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Cristiana J. Silva

Professora Associada (com Agregação)
ISTAR-Iscte - Information Sciences, Technologies and Architecture Research Centre
Department of Mathematics (ISTA)



Contacts

E-mail	Cristiana.Joao.Silva@iscte-iul.pt
Office	D2.04
Post Box	357

Academic Qualifications

University/Institution	Type	Degree	Period
Universidade de Aveiro	Aggregation	Matemática	2023
Universidade de Aveiro - Departamento de Matematica	PhD	Matemática	2010
Université d'Orléans	PhD	Matemática	2010
Universidade de Aveiro - Departamento de Matematica	M.Sc.	Matemática - Especialização Análise e Geometria	2005
Universidade de Coimbra, Faculdade de Ciências e Tecnologia	Licenciate	Matemática - Ramo Educacional	2003

Teaching Activities

Teaching Year	Sem.	Course Name	Degree(s)	Coord.
2026/2027	2º	Complements on Differential Calculus	Bachelor Degree in Finance and Accounting;	No
2026/2027	1º	Computational Optimization	Master Degree in Artificial Intelligence;	Yes
2026/2027	1º	Differential and Integral Calculus	Bachelor Degree in Industrial Management and Logistics; Bachelor Degree in Management;	Yes
2025/2026	2º	Complements on Differential Calculus	Bachelor Degree in Management;	No
2025/2026	2º	Computational Optimization		No
2025/2026	1º	Computational Optimization	Master Degree in Artificial Intelligence;	Yes
2025/2026	1º	Differential and Integral Calculus	Bachelor Degree in Industrial Management and Logistics; Bachelor Degree in Management;	Yes
2024/2025	2º	Optimization		No
2024/2025	1º	Computational Optimization	Master Degree in Artificial Intelligence;	Yes
2024/2025	1º	Mathematics		Yes
2023/2024	2º	Optimization		No
2023/2024	1º	Mathematics		No
2022/2023	2º	Optimization		No
2022/2023	1º	Mathematics		No

Supervisions

• Post-doc Supervisions

- Ongoing

	Student Name	Title/Topic	Language	Status	Institution
1	Dilara Yapiskan	Analysis of the Impact of an Innovative Treatment Approach on Diabetes–Obesity Dynamics with Optimal Control	English	Developing	Universidade de Aveiro

- Concluded

	Student Name	Title/Topic	Language	Institution	Concluding Year
1	Dilara Yapkan	Optimal control strategies for the prevention and treatment of human diseases	English	Universidade de Aveiro	2026
2	Asmae Tajani	On a new generation of hybrid mathematical models	English	Universidade de Aveiro	2025

• Ph.D. Thesis

- Ongoing

	Student Name	Title/Topic	Language	Status	Institution
1	Sérgio Castigo	Temporal clustering in Epidemiology: Comparative studies and application to the number of cases and deaths by COVID-19 in Mozambique	Portuguese	Developing	Universidade de Évora

- Concluded

	Student Name	Title/Topic	Language	Institution	Concluding Year
1	ZAITRI MOHAMED ABDELAZIZ	Optimal control and biomathematics: modelling, control and optimization	English	Departamento de Matemática, Universidade de Aveiro	2023
2	Ana Pedro Lemos-Paião	Optimal control and mathematical models in epidemiology	English	Iscte	2019

• M.Sc. Dissertations

- Ongoing

	Student Name	Title/Topic	Language	Status	Institution
1	Alano Carvalho Baptista	Modeling and Optimization of Epidemic Outbreak Forecasting Based on Human Mobility	--	Developing	Iscte
2	Joana Oliveira Duarte	Caracterização da mobilidade na cidade de Lisboa, com base em dados de comunicações móveis	--	Developing	Iscte

