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Rui J. Lopes

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Curriculum

Rui J. Lopes was born on April 21, 1970 in Lisbon. He graduated in Electrical and Computer Engineering in 1993 from Instituto Superior Técnico of the Technical University of Lisbon where he also obtained a Master's degree in Electrical and Computer Engineering in 1996 developing work on simulation of mobile communications systems under the guidance of Professor José Manuel Brázio. In 2005 he obtained a PhD in Computer Science from the University of Lancaster, United Kingdom, as a result of research on distributed multimedia systems supporting the ISO/MPEG-7 standard, under the supervision of Professor David Hutchison. His professional activity has been divided between teaching in the higher education system and research. He started his teaching activity in October 1996 as a 1st triennium Teaching Assistant at the Escola Superior de Tecnologia do Instituto Politécnico de Castelo Branco where he contributed to the start of the Bachelor in Electrical and Telecommunications Engineering. He joined the Department of Information Sciences and Technologies of ISCTE in October 1997 where he is, since January 2021, Associated Professor. He has taught curricular units of the three cycles of studies in different areas mostly in network science, computer networks and network services. He has supervised the work of more than a dozen master theses and five doctoral theses, three of which have already been concluded with the highest classification. In addition to his teaching activity he has contributed significantly to the activity of ISCTE having promoted various internationalization programs (e.g. Erasmus and IAESTE) and was, between January 2018 and September 2020, the director of the doctoral program in Complexity Sciences (taught jointly with the Faculty of Sciences of the University of Lisbon). His research activity has mostly been developed at the Institute of Telecommunications (IT) and focuses in the study of complex systems and networks with several application areas: from multimedia network systems to social systems. In this context he is particularly interested in the study and characterisation

of processes and dynamic mechanisms in multilayer hypernetworks. In his curriculum *Ciência Vitae* the most frequent terms in the context of scientific, technological and artistic cultural output are: soccer; annotation; mobile application; distributed; crowd-sourcing; Multilevel hypernetworks; Dynamics; Team synergies; Team collective behaviour; Performance analysis; Association football; Complex systems; Networks; Clustering.

Research Interests

Computer Networks

Complex Systems' Dynamics

Networked Multimedia Systems (Metadata and QoE)

Academic Qualifications

University/Institution	Type	Degree	Period
University of Lancaster	PhD	Ciências da Computação	2005
Instituto Superior Técnico - UTL	M.Sc.	Engenharia Electrotécnica e de Computadores	1997
Instituto Superior Técnico - UTL	Licenciante	Engenharia Electrotécnica e de Computadores	1994

Teaching Activities

Teaching Year	Sem.	Course Name	Degree(s)	Coord
2026/2027	2º	Fundamentals of Computer Networks	Bachelor Degree in Computer Science and Business Management (PL); Bachelor Degree in Computer Engineering (PL); Bachelor Degree in Computer Engineering;	No
2026/2027	1º	Intelligent Network and Service Management	Master Degree in Telecommunications and Computer Engineering;	Yes
2025/2026	2º	Fundamentals of Computer Networks	Bachelor Degree in Computer Science and Business Management (PL); Bachelor Degree in Computer Engineering (PL); Bachelor Degree in Computer Engineering;	No
2025/2026	1º	Intelligent Network and Service Management	Master Degree in Telecommunications and Computer Engineering;	Yes
2024/2025	2º	Fundamentals of Computer Networks	Bachelor Degree in Computer Science and Business Management (PL); Bachelor Degree in Computer Engineering (PL); Bachelor Degree in Computer Engineering;	No

