Thales Costa Silva, Ph.D.

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Postdoctoral Researcher at GRASP Lab

Department of Mechanical Engineering and Applied Mechanics — University of Pennsylvania
School of Engineering and Applied Science — Philadelphia, PA - U.S.

Research Interests

I aspire to develop formal analysis and control design strategies for dynamical systems to shape their behavior and convergence properties. In the long term, I am interested in finding elegant control solutions for distributed control systems operating jointly in real-world environments to enhance the interface between humans and processes in the physical world.

Keywords:

Multi-Agent Systems	Delayed Systems	Nonlinear Systems
Control Theory	Robust Control	Automation & Robotics

Education

Ph.D. in Electrical Engineering — May 2021
Universidade Federal de Minas Gerais
Thesis: *Analysis and Design of Distributed Protocols for Multi-Agent Systems Subject to Input Saturation and Time-Varying Delays*
Supervisors: Dr. Luciano Pimenta and Dr. Fernando Souza

M.Sc. in Electrical Engineering — Apr. 2019
Universidade Federal de Minas Gerais
Dissertation: *Consensus in Multi-Agent Systems with Input Saturation and Time-Varying Delays*
Supervisors: Dr. Luciano Pimenta and Dr. Fernando Souza

B.Sc. in Electrical Engineering — Jan. 2017
Universidade Federal do Tocantins
High Honors (average 9.3/10)
Supervisor: Dr. Kathy Senhorini

Research Experience

Postdoctoral Researcher — Aug. 2022-Present
General Robotics, Automation, Sensing, & Perception (GRASP) Lab at UPenn
Project: *Developing control strategies for stochastic communication in multi-robot systems*
Supervisor: Dr. M. Ani Hsieh

Graduate Researcher — Aug. 2017-May. 2022
Control, Automation, and Robotics Lab at Universidade Federal de Minas Gerais
Project: *Formulated methods to analyze the stability and to design controllers for multi-agent systems subject to dynamical restrictions*
Supervisors: Dr. Luciano Pimenta & Dr. Fernando Souza

Undergraduate Researcher — Jan. 2014-Dec. 2016
Universidade Federal do Tocantins
Projects: *Designed, implemented, and experimentally evaluated microwave band-pass filters in parallel-coupled transmission lines, & developed and implemented auxiliary methods to design electrical transformers, considering running losses*
Supervisor: Dr. Kathy Senhorini

Teaching Experience

Universidade Federal de Minas Gerais
Teaching Assistant, Digital Systems Design and Practice — 1st and 2nd semester of 2020

Universidade Federal do Tocantins
Teaching Assistant, Principles of Electromagnetism — 1st semester of 2016
Teaching Assistant, Differential Calculus — 2nd semester of 2015
Teaching Assistant, Linear Algebra — 1st semester of 2015

Skills

Programming	**Robotics**	**Languages**
Python	ROS	Portuguese: First Language
Matlab	GAZEBO	English: Advanced (*Score TOEFL iBT 102/120*)
C++	OptiTrack	

Scholarships

Coordination for the Improvement of Higher Education Personnel (CAPES)	2017-2021
National Fund for the Development of Education (FNDE)	2014-2016
Undergraduate Teaching Assistant Scholarship	2015-2016

Works in Progress

Silva, T. C. & M. Ani Hsieh. Consensus Analysis in the Presence of Disturbances, Intermittent Interactions, and Input Saturation. Manuscript in Preparation.

Peer Reviewed Publications

Silva, T. C., Leite, V. J. S., Souza, F. O., & Pimenta, L. C. A. Regional Consensus in Discrete-Time Multi-Agent Systems Subject to Saturating Inputs and Time-Varying Delays. International Journal of Control, DOI: 10.1080/00207179.2022.2053207.

Silva, T. C., Souza, F. O., & Pimenta, L. C. A. (2020). Consensus in Multi-Agent Systems Subject to Input Saturation and Time-Varying Delays. International Journal of Systems Science, DOI: 10.1080/00207721.2020.1860267.

Silva, T. C., Souza, F. O., & Pimenta, L. C. A. (2020). Distributed formation-containment control with Euler-Lagrange systems subject to input saturation and communication delays. International Journal of Robust and Nonlinear Control, 30(7), 2999-3022. DOI: 10.1002/rnc.4919.

Silva, T. C., Souza, F. O., & Pimenta, L. C. A. (2018). *Consenso em sistemas multiagentes sujeitos a saturação e atrasos variantes no tempo.* Anais do XXII Congresso Brasileiro de Automação, 1-8. (Published in Portuguese.)

Freitas, S. C. L., **Silva, T. C.**, Silva, G. C., Martins, R., Rezende, R. R., Oliveira, P. S. (2015). *Estratégia para Incremento da Aprendizagem e do Conteúdo Ministrado na Disciplina Conversão de Energia.* Revista SODEBRAS, v. 10, p. 339-344. (Published in Portuguese.)

Conference Publications and Presentations

Silva, T. C., Souza, F. O., & Pimenta, L. C. A. (2018). *Consenso em sistemas multiagentes sujeitos a saturação e atrasos variantes no tempo.* Oral presentation delivered at the Congresso Brasileiro de Automação, 1-8.

Freias, S. C. L., Silva, J. C., **Silva, T. C.** (2015). A New Contribution to the Calculation of Losses in Transformers in Function of Magnetic Flux Density. Oral presentation delivered at the XI Latin American Congress on Electricity Generation and Transmission, 2015, Guaratinguetá. Proceedings and Book of Abstracts of The 11 th Latin-American Congress on Electricity Generation and Transmission - CLAGTEE2015. p. 176-176. ISBN: 978-85-61065-02-7

Silva, T. C., Freitas, S. C. L., Oliveira, P. S., Torres, P. R.(2015) *Aplicativo para dispositivos móveis como ferramenta educacional auxiliar ao projeto de transformadores monofásicos e trifásicos.* Oral presentation delivered at the XI Latin American Congress on Electricity Generation and Transmission, 2015, Guaratinguetá. Proceedings and Book of Abstracts of The 11 th Latin-American Congress on Electricity Generation and Transmission - CLAGTEE2015, p. 176-177. ISBN: 978-85-61065-02-7 (Published in Portuguese.)

References

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Universidade Federal de Minas Gerais, Brazil.

Fernando de Oliveira Souza, Ph.D.
Associate Professor
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Universidade Federal de Minas Gerais, Brazil.