Total Citations

Web of Science®	1634
Scopus	1659

Publications

• Scientific Journals

- Scientific journal paper

1	Tajani, A., Silva, C. J. & Cantin, G. (2026). Hybrid reaction–diffusion epidemic models: Dynamics and emergence of oscillations. Mathematical Methods in the Applied Sciences, 49(5), 4074?4095. https://doi.org/10.1002/mma.70334
2	Rocha, F., Silva, C. J. , Pinheiro, S. J., Afreixo, V., Leitão, R. P. & Felgueiras, M. (2025). Characterization of the appointment's reasons for "P—Psychological" on the ICPC-2 scale in primary health care services. Mathematical and Computational Applications, 30(2). https://doi.org/10.3390/mca30020028 - Times Cited Web of Science®: 1 - Times Cited Scopus: 1 - Times Cited Google Scholar: 2
3	Saraiva, A. L., Silva, C. J. , Cabral, J., Antunes, J. P., Rama, P., Pinheiro, S. J....Afreixo, V. (2025). Analysis of primary healthcare indicators. Mathematical and Computational Applications, 30(1). https://doi.org/10.3390/mca30010014 - Times Cited Web of Science®: 1 - Times Cited Scopus: 1 - Times Cited Google Scholar: 2
4	Yapkan, D., Silva, C. J. & Torres, D. F. M. (2024). Optimal control of microcephaly under vertical transmission of Zika. Axioms, 13(11). https://doi.org/10.3390/axioms13110772 - Times Cited Google Scholar: 2
5	Bonnard, B., Rouot, J. & Silva, C. J. (2024). Geometric optimal control of the generalized Lotka–Volterra model of the intestinal microbiome. Optimal Control Applications and Methods, 45(2), 544?574. https://doi.org/10.1002/oca.3089 - Times Cited Web of Science®: 4 - Times Cited Scopus: 6 - Times Cited Google Scholar: 9
6	Tedim, S., Afreixo, V., Felgueiras, M., Leitão, R. P., Pinheiro, S. J. & Silva, C. J. (2024). Evaluating COVID-19 in Portugal: Bootstrap confidence interval. AIMS Mathematics, 9(2), 2756?2765. https://doi.org/10.3934/math.2024136 - Times Cited Web of Science®: 2 - Times Cited Scopus: 2 - Times Cited Google Scholar: 1
7	Zaitri, M. A., Silva, C. J. & Torres, D. F. M. (2023). An analytic method to determine the optimal time for the induction phase of anesthesia. Axioms, 12(9). https://doi.org/10.3390/axioms12090867 - Times Cited Web of Science®: 3 - Times Cited Scopus: 1 - Times Cited Google Scholar: 2

8	Cabral, J. , Afreixo, Vera, Silva, C. J. , Tavares, A. & Marques, A. (2023). A multiobjective optimization approach to pulmonary rehabilitation effectiveness in COPD. Statistics, Optimization and Information Computing, 11(2), 299?331. https://doi.org/10.19139/soic-2310-5070-1505
9	Cantin, G. & Silva, C. J. (2022). Complex network near-synchronization for non-identical predator-prey systems. AIMS Mathematics, 7(11), 19975?19997. https://doi.org/10.3934/math.20221093 - Times Cited Web of Science®: 1 - Times Cited Scopus: 1 - Times Cited Google Scholar: 1
10	Machado, Pedro, Pinheiro, Sofia J., Afreixo, Vera, Silva, C. J. & Leitão, Rui (2022). Graph Theory Approach to COVID-19 Transmission by Municipalities and Age Groups. Mathematical and Computational Applications, 27(5), 86. https://doi.org/10.3390/mca27050086 - Times Cited Web of Science®: 4 - Times Cited Google Scholar: 5
11	Ana P. Lemos-Paião, Maurer, Helmut, Silva, C. J. & Torres, Delfim F. M. (2022). A SIQRB delayed model for cholera and optimal control treatment. Mathematical Modelling of Natural Phenomena, 17, 25. https://doi.org/10.1051/mmnp/2022027 - Times Cited Web of Science®: 13 - Times Cited Scopus: 12 - Times Cited Google Scholar: 19
12	Cantin, G., Guillaume Cantin, Silva, C. J. & Banos, A. (2022). Mathematical analysis of a hybrid model: Impacts of individual behaviors on the spreading of an epidemic. Networks & Heterogeneous Media, 0(0), 0. https://doi.org/10.3934/nhm.2022010 - Times Cited Web of Science®: 4 - Times Cited Scopus: 4 - Times Cited Google Scholar: 9
13	Silva, C. J. (2022). Stability and optimal control of a delayed HIV/AIDS-PrEP model. Discrete & Continuous Dynamical Systems - S, 15(3), 639. https://doi.org/10.3934/dcdss.2021156 - Times Cited Web of Science®: 3 - Times Cited Scopus: 3 - Times Cited Google Scholar: 4
14	Abreu, Zita, Cantin, G., Guillaume Cantin & Silva, C. J. (2021). Analysis of a COVID-19 compartmental model: a mathematical and computational approach. Mathematical Biosciences and Engineering, 18(6), 7979?7998. https://doi.org/10.3934/mbe.2021396 - Times Cited Web of Science®: 10 - Times Cited Scopus: 8 - Times Cited Google Scholar: 16
15	Almeida, Ricardo, Martins, Natália & Silva, C. J. (2021). Global Stability Condition for the Disease-Free Equilibrium Point of Fractional Epidemiological Models. Axioms, 10(4), 238. https://doi.org/10.3390/axioms10040238 - Times Cited Web of Science®: 13 - Times Cited Scopus: 12 - Times Cited Google Scholar: 14
16	Silva, C. J. , Cruz, Carla, Torres, Delfim F. M., Muñuzuri, Alberto P., Carballosa, Alejandro, Area, Iván...et al (2021). Optimal control of the COVID-19 pandemic: controlled sanitary deconfinement in Portugal. Scientific Reports, 11(1). https://doi.org/10.1038/s41598-021-83075-6 - Times Cited Web of Science®: 108 - Times Cited Scopus: 101 - Times Cited Google Scholar: 144