2024/2025	1°	Intelligent Network and Service Management	Master Degree in Telecommunications and Computer Engineering;	Yes
2023/2024	2°	Fundamentals of Computer Networks	Bachelor Degree in Computer Science and Business Management (PL); Bachelor Degree in Computer Engineering (PL); Bachelor Degree in Computer Engineering;	No
2023/2024	1°	Phd Thesis in Complexity Sciences		No
2023/2024	1°	Intelligent Network and Service Management	Master Degree in Telecommunications and Computer Engineering;	Yes
2022/2023	2°	Fundamentals of Computer Networks	Bachelor Degree in Computer Science and Business Management (PL); Bachelor Degree in Computer Engineering (PL); Bachelor Degree in Computer Engineering;	No
2022/2023	1°	Sustainable and Resilient Networks		Yes
2022/2023	1°	Intelligent Network and Service Management	Master Degree in Telecommunications and Computer Engineering;	Yes
2021/2022	2°	Fundamentals of Computer Networks	Bachelor Degree in Computer Science and Business Management (PL); Bachelor Degree in Computer Engineering (PL); Bachelor Degree in Computer Engineering;	No
2021/2022	1°	Intelligent Network and Service Management	Master Degree in Telecommunications and Computer Engineering;	Yes
2020/2021	2°	Phd Thesis in Complexity Sciences		Yes
2020/2021	2°	Research Topics in Social Stigmergy		Yes
2020/2021	2°	Fundamentals of Computer Networks	Bachelor Degree in Computer Engineering (PL); Bachelor Degree in Computer Engineering; Bachelor Degree in Computer Science and Business Management;	No
2020/2021	2°	Phd Thesis in Complexity Sciences		No
2020/2021	1°	Sustainable and Resilient Networks		Yes
2020/2021	1°	Research Methods for Phd in Complexity Sciences I		Yes
2020/2021	1°	Advanced Topics in Complexity Sciences I		Yes

Supervisions

• Ph.D. Thesis

- Ongoing

	Student Name	Title/Topic	Language	Status	Institution
1	Natalia Pasishnyk	A multiplex network approach to analyze sustainable development goals (SDGs) interlinkages	English	Delivered	Iscte
2	Tousif Ahmed Inayath Syed	Study of deception networks from a complexity science perspective	English	Developing	Iscte
3	Luís António Guedes Caldeira	Collective behavior processes and patterns in elite football: gender differences and contributions to female football practice	English	Developing	Universidade Lusófona de Humanidades e Tecnologias
4	José V. Matos	--	English	Developing	Iscte

- Concluded

	Student Name	Title/Topic	Language	Institution	Concluding Year
1	Pedro Artur de Almeida Fidalgo	Hubs and Gatekeepers, the attributes of Capability in Complex networks	English	Iscte	2026
2	Nelson Cândido Andrade Caldeira	Functional space-time properties of team synergies in high-performance football.	English	--	2023
3	José Luís Loureiro Ramada Pereira	Communities in Temporal Networks: From theoretical underpinnings to real-life applications	English	Iscte	2022
4	João Paulo Duarte Ramos	Complex Networks Analysis in Team Sports Performance: Multilevel Hypernetworks Approach to Soccer Matches	--	Iscte	2019
5	Carlos Miguel Reis Silva de Oliveira e Lemos	On Agent-Based Modelling of Large Scale Conflict Against a Central Authority: from Mechanisms to Complex Behaviour	--	Iscte	2016

• M.Sc. Dissertations

- Ongoing

	Student Name	Title/Topic	Language	Status	Institution
1	Rodrigo da Costa Sanches	Low-Code System for Odds Calculation in Sports Betting – A Football Case Study	--	Developing	Iscte

2	Rúben Filipe Martins da Rocha	Tactical Analysis of Football Matches using Neural Networks	--	Developing	Iscte
3	João Maria Pereira Nunes	From technology to the whistle: the contribution of information technologies to the development of professional football referees in Portugal	--	Developing	Iscte
4	Sara Ataíde Santos	Tactics and Plays Detection in Futsal Videos	--	Developing	Iscte
5	Pedro Amaral Beja Cláudio Canelas	Tracking and Motion Detection in Futsal Using Computer Vision Algorithms	--	Developing	Iscte

