Thales Costa Silva

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Post Doctoral Researcher at the Automatic Coordination of Teams Lab - Brown University

Department of Computer Science — Brown University, Providence, RI - U.S.

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*

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*

B.Sc. in Electrical Engineering *Jan. 2017*

Universidade Federal do Tocantins - High Honors

Academic Appointments

Postdoctoral Research Associate *Jan. 2025-Present*

Automatic Coordination of Teams (ACT) Lab at Brown University

Postdoctoral Researcher *Aug. 2021-Jan. 2025*

General Robotics, Automation, Sensing, & Perception (GRASP) Lab at UPenn

Research Scholar *Aug. 2017-May. 2021*

Control, Automation, and Robotics Lab at Universidade Federal de Minas Gerais

Research Scholar *Jan. 2014-Dec. 2016*

Universidade Federal do Tocantins

Mentorship

Postdoctoral mentorship at Brown University: Lishuo Pan (Ph.D. Student, 2025 — Current), Anoop Kiran (Ph.D. Student, 2025 — Current).
Postdoctoral mentorship at University of Pennsylvania Arjun Kumar (Ph.D. Student, 2023 — 2025) Alice K. Li (Ph.D. Student, 2023 — 2026) Victoria Edwards (Ph.D. Student, 2022 — 2025) Urara Kono (Masters Student, 2022 — 2024) Li Shen (Masters Student, 2021 — 2022)

Teaching Experience

Universidade Federal de Minas Gerais
Teaching Assistant, Digital Systems Design and Practice

Universidade Federal do Tocantins
Teaching Assistant, Principles of Electromagnetism
Teaching Assistant, Differential Calculus
Teaching Assistant, Linear Algebra

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

Skills

Robotics: Multi-Robot Systems, Path Planning, State Estimation, Distributed Control, Model Predictive Control, Adaptive Control, Machine Learning, Optimization, Formal Methods.
Programming Languages: Python, MATLAB, Simulink, C++, Julia.
Software: PyTorch, Robot Operating System (ROS 2), GAZEBO, CoppeliaSim, OptiTrack, Git, OS: Linux, Latex.
Hardware: Raspberry Pi, ESP32, Arduino, IMU, XBee, MSP-430, PIC32.
Languages: English; Portuguese (Native).

Publications in Progress

Victoria Edwards, **Silva, T. C.**, & M. Ani Hsieh. (2025). Adaptive Macroscopic Ensemble Modeling and Control for Robot Teams in Dynamic Environments. Manuscript submitted to RA-L.

Arjun Kumar, **Silva, T. C.**, & M. Ani Hsieh. (2026). Multi-Robot Active SLAM for GPS Denied Flow Mapping. Manuscript submitted to IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS), 2026.

Silva, T. C., Anoop Kiran, & Nora Ayanian. (2026). Nonlinear Sliding Mode Control for Aerial Robots under Uncertainty. Manuscript submitted to IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS), 2026.

Peer Reviewed Publications

Silva, T.C., Yu, X. & Hsieh, M.A (2026). Probabilistic multi-robot planning with temporal tasks and communication constraints. Autonomous Robots 50, 2 (2026). 10.1007/s10514-025-10231-6

Victoria Edwards, **Silva, T. C.**, & M. Ani Hsieh. (2026). Adaptive Macroscopic Ensemble Allocation for Robot Teams Monitoring Spatiotemporal Processes, in Advanced Intelligent Systems, doi: 10.1002/aisy.202501221

L. Pan, M. Catellani, **Silva, T. C.**, L. Sabattini and N. Ayanian. Online Learning-Enhanced High Order Adaptive Safety Control, in IEEE Robotics and Automation Letters, vol. 11, no. 7, pp. 7964-7971, July 2026, doi: 10.1109/LRA.2026.3686645.

Silva, T. C. & Nora Ayanian. (2026). Mind the Gaps: Multi-Robot Feedback-Driven Ergodic Coverage in Unknown Environments To appear in The American Control Conference 2026.

Silva, T. C., Anoop Kiran, & Nora Ayanian. (2025). Anisotropic Diffusion-Driven Ergodic Coverage in Multi-Robot Systems To appear in IEEE International Symposium on Multi-Robot & Multi-Agent Systems (MRS) 2025.