17	Michel, Loïc, Silva, C. J. & Torres, Delfim F. M. (2021). Model-free based control of a HIV/AIDS prevention model. Mathematical Biosciences and Engineering, 19(1), 759?774. https://doi.org/10.3934/mbe.2022034 - Times Cited Web of Science®: 4 - Times Cited Scopus: 3 - Times Cited Google Scholar: 8
18	Ndaïrou, Faïçal, Area, Iván, Nieto, Juan J., Silva, C. J. & Torres, Delfim F. M. (2021). Fractional model of COVID-19 applied to Galicia, Spain and Portugal. Chaos, Solitons & Fractals, 144, 110652. https://doi.org/10.1016/j.chaos.2021.110652 - Times Cited Web of Science®: 86 - Times Cited Scopus: 92 - Times Cited Google Scholar: 119
19	Silva, C. J. , Cantin, G., Guillaume Cantin, Cruz, Carla, Fonseca-Pinto, Rui, Passadouro, Rui...Torres, Delfim F. M. (2021). Complex network model for COVID-19: Human behavior, pseudo-periodic solutions and multiple epidemic waves. Journal of Mathematical Analysis and Applications,, 125171. https://doi.org/10.1016/j.jmaa.2021.125171 - Times Cited Web of Science®: 52 - Times Cited Scopus: 58 - Times Cited Google Scholar: 77
20	Ana P. Lemos-Paião, Silva, C. J. , Torres, Delfim F. M. & Venturino, Ezio (2020). Optimal Control of Aquatic Diseases: A Case Study of Yemen's Cholera Outbreak. Journal of Optimization Theory and Applications, 185, 1008?1030. https://doi.org/10.1007/s10957-020-01668-z - Times Cited Web of Science®: 24 - Times Cited Scopus: 26 - Times Cited Google Scholar: 30
21	Ana P. Lemos-Paião, Silva, C. J. & Torres, Delfim F. M. (2020). A New Compartmental Epidemiological Model for COVID-19 with a Case Study of Portugal. Ecological Complexity, 44, 100885. https://doi.org/10.1016/j.ecocom.2020.100885 - Times Cited Web of Science®: 28 - Times Cited Scopus: 31 - Times Cited Google Scholar: 54
22	Silva, C. J. & Torres, Delfim F. M. (2020). Errata to. Discrete & Continuous Dynamical Systems - S, 13(5), 1619?1621. https://doi.org/10.3934/dcdss.2020343 - Times Cited Web of Science®: 2 - Times Cited Scopus: 2 - Times Cited Google Scholar: 1
23	Silva, C. J. , Cantin, G. & Guillaume Cantin (2020). Synchronization and Self-organization in Complex Networks for a Tuberculosis Model. Mathematics in Computer Science, 15, 107?120. https://doi.org/10.1007/s11786-020-00472-2 - Times Cited Web of Science®: 9 - Times Cited Scopus: 7 - Times Cited Google Scholar: 6
24	Ana P. Lemos-Paião, Silva, C. J. & Torres, Delfim F. M. (2019). A sufficient optimality condition for delayed state-linear optimal control problems. Discrete and Continuous Dynamical Systems - Series B, 24(5), 2293?2313. https://doi.org/10.3934/dcdsb.2019096 - Times Cited Web of Science®: 5 - Times Cited Scopus: 4 - Times Cited Google Scholar: 4