- Concluded

	Student Name	Title/Topic	Language	Institution	Concluding Year
1	Deise Eveline Gonçalves Sanches	Proactive Intelligence: A System for Detecting and Preventing Failures	Portuguese	Iscte	2025
2	Pedro Miguel Simão da Silva	Development of young players and their market value: A study of the Championship soccer league in the 22/23 season	Portuguese	Iscte	2024
3	João Carlos Pereira da Silva	Data grouping by performance characteristics of athletes in Portugal's First Football League	English	Iscte	2024
4	Rita Guerreiro de Morais	Machine learning for tactical performance analysis of handball teams	Portuguese	Iscte	2024
5	João Rodrigo Ferreira Fernandes de Castro	Artificial Intelligence in Padel sport: Creation of an AI System	English	Iscte	2023
6	Francisca Miranda Guedes	Activity detection and classification in public sports spaces	English	Iscte	2023
7	Hugo Vítor Carapinha Muacho	mISoccer: Machine learning based tool to investigate factors influencing passing success	Portuguese	Iscte	2023
8	Gustavo Henrique de Sousa Silva	Football players performance analysis and formal and informal media: Sentiment Analysis and Semantic Similarity	English	Iscte	2021
9	Sandro Camilo Alpoim Ferreira	Distributed system for data collection in sport events	Portuguese	Iscte	2020
10	David Eduardo Louro Adão Cadeirinhas	diScount - Distributed Mobile Application for Evaluation and Recruitment of Training Soccer Players	Portuguese	Iscte	2019

11	Miguel Tavares Botelho	Unfolding the influencing factors and dynamics of overall hotel scores	English	Iscte	2019
12	Domingos Garcia da Silva	IMS SOLUTIONS FOR THE PROVISION OF TELECOMMUNICATIONS SERVICES IN AD HOC ENVIRONMENTS	Portuguese	Iscte	2018
13	Jorge Miguel Pereira de Sousa Calado	A Unity-Based Framework for Sound Transmission and Perception in Video Games	English	Iscte	2017
14	Bruno Aurélio Correia Santos Barros	Aplicação móvel distribuída para registo e avaliação em tempo real de desempenho de equipas desportivas	Portuguese	Iscte	2017
15	Nuno Bettencourt Coelho	Implementation of Linear Network Coding Over a Flexible Emulator	English	Iscte	2016
16	Susana Maria Santos do Paço	Modeling the regeneration on the human body: the case of the vascular tumour and p53 metabolism	English	Iscte	2015
17	João Paulo Marques Jarreta	*PI - Provision and performance evaluation of telecommunication service over Raspberry PI	English	Iscte	2014
18	José Miguel Gomes Teixeira Sousa	--	--	Iscte	2011

• M.Sc. Final Projects

- Concluded

	Student Name	Title/Topic	Language	Institution	Concluding Year
1	André Santos Rouiller	Platform for aggregating and analysing institutional information and on social networks: an application to youth football	Portuguese	Iscte	2020