Alice K. Li, **Silva, T. C.**, Victoria Edwards, & M. Ani Hsieh. (2024). KoopMotion: Learning Almost Divergence-Free Koopman Flow Fields for Motion Planning, The Conference on Robot Learninp (CoRL), 2025.

Arjun Kumar, **Silva, T. C.**, Victoria Edwards, & M. Ani Hsieh. (2024). Flow-Based Localization and Mapping for Multi-Robot Systems, in IEEE Robotics and Automation Letters, vol. 10, no. 4, pp. 3278-3285, April 2025, doi: 10.1109/LRA.2025.3540383.

Alice K. Li, **Silva, T. C.**, & M. Ani Hsieh. (2024). EnKode: Active Learning of Unknown Flows With Koopman Operators, in IEEE Robotics and Automation Letters, vol. 9, no. 12, pp. 11282-11289, Dec. 2024, doi: 10.1109/LRA.2024.3486217.

Alysson Ribeiro da Silva, Luiz Chaimowicz, **Silva, T. C.**, & M. Ani Hsieh. (2024). Communication-Constrained Multi-Robot Exploration with Intermittent Rendezvous, 2024 IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS), Abu Dhabi, United Arab Emirates, 2024, pp. 3490-3497.

Kong Yao Chee, **Silva, T. C.**, M. Ani Hsieh, & George J. Pappas. (2024). Uncertainty Quantification and Robustification of Model-based Controllers using Conformal Prediction. Proceedings of the 6th Annual Learning for Dynamics & Control Conference, PMLR 242:528-540, 2024.

Silva, T. C., Xi Yu, & M. Ani Hsieh. (2024). Probabilistic Multi-Robot Planning with Temporal Tasks and Communication Constraints. Manuscript accepted. To appear in DARS2024.

Victoria Edwards, **Silva, T. C.**, & M. Ani Hsieh. (2024). A Macroscopic Ensemble Modeling Approach to Collaborative Task Assignment in Dynamic Environments. Manuscript accepted. To appear in DARS2024.

Silva, T. C. & M. Ani Hsieh. (2023). Local Input-to-State Stability for Consensus in the Presence of Intermittent Communication and Input Saturation, 2023 62nd IEEE Conference on Decision and Control (CDC), Singapore, Singapore, 2023, pp. 7420-7426, doi: 10.1109/CDC49753.2023.10383364.

Victoria Edwards, **Silva, T. C.**, Bharg Mehta, Jasleen Dhanoa, & M. Ani Hsieh. (2023). On Collaborative Robot Teams for Environmental Monitoring: A Macroscopic Ensemble Approach, 2023 IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS), Detroit, MI, USA, 2023, pp. 11148-11153, doi: 10.1109/IROS55552.2023.10342495.

Kong Yao Chee, **Silva, T. C.**, M. Ani Hsieh, & George J. Pappas. (2023). Enhancing Sample Efficiency and Uncertainty Compensation in Learning-based Model Predictive Control for Aerial Robots. 2023 IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS2023), Detroit, MI, USA, 2023, arXiv:2308.00570.

Silva, T. C., Li Shen, Xi Yu, & M. Ani Hsieh. (2022). Receding Horizon Control on the Broadcast of Information in Stochastic Networks. In Proceedings of the 16th International Symposium on Distributed Autonomous Robotic Systems.

Silva, T. C., Victoria Edwards, & M. Ani Hsieh. (2022). Proportional Control for Stochastic Regulation on Allocation of Multi-Robots. In Proceedings of the 16th International Symposium on Distributed Autonomous Robotic Systems.

Victoria Edwards, **Silva, T. C.**, & M. Ani Hsieh. (2022). Stochastic Nonlinear Ensemble Modeling and Control for Robot Team Environmental Monitoring. In Proceedings of the 16th International Symposium on Distributed Autonomous Robotic Systems.

Silva, T. C., Leite, V. J. S., Souza, F. O., & Pimenta, L. C. A. (2023). 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. (2021). 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.)

References

On request.