25	Djordevic, Jasmina & Silva, C. J. (2019). A stochastic analysis of the impact of fluctuations in the environment on pre-exposure prophylaxis for HIV infection. Soft Computing,. https://doi.org/10.1007/s00500-019-04611-1 - Times Cited Web of Science®: 8 - Times Cited Scopus: 8 - Times Cited Google Scholar: 11
26	Campos, Carlos, Silva, C. J. & Torres, Delfim F. M. (2019). Numerical Optimal Control of HIV Transmission in Octave/MATLAB. Mathematical and Computational Applications, 25(1), 1?20. https://doi.org/10.3390/mca25010001 - Times Cited Web of Science®: 30 - Times Cited Google Scholar: 50
27	Silva, C. J. & Torres, Delfim F. M. (2019). Stability of a fractional HIV/AIDS model. Mathematics and Computers in Simulation, 164, 180?190. https://doi.org/10.1016/j.matcom.2019.03.016 - Times Cited Web of Science®: 71 - Times Cited Scopus: 77 - Times Cited Google Scholar: 93
28	Cantin, G., Guillaume Cantin & Silva, C. J. (2019). Influence of the topology on the dynamics of a complex network of HIV/AIDS epidemic models. AIMS Mathematics, 4(4), 1145?1169. https://doi.org/10.3934/math.2019.4.1145 - Times Cited Web of Science®: 10 - Times Cited Scopus: 8 - Times Cited Google Scholar: 15
29	Silva, C. J. & Maurer, Helmut (2019). Optimal control of HIV treatment and immunotherapy combination with state and control delays. Optimal Control Applications and Methods, 41(2), 537?554. https://doi.org/10.1002/oca.2558 - Times Cited Web of Science®: 10 - Times Cited Scopus: 7 - Times Cited Google Scholar: 13
30	Lotfi, El Mehdi, Mahrouf, Marouane, Maziane, Mehdi, Silva, C. J. , Torres, Delfim F. M. & Yousfi, Noura (2019). A Minimal HIV-AIDS Infection Model with General Incidence Rate and Application to Morocco Data. Statistics, Optimization & Information Computing, 7(3). https://doi.org/10.19139/soic.v7i3.834 - Times Cited Web of Science®: 14 - Times Cited Scopus: 17 - Times Cited Google Scholar: 20
31	Silva, C. J. , Ana P. Lemos-Paião & Torres, Delfim F. M. (2019). A sufficient optimality condition for non-linear delayed optimal control problems. Pure and Applied Functional Analysis, 4(2), 345?361. - Times Cited Google Scholar: 3
32	Silva, C. J. & Torres, Delfim F. M. (2018). Modeling and optimal control of HIV/AIDS prevention through PrEP. Discrete and Continuous Dynamical Systems - Series S, 11(1), 119?141. https://doi.org/10.3934/dcdss.2018008 - Times Cited Web of Science®: 47 - Times Cited Scopus: 45 - Times Cited Google Scholar: 79
33	Rodrigues, F., Silva, C. J. , Torres, Delfim F. M. & Maurer, Helmut (2018). Optimal control of a delayed HIV model. Discrete and Continuous Dynamical Systems - Series B, 23(1), 443?458. https://doi.org/10.3934/dcdsb.2018030 - Times Cited Web of Science®: 19 - Times Cited Scopus: 22 - Times Cited Google Scholar: 32

34	Denysiuk, R., Silva, C. J. & Torres, Delfim F. M. (2018). Multiobjective optimization to a TB-HIV/AIDS coinfection optimal control problem. Computational and Applied Mathematics, 37(2), 2112?2128. https://doi.org/10.1007/s40314-017-0438-9 - Times Cited Web of Science®: 21 - Times Cited Scopus: 24 - Times Cited Google Scholar: 26
35	Ndaïrou, F., Area, Iván, Nieto, Juan J., Silva, C. J. & Torres, Delfim F. M. (2018). Mathematical modeling of Zika disease in pregnant women and newborns with microcephaly in Brazil. Mathematical Methods in the Applied Sciences, 41(18), 8929?8941. https://doi.org/10.1002/mma.4702 - Times Cited Web of Science®: 52 - Times Cited Scopus: 52 - Times Cited Google Scholar: 71
36	P. Lemos-Pai˜ao, Ana, Silva, C. J. & Torres, Delfim F. M. (2018). A cholera mathematical model with vaccination and the biggest outbreak ofworld's history. AIMS Mathematics, 3(4), 448?463. https://doi.org/10.3934/math.2018.4.448 - Times Cited Web of Science®: 32 - Times Cited Scopus: 33 - Times Cited Google Scholar: 51
37	Wojtak, W., Silva, C. J. & Torres, Delfim F. M. (2018). Uniform asymptotic stability of a fractional tuberculosis model. Mathematical Modelling of Natural Phenomena, 13(1). https://doi.org/10.1051/mmnp/2018015 - Times Cited Web of Science®: 33 - Times Cited Scopus: 37 - Times Cited Google Scholar: 54
38	Djordjevic, J., Silva, C. J. & Torres, Delfim F. M. (2018). A stochastic SICA epidemic model for HIV transmission. Applied Mathematics Letters, 84, 168?175. https://doi.org/10.1016/j.aml.2018.05.005 - Times Cited Web of Science®: 108 - Times Cited Scopus: 116 - Times Cited Google Scholar: 139
39	Area, Iván, Ndaïrou, F., Nieto, Juan J., Silva, C. J. & Torres, Delfim F. M. (2018). Ebola model and optimal control with vaccination constraints. Journal of Industrial and Management Optimization, 14(2), 427?446. https://doi.org/10.3934/jimo.2017054 - Times Cited Web of Science®: 63 - Times Cited Scopus: 68 - Times Cited Google Scholar: 112
40	Ana P. Lemos-Paião, Silva, C. J. & Torres, Delfim F. M. (2017). An epidemic model for cholera with optimal control treatment. Journal of Computational and Applied Mathematics, 318, 168?180. https://doi.org/10.1016/j.cam.2016.11.002 - Times Cited Web of Science®: 99 - Times Cited Scopus: 105 - Times Cited Google Scholar: 156
41	Rocha, E.M., Silva, C. J. & Torres, Delfim F. M. (2017). The effect of immigrant communities coming from higher incidence tuberculosis regions to a host country. Ricerche di Matematica,, 1?24. https://doi.org/10.1007/s11587-017-0350-z - Times Cited Web of Science®: 6 - Times Cited Scopus: 7 - Times Cited Google Scholar: 10

