### Faculty Administration

2011, 2022    ■ Member of Faculty Board  
2012/13 & 2015/16    ■ IEM Prize Chairperson  
2014    ■ Member of the Award Committee (Mauritius Examinations Syndicate)  
2016    ■ Member of Faculty Research Advisory Committee  
2017    ■ Chairperson of Exemption Committee

### University Administration




2014 – 16    ■ Member of Student Progress and Complaints Committee  
                  ■ Member of the Examinations Committee  
2015    ■ Member of International Year of Light Committee  
                  ■ Member of the Quality Audit Committee  
2016 – 18    ■ Member of the Higher Degrees Committee  
2018 – 24    ■ Member of Examination Results Committee (ERC)  
2020    ■ Member of MPhil/PhD Regulations Committee  
2021 – 2023    ■ Member of the Discipline Committee

### National Committees/Regional and International Involvement

2014 – 2016    ■ Member of the Square Kilometer Array Working Group and Steering Committee for Mauritius.  
2014 – 2015    ■ Member of Advisory Council of Marine Renewable Energy Cluster at Mauritius Research Council  
2015 – 2017    ■ Chairperson of Electrical Engineering Standards Committee at Mauritius Standards Bureau  
2016 – 2017    ■ Member of Technical Committee on “Renewable Energy Generation - Innovative Technologies” at Mauritius Research Council  
2016 – 2020    ■ Board Member of Energy Efficiency Management Office (EEMO)  
2017 – 2020    ■ Chairperson of Energy Efficiency Competitions (Report and Debate)  
2017    ■ Chairperson of Evaluation Committee for “Expression of Interest for the Development of Offshore Wind Farms for the Republic of Mauritius” at Mauritius Research Council  
2017 – 2022    ■ Chairperson of Technical Committee on Engineering Standards and Labelling at Ministry of Energy and Public Utilities  
2018 – Pres.    ■ Alternate Board Member of the Mauritius Renewable Energy Agency (MARENA)  
2019 – Pres.    ■ Engineering Programme Accreditation Assessor/Visit Leader for Institute of Engineers Mauritius/Engineering Accreditation Board  
Dec 2023    ■ Erasmus + Mobility Programme Scholarship – Bialystok University of Technology, Poland  
Jan 2024    ■ Assessor for Promotion assessment exercise from Senior Lecturer to Associate Professor for University of Kwazulu-Natal

## Skills






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- Languages     Fluent in English and French.
- Coding       Proficient with MATLAB, dSPACE, LabVIEW, C, Unix/Linux,  $\text{\LaTeX}$ .
-  Experience with AUTOCAD and VISUAL BASIC.




## Awards, Honours, Prizes and Memberships

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### Awards and Honours

- 1998 – 2001     Overseas Postgraduate Research Scholarship
-  Monash Graduate Scholarship
- 2007 – 2010     International Postgraduate Research Scholarship
-  University College Postgraduate Research Scholarship
- 2010     Research Publication Fellowship

### Prizes

- 1995     Best Second Year **Electronics** student
- 1996     Best Third Year **Electronics** student
-  Best Third Year **Control** student

### Certification

- 2002     Senior Member of **Institute of Electrical and Electronic Engineers (IEEE)**
- 2003     Member of **Council of Registered Professional Engineers (CRPE)**