Total Citations

Web of Science®	321
Scopus	354

Publications

• Scientific Journals

- Scientific journal paper

1	Santos, R., Garganta, J., Lopes, R. J., Davids, K. & Ribeiro, J. (N/A). Capturing meso-level synchronisation tendencies in elite football teams: A novel method for analysing collective organisation in performance. Proceedings of the Institution of Mechanical Engineers, Part P: Journal of Sports Engineering and Technology. N/A
2	Freitas, R., Lopes, R. J., Sarajärvi, J. & Volossovitch, A. (2026). Elite-level cooperation and opposition dynamics during defensive transitions: Using computer vision data to estimate the pass and dribbling progression conceded. International Journal of Sports Science & Coaching. 21 (1), 182-197 - Times Cited Google Scholar: 1
3	Pasishnyk, N. & Lopes, R. J. (2026). Evaluating SDG network models: A network science ontology-based framework . Sustainability. 18 (1)
4	Santos, R., Garganta, J., Lopes, R. J., Davids, K. & Ribeiro, J. (2026). Capturing homeostatic behaviour in elite football teams: Synchronisation tendencies of cooperative and oppositional dynamics. International Journal of Data Science and Analytics. 21 (1) - Times Cited Web of Science®: 1 - Times Cited Scopus: 1 - Times Cited Google Scholar: 2
5	Caldeira, N., Lopes, R. J., Araújo, D. & Fernandes, D. (2024). The finishing space value for shooting decision-making in high-performance football. Sports. 12 (8) - Times Cited Web of Science®: 3 - Times Cited Scopus: 5 - Times Cited Google Scholar: 6
6	Caldeira, N., Lopes, R. J., Fernandes, D. & Araújo, D. (2023). From optical tracking to tactical performance via Voronoi diagrams: Team formation and players' roles constrain interpersonal linkages in high-level football. Sensors. 23 (1) - Times Cited Web of Science®: 8 - Times Cited Scopus: 14 - Times Cited Google Scholar: 21
7	Pereira, L. R., Lopes, R. J., Louçã, J., Araújo, D. & Ramos, J. (2021). The soccer game, bit by bit: An information-theoretic analysis. Chaos, Solitons and Fractals. 152 - Times Cited Web of Science®: 7 - Times Cited Scopus: 5 - Times Cited Google Scholar: 10
8	Matos, J. & Lopes, R. J. (2021). Food system sustainability metrics: Policies, quantification, and the role of complexity sciences. Sustainability. 13 - Times Cited Web of Science®: 4 - Times Cited Scopus: 3 - Times Cited Google Scholar: 5
9	Almeida, H., Lopes, R. J., Carrilho, J.M. & Eloy, S. (2021). Unfolding the dynamical structure of Lisbon's public space: space syntax and micromobility data. Applied Network Science. 6 (1) - Times Cited Web of Science®: 6 - Times Cited Scopus: 7 - Times Cited Google Scholar: 11

10	<p>Pereira, L. R., Lopes, R. J. & Louçã, J. (2021). Community identity in a temporal network: a taxonomy proposal. <i>Ecological Complexity</i>. 45</p> <ul style="list-style-type: none"> - Times Cited Web of Science®: 6 - Times Cited Scopus: 4 - Times Cited Google Scholar: 6
11	<p>Ribeiro, J., Silva, P., Davids, K., Araújo, D., Ramos, J., Lopes, R. J....Garganta, J. (2020). A multilevel hypernetworks approach to capture properties of team synergies at higher complexity levels. <i>European Journal of Sport Science</i>. 20 (10), 1318-1328</p> <ul style="list-style-type: none"> - Times Cited Web of Science®: 14 - Times Cited Scopus: 13 - Times Cited Google Scholar: 23
12	<p>Ribeiro, J., Lopes, R. J., Silva, P., Araújo, D., Barreira, D., Davids, K....Garganta, J. (2020). A multilevel hypernetworks approach to capture meso-level synchronisation processes in football. <i>Journal of Sports Sciences</i>. 38 (5), 494-502</p> <ul style="list-style-type: none"> - Times Cited Web of Science®: 16 - Times Cited Scopus: 14 - Times Cited Google Scholar: 27
13	<p>Pereira, L. R., Louçã, J. & Lopes, R. J. (2020). Syntgen: a system to generate temporal networks with user specified topology. <i>Journal of Complex Networks</i>. 8 (14)</p> <ul style="list-style-type: none"> - Times Cited Web of Science®: 5 - Times Cited Scopus: 5 - Times Cited Google Scholar: 8
14	<p>Ramos, J., Lopes, R. J. & Araújo, D. (2020). Interactions between soccer teams reveal both design and emergence: cooperation, competition and Zipf-Mandelbrot regularity. <i>Chaos, Solitons and Fractals</i>. 137, 1-7</p> <ul style="list-style-type: none"> - Times Cited Web of Science®: 10 - Times Cited Scopus: 10 - Times Cited Google Scholar: 15
15	<p>Moro, S., Lopes, R. J., Esmerado, J. & Botelho, M. (2020). Service quality in airport hotel chains through the lens of online reviewers. <i>Journal of Retailing and Consumer Services</i> . 56</p> <ul style="list-style-type: none"> - Times Cited Web of Science®: 42 - Times Cited Scopus: 44 - Times Cited Google Scholar: 75
16	<p>Daniel, C., Couceiro, M. S., Brito, J., Figueiredo, P., Lopes, R. J. & Araújo, D. (2020). Using optical tracking system data to measure team synergic behavior: Synchronization of player-ball-goal angles in a football match. <i>Sensors</i>. 20 (17)</p> <ul style="list-style-type: none"> - Times Cited Web of Science®: 25 - Times Cited Scopus: 26 - Times Cited Google Scholar: 48
17	<p>Ribeiro, J., Davids, K. , Araújo, D., Silva, P., Ramos, J., Lopes, R. J....Garganta, J. (2019). The role of hypernetworks as a multilevel methodology for modelling and understanding dynamics of team sports performance. <i>Sports Medicine</i>. 49 (9), 1337-1344</p> <ul style="list-style-type: none"> - Times Cited Web of Science®: 46 - Times Cited Scopus: 42 - Times Cited Google Scholar: 73
18	<p>Ramos, J., Lopes, R. J. & Araújo, D. (2018). What's next in complex networks? Capturing the concept of attacking play in invasive team sports. <i>Sports Medicine</i>. 48 (1), 17-28</p> <ul style="list-style-type: none"> - Times Cited Web of Science®: 56 - Times Cited Scopus: 52 - Times Cited Google Scholar: 89