42	Silva, C. J. & Torres, Delfim F. M. (2017). A SICA compartmental model in epidemiology with application to HIV/AIDS in Cape Verde. Ecological Complexity, 30, 70?75. https://doi.org/10.1016/j.ecocom.2016.12.001 - Times Cited Web of Science®: 79 - Times Cited Scopus: 83 - Times Cited Google Scholar: 121
43	Silva, C. J. , Torres, Delfim F. M. & Venturino, Ezio (2017). Optimal Spraying in Biological Control of Pests. Mathematical Modelling of Natural Phenomena, 12(3), 51?64. https://doi.org/10.1051/mmnp/201712305 - Times Cited Web of Science®: 11 - Times Cited Scopus: 10 - Times Cited Google Scholar: 16
44	Silva, C. J. , Maurer, Helmut & Torres, Delfim F. M. (2017). Optimal control of a tuberculosis model with state and control delays. Mathematical Biosciences and Engineering, 14(1), 321?337. https://doi.org/10.3934/mbe.2017021 - Times Cited Web of Science®: 60 - Times Cited Scopus: 62 - Times Cited Google Scholar: 94
45	D. Rocha, Silva, C. J. & Torres, Delfim F. M. (2016). Stability and optimal control of a delayed HIV model. Mathematical Methods in the Applied Sciences,. https://doi.org/10.1002/mma.4207 - Times Cited Web of Science®: 35 - Times Cited Scopus: 39 - Times Cited Google Scholar: 61
46	Silva, C. J. & Torres, Delfim F. M. (2015). A TB-HIV/AIDS coinfection model and optimal control treatment. Discrete and Continuous Dynamical Systems, 35(9), 4639?4663. https://doi.org/10.3934/dcds.2015.35.4639 - Times Cited Web of Science®: 88 - Times Cited Scopus: 88 - Times Cited Google Scholar: 161
47	Denysiuk, R., Silva, C. J. & Torres, Delfim F. M. (2015). Multiobjective approach to optimal control for a tuberculosis model. Optimization Methods and Software, 30(5), 893?910. https://doi.org/10.1080/10556788.2014.994704 - Times Cited Web of Science®: 27 - Times Cited Scopus: 27 - Times Cited Google Scholar: 39
48	Rodrigues, P., Silva, C. J. & Torres, Delfim F. M. (2014). Cost-Effectiveness Analysis of Optimal Control Measures for Tuberculosis. Bulletin of Mathematical Biology, 76(10), 2627?2645. https://doi.org/10.1007/s11538-014-0028-6 - Times Cited Web of Science®: 86 - Times Cited Scopus: 92 - Times Cited Google Scholar: 129
49	Silva, C. J. & Torres, Delfim F. M. (2013). Optimal control for a tuberculosis model with reinfection and post-exposure interventions. Mathematical Biosciences, 244(2), 154?164. https://doi.org/10.1016/j.mbs.2013.05.005 - Times Cited Web of Science®: 120 - Times Cited Scopus: 120 - Times Cited Google Scholar: 175
50	Silva, C. J. & Torres, Delfim F. M. (2012). Optimal control strategies for tuberculosis treatment: A case study in Angola. Numerical Algebra, Control and Optimization, 2(3), 601?617. https://doi.org/10.3934/naco.2012.2.601 - Times Cited Web of Science®: 24 - Times Cited Scopus: 29 - Times Cited Google Scholar: 47

51	Silva, C. J. & Trélat, E. (2010). Smooth regularization of bang-bang optimal control problems. IEEE Transactions on Automatic Control, 55(11), 2488?2499. https://doi.org/10.1109/TAC.2010.2047742 - Times Cited Web of Science®: 75 - Times Cited Scopus: 77 - Times Cited Google Scholar: 118
52	Silva, C. J. & Trélat, E. (2010). Asymptotic approach on conjugate points for minimal time bangbang controls. Systems and Control Letters, 59(11), 720?733. https://doi.org/10.1016/j.sysconle.2010.08.008 - Times Cited Web of Science®: 9 - Times Cited Scopus: 6 - Times Cited Google Scholar: 14
53	Silva, C. J. & Torres, Delfim F. M. (2006). Two-dimensional Newton's problem of minimal resistance. Control and Cybernetics, 35(4), 965?975. - Times Cited Web of Science®: 7 - Times Cited Google Scholar: 15
54	Silva, C. J. & Torres, Delfim F. M. (2006). Absolute extrema of invariant optimal control problems. Communications in Applied Analysis, 10(4), 503?516. - Times Cited Scopus: 9 - Times Cited Google Scholar: 11