## Publications

### Journal Articles

- 1 Jahmeerbacus, I., **Sayed Hassen, S. Z.**, Gajadur, Y., & Jugurnauth, R. (2024). A perturb and observe efficiency control method for improving the energy performance of domestic water pumps. *Building Services Engineering Research and Technology*. Submitted.
- 2 Murdan, A. P., Jahmeerbacus, I., & **Sayed Hassen, S. Z.** (2024). Optimizing PID controllers in multisource power systems through evolutionary algorithms. *e-Prime: Advances in Electrical Engineering, Electronics and Energy*. Submitted.
- 3 Shamachurn, H., Seebaruth, M., Kowlessur, N., & **Sayed Hassen, S. Z.** (2024, September). Real-time model predictive control of air conditioners through iot—results from an experimental setup in a tropical climate. *Advanced Control for Applications: Engineering and Industrial Systems*, (e232), 1–14. doi:10.1002/adc2.232
- 4 Murdan, A. P., Jahmeerbacus, I., & **Sayed Hassen, S. Z.** (2023a). Bandwidth oriented approach for the design of a PI controller for a three phase two-stage grid-connected PV system. *International Journal of Electronics*, 1–21. doi:10.1080/00207217.2023.2210299
- 5 Murdan, A. P., Jahmeerbacus, I., & **Sayed Hassen, S. Z.** (2023b, September). Challenges of existing grid codes and the call for enhanced standards. *Clean Technologies and Recycling*, 3(4), 241–256. doi:10.3934/ctr.2023015
- 6 Murdan, A. P., Jahmeerbacus, I., & **Sayed Hassen, S. Z.** (2023c, June). Simulation of the Rotor Side Vector Control of DFIG under different wind speed. *Journal of Electrical Engineering, Electronics, Control and Computer Science*, 9(31), 29–36.   
<https://jeeccs.net/index.php/journal/article/view/343>
- 7 **Sayed Hassen, S. Z.** (2023, June). A Mathematical Characterisation of COVID-19 in Mauritius. *Qeios*, (2632-3834). doi:10.32388/K8JMQG.2
- 8 Shamachurn, H. & **Sayed Hassen, S. Z.** (2023). Development of control-oriented models for a building under regular heating, ventilation and air-conditioning operation – a comparative simulation study and an experimental validation. *Int. J. of Modelling, Identification and Control*, 42(1), 83–104. doi:10.1504/IJMIC.2023.128763
- 9 Oree, V., **Sayed Hassen, S. Z.**, & Fleming, P. J. (2019, November). A multi-objective framework for long-term generation expansion planning with variable renewables. *Applied Energy*, 253, 113589. doi:10.1016/j.apenergy.2019.113589
- 10 Oree, V., **Sayed Hassen, S. Z.**, & Fleming, P. J. (2017, March). Generation expansion planning optimisation with renewable energy integration: a review. *Renewable and Sustainable Energy Reviews*, 69, 790–803. doi:10.1016/j.rser.2016.11.120
- 11 Oree, V. & **Sayed Hassen, S. Z.** (2016, June). A composite metric for assessing flexibility available in conventional generators of power systems. *Applied Energy*, 177, 683–691. doi:10.1016/j.apenergy.2016.05.138
- 12 Schütte, D., **Sayed Hassen, S. Z.**, Karvinen, K. S., Boyson, T. K., Kallapur, A. G., Song, H., ... Heurs, M. (2016, January). Experimental demonstration of frequency autolocking an optical cavity using a time-varying Kalman filter. *Physical Review Applied*, 5(014005). doi:10.1103/PhysRevApplied.5.014005
- 13 Kallapur, A., Schütte, D., Petersen, I., Boyson, T., Huntington, E., **Sayed Hassen, S. Z.**, ... Heurs, M. (2015). Design and implementation of an optical cavity locking controller test bed system. *IEEE Transactions Control Systems Technology*, 23(2), 715–721. doi:10.1109/TCST.2014.2331274

- 14 **Sayed Hassen, S. Z.** (2015). Modelling, analysis and simulation of an optical squeezer. *Applied Mathematical Modelling*, 39(13), 3846–3861. doi:10.1016/j.apm.2014.11.066
- 15 **Sayed Hassen, S. Z. & Petersen, I.** (2014). Frequency locking of an optical cavity using a time-varying Kalman filtering approach. *IEEE Transactions Control Systems Technology*, 22(3), 1143–1150. doi:10.1109/TCST.2013.2266693
- 16 **Sayed Hassen, S. Z.** (2012). A robust approach to the load frequency control problem with speed regulation uncertainty. *Int. J. Elec. and Elec. Engg.* 6(51), 313–320. doi:10.5281/zenodo.1331741
- 17 **Sayed Hassen, S. Z., Heurs, M., Huntington, E. H., Petersen, I. R., & James, M. R.** (2009). Frequency Locking of an Optical Cavity using Linear-Quadratic Gaussian Integral Control. *J. Phys. B: At. Mol. Opt. Phys.* 42(17), 175501. doi:10.1088/0953-4075/42/17/175501