19	Ramos, J., Lopes, R. J., Marques, P. & Araújo, D. (2017). Hypernetworks reveal compound variables that capture cooperative and competitive interactions in a soccer match. <i>Frontiers in Psychology</i> . 8 - Times Cited Web of Science®: 43 - Times Cited Scopus: 45 - Times Cited Google Scholar: 68
20	Lemos, C. M., Lopes, R. J. & Coelho, H. (2016). On legitimacy feedback mechanisms in agent-based modeling of civil violence. <i>International Journal of Intelligent Systems</i> . 31 (2), 106-127 - Times Cited Web of Science®: 9 - Times Cited Scopus: 7 - Times Cited Google Scholar: 24
21	Lopes, R. J., Lindsay, A. T. & Hutchison, D. (2003). The utility of MPEG-7 systems in audio-visual applications with multiple streams. <i>IEEE Transactions on Circuits and Systems for Video Technology</i> . 13 (1), 16-25 - Times Cited Web of Science®: 7 - Times Cited Scopus: 6 - Times Cited Google Scholar: 17

- Editorial

1	Buchinger, S., Lopes, R. J., Jumisko-Pyykko, S. & Zepernick, H. J. (2015). Guest editorial: advances in tools, techniques and practices for multimedia QoE. <i>Multimedia Tools and Applications</i> . 74 (2), 319-322
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• Books and Book Chapters