- Editorial

1	Silva, C. J. , Monique Chyba & Guillermo Huerta Cuellar (2024). Editorial: Mathematical modeling and optimization for real life phenomena. Frontiers in Applied Mathematics and Statistics, 10. https://doi.org/10.3389/fams.2024.1389061
2	Martins, N., Almeida, R., Silva, C. J. & Ammi, M. R. S. (2023). Editorial for the special issue of Axioms “Calculus of variations, optimal control and mathematical biology: A themed issue dedicated to Professor Delfim F. M. Torres on the occasion of his 50th birthday”. Axioms, 12(2). https://doi.org/10.3390/axioms12020110

• Books and Book Chapters

- Book editor

1	Silva, C. J. , G. Cantin, P. Patrício & A. J. Soares (2026). Mathematical Modelling of Multi-scale Control Systems: Applications to Human Diseases. AIMS.

- Book chapter

1	Boudjellal, L. & Silva, C. J. (2025). Analysis of the impact of time delay incorporation in mathematical models of cellular population dynamics. In Hemen Dutta (Ed.), Mathematical modeling in bioscience: Theory and applications (pp. 1?17). Elsevier. https://doi.org/10.1016/B978-0-44-315445-4.00007-X - Times Cited Scopus: 2 - Times Cited Google Scholar: 5
2	Silva, C. J. & Cantin, G. (2024). Optimal control synchronization of a complex network of predator-prey systems. In Bernard Bonnard, Monique Chyba, David Holcman and Emmanuel Trélat (Ed.), Ivan Kupka legacy: A tour through controlled dynamics (pp. 283?304). American Institute of Mathematical Sciences.

3	Ghaffari, Peyman, Silva, C. J. & Torres, Delfim F. M. (2023). Mathematical models and optimal control in mosquito transmitted diseases.. CRC Press. https://doi.org/10.1201/9781003035992-7 - Times Cited Google Scholar: 3
4	Couras, Juliana, Area, Iván, Nieto, Juan J., Silva, C. J. & Torres, Delfim F. M. (2021). Optimal Control of Vaccination and Plasma Transfusion with Potential Usefulness for Covid-19. Analysis of Infectious Disease Problems (Covid-19) and Their Global Impact (pp. 509?525). Springer Singapore. https://doi.org/10.1007/978-981-16-2450-6_23 - Times Cited Scopus: 5 - Times Cited Google Scholar: 9
5	Silva, C. J. & Torres, Delfim F. M. (2020). On SICA Models for HIV Transmission. Mathematical Modelling and Analysis of Infectious Diseases (pp. 155?179). Springer International Publishing. https://doi.org/10.1007/978-3-030-49896-2_6 - Times Cited Scopus: 9 - Times Cited Google Scholar: 12
6	Ana P. Lemos-Paião, Silva, C. J. & Torres, Delfim F. M. (2020). A Survey on Sufficient Optimality Conditions for Delayed Optimal Control Problems. Mathematical Modelling and Analysis of Infectious Diseases (pp. 323?342). Springer International Publishing. https://doi.org/10.1007/978-3-030-49896-2_12
7	Silva, C. J. & Torres, Delfim F. M. (2015). Optimal Control of Tuberculosis: A Review. In J. P. Bourguignon, R. Jeltsch, A. Pinto and M. Viana (Ed.), Dynamics, Games and Science, CIM Series in Mathematical Sciences 1 (pp. 701?722). Springer International Publishing. - Times Cited Web of Science®: 13 - Times Cited Google Scholar: 31

• Conferences/Workshops and Talks

- Publication in conference proceedings

1	Caio, P. & Silva, C. J. (2025). Application of indirect methods to optimal control problems in epidemiology. In Antonio Pedro Aguiar, Paula Rocha Malonek, Vítor Hugo Pinto, Fernando A. C. C. Fontes, Roman Chertovskih (Ed.), CONTROLO 2024: Proceedings of the 16th APCA International Conference on Automatic Control and Soft Computing (pp. 444?454). Springer. https://doi.org/10.1007/978-3-031-81724-3_40 - Times Cited Google Scholar: 1

- Talk

1	Silva, C. J. , N. Martins & R. Almeida (2026). Global stability of disease free equilibria in fractional epidemic models. Differential Equations, Optimization Techniques and their Industrial Applications (DEOTIA26),.
2	Silva, C. J. & G. Cantin (2026). Hybrid models and optimal control of epidemic dynamics. Seminário do CIMA/Programa de doutoramento em Matemática da Universidade de Évora,.
3	Silva, C. J. (2026). Modeling and optimal control of SICA epidemic models. Scientific Computing and Differential Equations (SciCADE 2026),.
4	Silva, C. J. & G. Cantin (2025). Near-synchronization and optimal control of a complex network of Lotka-Volterra systems. Conference on Models in Population Dynamics, Ecology, and Evolution (MPDEE'25),.
5	Silva, C. J. (2025). Mathematical modeling and optimal control of infectious diseases. Department of Mathematics Seminar, University of Évora,.