## Conference Proceedings

- 1 **Sayed Hassen, S. Z., Aboudonia, A., & Lygeros, J.** (2025, June). A Data-Driven Model Predictive Controller to manage epidemics: The case of SARS-CoV-2 in Mauritius. In *European Control Conference*. Submitted. EUCA. Greece.
- 2 **Gajadur, Y. & Sayed Hassen, S. Z.** (2022, November). A comparative analysis of Maximum Power Point Tracking (MPPT) Techniques of a Solar Panel. In *4th Int. Conf. on Emerging Trends in Elec., Elec. and Comm. Engg.* (pp. 1–6). IEEE. Mauritius. doi:10.1109/ELECOM54934.2022.9965223
- 3 **Murdan, A. P., Jahmeerbacus, I., & Sayed Hassen, S. Z.** (2022, November). Modeling and simulation of a STATCOM for reactive power control. In *4th Int. Conf. on Emerging Trends in Elec., Elec. and Comm. Engg.* (pp. 1–6). IEEE. Mauritius. doi:10.1109/ELECOM54934.2022.9965258
- 4 **Gajadur, Y. & Sayed Hassen, S. Z.** (2021, December). Experimental validation of three nonlinear MPP solar tracking techniques. In *Control Conference Africa* (pp. 31–36). Int. Fed. Automatic Control. Johannesburg, South-Africa.
- 5 **Gooroochurn, M., Mallet, D., Jahmeerbacus, I., Shamachurn, H., & Sayed Hassen, S. Z.** (2021). A framework for AI-based building controls to adapt passive measures for optimum thermal comfort and energy efficiency in tropical climates. In K. Arai (Ed.), *Proceedings of the Future Technologies Conference* (Vol. 359, 2, pp. 526–539). Lecture Notes in Networks and Systems. Springer.
- 6 **Gobin, S. & Sayed Hassen, S. Z.** (2020, November). Solar tracking for optimum energy generation using extremum seeking control. In *Third Int. Conf. on Emerging Trends in Elec., Elec. and Comm. Engg.* (pp. 118–123). IEEE. Mauritius.
- 7 **Sayed Hassen, S. Z. & Souky, S.** (2020, November). Modeling, control and simulation of a wave energy converter. In *Third Int. Conf. on Emerging Trends in Elec., Elec. and Comm. Engg.* (pp. 124–129). IEEE. Mauritius.
- 8 **Shamachurn, H. & Sayed Hassen, S. Z.** (2020a, November). A comparison between optimization and filtering techniques for RC thermal model identification. In *Third Int. Conf. on Emerging Trends in Elec., Elec. and Comm. Engg.* (pp. 73–78). IEEE. Mauritius.
- 9 **Shamachurn, H. & Sayed Hassen, S. Z.** (2020b, August). Thermal model and disturbance co-identification using optimization and filtering techniques. In *IEEE PES/IAS PowerAfrica Conference* (pp. 855–860). Kenya.
- 10 **Murdan, A., Sayed Hassen, S. Z., & Jahmeerbacus, I.** (2019, October). A performance evaluation of fuzzy logic controllers for load frequency control in a single area network. In



*2nd International Conference on Power Energy, Environment and Intelligent Control* (pp. 411–417). India.

- 11 Mooraby, M. M. R. & **Sayed Hassen, S. Z.** (2018, November). A comparative study of different solar power tracking control techniques. In *International Conf. on Emerging Trends in Elec., Elec. and Comm. Engg.* (pp. 96–106). Mauritius: Springer.
- 12 Azeer, S. A., Ramjug-Ballgobin, R., & **Sayed Hassen, S. Z.** (2017, December). Intelligent controllers for load frequency control of two-area power system. In *Control Conference Africa* (pp. 301–306). Int. Fed. Automatic Control. Johannesburg, South-Africa.
- 13 **Sayed Hassen, S. Z.**, Jahmeerbacus, M. I., Sewraj, K., & Ruhomaun, M. S. (2016, November). A power flow control scheme for photovoltaic to a low voltage microgrid system. In *International Conf. on Emerging Trends in Elec., Elec. and Comm. Engg* (pp. 129–142). Mauritius: Springer.
- 14 Ramjug-Ballgobin, R., **Sayed Hassen, S. Z.**, & Veerapen, S. (2015, December). Load frequency control of a nonlinear two-area power system. In *Int. conf. computing, communication and security* (pp. 345–350). IEEE. Le Meridien, Mauritius.
- 15 **Sayed Hassen, S. Z.** & Petersen, I. R. (2014, August). Extremum seeking control of an optical cavity. In *Proc. of the 19th IFAC World Congress* (pp. 11787–11792). Cape Town, South-Africa.
- 16 **Sayed Hassen, S. Z.** & Jahmeerbacus, M. I. (2013, February). Optimal frequency regulation of a two-area power system. In *IEEE Inter. Conf. on Industrial Tech.* (pp. 140–145). Cape Town, South-Africa.
- 17 Kallapur, A., Schütte, D., Petersen, I., Boyson, T., Huntington, E., **Sayed Hassen, S. Z.**, ... Heurs, M. (2012, October). Digital locking of a three-mirror ring cavity. In *IEEE Multi-conference on Systems and Control* (pp. 794–799). Dubrovnik, Croatia.
- 18 **Sayed Hassen, S. Z.** & Jahmeerbacus, M. I. (2012, April). Optimal frequency regulation of a single-area power system. In *Proc. IASTED Asian Conf. on Modelling, Ident. and Cont.* Phuket, Thailand. doi:10.2316/P.2012.769-087
- 19 **Sayed Hassen, S. Z.**, Petersen, I. R., & Huntington, E. H. (2011, August). Optimal Squeezing using Multivariable Integral LQG Control. In *Proc. of the 18th IFAC World Congress* (pp. 7553–7558). Milano, Italy.
- 20 **Sayed Hassen, S. Z.** & Petersen, I. R. (2010b, July). A time-varying Kalman filter approach to integral LQG frequency locking of an optical cavity. In *American Control Conference* (pp. 2736–2741). Baltimore, MD, USA.
- 21 **Sayed Hassen, S. Z.** & Petersen, I. R. (2010c, September). Optimal amplitude quadrature control of an optical squeezer using an integral LQG approach. In *IEEE Int. Conf. Control Appl.* (pp. 286–291). Yokohama, Japan.
- 22 **Sayed Hassen, S. Z.**, Petersen, I. R., Huntington, E. H., Heurs, M., & James, M. R. (2010, July). LQG control of an optical squeezer. In *American control conference* (pp. 2730–2735). Baltimore, MD, USA.
- 23 Heurs, M., Huntington, E., **Sayed Hassen, S. Z.**, Petersen, I. R., & James, M. (2008, August). Laser Frequency Locking to an Optical Cavity using LQG control. In *Proc. ninth int. conf. quantum comm., meas. and comp.* (Vol. 1110, pp. 295–298). Calgary, Canada: American Institute of Physics.
- 24 **Sayed Hassen, S. Z.**, Huntington, E., Petersen, I. R., & James, M. R. (2008, July). Frequency Locking of an Optical Cavity Using LQG Integral Control. In *Proc. of the 17th IFAC World Congress* (pp. 1821–1826). Seoul, South-Korea.

- 25 **Sayed Hassen, S. Z. & Bhurtun, C.** (2005, May). Trends in the Power Sector in Mauritius. In *Industrial and Commercial Use of Energy Conference* (pp. 137–140). Cape-Town, South-Africa.
- 26 **Sayed Hassen, S. Z., Crusca, F., & Bhurtun, C.** (2005, April). Polytopic and LFT Approach to Gain-Scheduling: A design example. In I. J. Rudas (Ed.), *IEEE Third International Conference on Computational Cybernetics* (pp. 351–356). Hotel Le Victoria, Mauritius.
- 27 **Sayed Hassen, S. Z., Crusca, F., & Abachi, H.** (2000, March). Modelling systems for control studies - An overview. In *ISCA 15th International Conference on Computers and Their Applications* (pp. 418–421). New Orleans, Louisiana.