6	Silva, C. J. (2025). Mathematical modelling of infectious diseases: bridging traditional and modern approaches. Journées Internationales des Sciences de l'Ingénieur et de l'Intelligence Artificielle (JSIIA),.
7	Silva, C. J. (2025). Mathematical modelling and optimal control: applications in epidemic and ecological problems. Analysis Seminar,.
8	Silva, C. J. & G. Cantin (2025). Optimal control and synchronization in complex networks of Lotka-Volterra systems. 16th Dynamical Systems applied on Biology and Natural Sciences (DSABNS 2025),.
9	Silva, C. J. (2025). Hybrid mathematical models in epidemiology. Systems and Control Group Workshop 2025,.
10	Silva, C. J. (2025). Applications of optimal control theory: from Newton's minimal resistance problem to epidemiological models. Seminar of the Doctoral Program in Mathematics, Department of Mathematics,.
11	Silva, C. J. & Pedro Caio (2024). Application of indirect methods to optimal control problems in epidemiology. International Conference on Automatic Control and Soft Computing (CONTROLO 2024),.
12	Silva, C. J. & Guillaume Cantin (2024). Optimal control synchronization of a complex network of Lotka-Volterra systems. French-German-Spanish Conference on Optimization 2024,.
13	Silva, C. J. , Guillaume Cantin & Arnaud Banos (2024). Modeling the impact of individual behaviors on epidemic spreading through hybrid models. 15th Conference on Dynamical Systems Applied to Biology and Natural Sciences, DSABNS 2024,.
14	Silva, C. J. (2024). Optimal control applications: from Newton's minimal resistance problem to biological models. International Meeting on Applied Mathematics 2024 (IMAME'2024),.
15	Silva, C. J. (2023). Aplicações da Matemática. International Day of Mathematics - March14 ESECS - ESTG, IPLeiria,.
16	Silva, C. J. & Guillaume Cantin (2023). Complex network near-synchronization for Lotka-Volterra predator-prey models. European Conference on Numerical Mathematics and Advanced Applications (ENUMATH),.
17	Silva, C. J. & Guillaume Cantin (2023). Near-synchronization of predator-prey complex networks. Journées d'Analyse Numérique et Optimisation - JANO'14,.
18	Gomes, D., Silva, C. J. & Filipe, P.A. (2023). Classic and deep learning techniques for temporal clustering and mathematical modeling. Encontro Anual do CIMA 2023,.
19	Silva, C. J. , Cantin, G. & Banos, A. (2022). Impact of individual behaviors on epidemic spreading through hybrid mathematical models. 12th European Conference on Mathematical and Theoretical Biology ECMTB 2022,.

• Other Publications

- Master's Dissertation

1	Silva, C. J. (2005). Abordagens do Cálculo das Variações e Controlo Óptimo ao problema de Newton de Resistência Mínima.. - Times Cited Google Scholar: 5

- Doctoral Thesis

1	Silva, C. J. (2010). Regularization and Bang-bang Conjugate Times in Optimal Control..

Research Projects

Project Title	Role in Project	Partners	Period
Mathematical Modelling of Multi-scale Control Systems: applications to human diseases	Principal Researcher	ISTAR-Iscte (SCM), UA - Leader (Portugal), UMInho - (Portugal), SISSA - (Italy), NOVA.ID.FCT - (Portugal), Université de Nantes - (France)	2023 - 2026

Academic Management Positions

Director (2025 - 2028)
Unit/Area: Master Degree in Applied Computational Mathematics

Membro (Docente) (2025 - 2027)
Unit/Area: Comissão Pedagógica

Professional Associations

European Society for Mathematical and Theoretical Biology (Since 2019)

Sociedade Portuguesa de Matemática (Since 2000)

Organization/Coordination of Events

Type of Organization/Coordination	Event Title	Organizer	Year
Member of scientific event committee	Conference Academic Success in Higher Education	Instituto Superior de Engenharia do Porto	2025
Member of scientific event's organizing committee	VI Workshop in BioMathematics	Universidade de Aveiro	2024
Member of scientific event's organizing committee	4th Portuguese Meeting in Biomathematics	Universidade do Minho	2024
Coordination of scientific event (with scientific committee) outside of ISCTE-IUL	International Meeting on Applied Mathematics 2024" (IMAME'2024)	Universidade de Aveiro e FSTE, UMI, Marrocos	2024
Member of scientific event's organizing committee	BioMathDay2024	Universidade de Aveiro	2024

Member of scientific event's organizing committee	V Workshop in BioMathematics	CIDMA, Universidade de Aveiro	2023
Member of scientific event's organizing committee	IV Workshop in BioMathematics	Linha Temática BioMath, CIDMA, Universidade de Aveiro	2022
Member of non-scientific event's organizing committee	Co-organizer of the meeting III Encontro Português de Biomatemática		2022
Member of non-scientific event's organizing committee	Co-organisor of the meeting: III Workshop BioMathematics https://sites.google.com/view/3wsbiomath2021/		2021
Member of non-scientific event's organizing committee	Co-organisor of the meeting: II Workshop in BioMathematics, online event. https://sites.google.com/view/ltbiomath/activities-2020		2020
Member of non-scientific event's organizing committee	Co-organizer of the meeting: Annual meeting of the Center for Research & Development in Mathematics and Applications (CIDMA). https://sites.google.com/view/cidma2020/home		2019 - 2020
Member of scientific event's organizing committee	Member of the organising committee of the 4th Edition of The Cape Verde International Days on Mathematics, CVIM'2020, in Praia, Cape Verde. https://sites.google.com/view/cvim2020/organization		2019 - 2021
Member of non-scientific event's organizing committee	Co-organisor of the meeting: I Workshop in BioMathematics https://sites.google.com/view/biomath2019/home		2019
Coordination of scientific event (with scientific committee) outside of ISCTE-IUL	Local organizer of the COST Action CA16227 Special Working Group Meeting for WG1, WG2 and WG6.		2019
Member of scientific event's organizing committee	Member of the organising committee of the 6th International Conference on Complex Dynamical System in Life Science: Modeling & Analysis (ICCDS2020) in Al Ain, Department of Mathematical Sciences at the United Arab Emirates University. The 6th ICCDS'2020 is organized with the association of the Complex Systems Institute in Normandie, University of Le Havre, France, and the Center for Research in Mathematics and Applications, Universidade de Aveiro, Portugal. https://conferences.uaeu.ac.ae/iccds2020/en/index.shtml		2019 - 2020
Member of scientific event's organizing committee	Member of the organising committee of the Annual workshop of the Systems and Control Group. September 13 (part I) and September 18 (part II), 2019. https://sites.google.com/view/workshop-sc2019/home		2019

Member of scientific event's organizing committee	Member of the organising committee of the I Workshop in BioMathematics. Joint organization between the Interdisciplinarity Line of the Centre for Mathematics and Applications of the Faculty of Sciences and Technology of NOVA University of Lisbon and the Thematic Line BioMathematics of the Center for Research & Development in Mathematics and Applications of the University of Aveiro.		2019
Coordination of scientific event (with scientific committee) outside of ISCTE-IUL	Local organizer of a Working Group Meeting of Cost Action CA16227 - Investigation and Mathematical Analysis of Avant-garde Disease Control via Mosquito NanoTech-Repellents.		2018
Coordination of scientific event (with scientific committee) outside of ISCTE-IUL	Chair of the 5th International Conference on Complex Dynamical Systems in Life Sciences: Modeling and Analysis (5thICCDS'2018) https://sites.google.com/view/5thiccds2018/home		2018
Coordination of scientific event (with scientific committee) outside of ISCTE-IUL	Local Organizer of the Training School on Optimal Control Theory and Mosquito Control Strategies under the COST Action CA16227 - Investigation and Mathematical Analysis of Avant-garde Disease Control via Mosquito Nano-Tech-Repellentstext, Department of Mathematics of the University of Aveiro, Portugal. https://sites.google.com/view/tsocmosquito/home		2018
Member of scientific event's organizing committee	Second edition of New Horizons in Optimal Control (NHOC 2017), first held in 2014 (NHOC 2014). https://paginas.fe.up.pt/~mrpinho/NHOC2017_HUH/		2017
Coordination of scientific event (with scientific committee) outside of ISCTE-IUL	Annual workshop of the R&D System and Control Group of CIDMA. https://sites.google.com/view/workshop-sc2017/home		2017
Member of scientific event's organizing committee	VII Workshop in BioMathematics	Universidade de Aveiro	34

Scientific Editing/Reviewing Activities

Type of Activity	Journal Title	ISSN/Quartile	Period	Language
Member of scientific journal editing staff	Networks and Heterogeneous Media (NHM)	1556-1801 / Q2	Since 2025	English
Member of scientific journal editing staff	AIMS Mathematics	2473-6988 / Q1 (T5)	Since 2021	English