- Book chapter

1	Nelson Caldeira, Lopes, Rui J. & Araújo, D. (2026). Attacking and defending: The intrinsic dynamics of the football match. In <i>Ecological Dynamics Approach to Football</i> . (pp. 89-106). New York: Routledge.
2	Ramos, J., Lopes, Rui J., Araújo, D. & Pedro Passos (2024). Networks Centrality. In Daniel Memmert; (Ed.), <i>Computer Science in Sport</i> . (pp. 157-167). Berlin, Heidelberg: Springer Berlin Heidelberg.
3	Lemos, C. M., Coelho, H. & Lopes, R. J. (2017). ProtestLab: a computational laboratory for studying street protests. In Mohamed Nemiche, Mohammad Essaaidi (Ed.), <i>Advances in complex societal, environmental and engineered systems</i> . (pp. 3-29). Cham: Springer. - Times Cited Google Scholar: 9
4	Araújo, D., Ramos, J. & Lopes, R. J. (2016). Shared affordances guide interpersonal synergies in sport teams. In Pedro Passos, Keith Davids, Jia Yi Chow (Ed.), <i>Interpersonal coordination and performance in social systems</i> . (pp. 165-178).: Routledge. - Times Cited Scopus: 11 - Times Cited Google Scholar: 23
5	Burkhard Stiller, Pere Barlet-Ros, John Cushnie, Domingo-Pascual, J., Hutchison, D., Lopes, Rui J....almeida, H. (2003). Pricing and QoS. In <i>Pricing and QoS</i> . (pp. 263-291). Berlin/Heidelberg: Springer-Verlag. - Times Cited Web of Science®: 3 - Times Cited Scopus: 3 - Times Cited Google Scholar: 7

• Conferences/Workshops and Talks

- Publication in conference proceedings

1	Rúben Rocha & Lopes, Rui J. (2025). Assessing and Visualizing Principles of Play in Soccer. In Proceedings of the 13th International Conference on Sport Sciences Research and Technology Support. (pp. 90-99). - Times Cited Google Scholar: 1
2	Fidalgo, P., Lopes, R. J. & Faloutsos, C, (2022). Star-Bridge: A topological multidimensional subgraph analysis to detect fraudulent nodes and rings in telecom networks. In Tsumoto, S., Ohsawa, Y., Chen, L., Van den Poel, D., Hu, X., Motomura, Y., Takagi, T., Wu, L., Xie, Y., Abe, A., and Raghavan, V. (Ed.), 2022 IEEE International Conference on Big Data (Big Data). (pp. 2239-2242). Osaka, Japan: IEEE. - Times Cited Scopus: 1 - Times Cited Google Scholar: 5
3	Muacho, H., Ribeiro, R. & Lopes, R. J. (2022). The elusive features of success in soccer passes: A machine learning perspective. In Capelli, C., Verhagen, E., Pezarat-Correia, P., Vilas-Boas, J., and Cabri, J. (Ed.), Proceedings of the 10th International Conference on Sport Sciences Research and Technology Support - icSPORTS. (pp. 110-116). Valletta, Malta: SCITEPRESS – Science and Technology Publications, Lda. - Times Cited Google Scholar: 4
4	Silva, G., Ribeiro, R. & Lopes, R. J. (2021). “How Was the Match?”: Semantic similarity between electronic media commentary and work domain analysis key phrases. In Pezarat-Correia, P., Vilas-Boas, J., and Cabri, J. (Ed.), Proceedings of the 9th International Conference on Sport Sciences Research and Technology Support. (pp. 144-150). Online: SCITEPRESS – Science and Technology Publications, Lda. - Times Cited Google Scholar: 1
5	Pereira, L. R., Lopes, R. J. & Louçã, J. (2019). A taxonomy of community lifecycle events in temporal networks. In 2019 4th World Conference on Complex Systems (WCCS). (pp. 184-188). Ouarzazate, Morocco: IEEE. - Times Cited Scopus: 1 - Times Cited Google Scholar: 1
6	Coelho, N. B., Monteiro, F. A. & Lopes, R. J. (2019). Self-adapting linear network coding emulation. In IEEE International Symposium on Networks, Computers and Communications (ISNCC). (pp. 1-7). Istanbul: IEEE.
7	Barros, B., Serrão, C. & Lopes, R. (2018). Distributed crowd-based annotation of soccer games using mobile devices. In Pedro Pezarat-Correia; João Paulo Vilas-Boas; Octavio Rivera; Jan Cabri (Ed.), 6th International Congress on Sport Sciences Research and Technology Support. (pp. 40-48). Seville: SCITEPRESS. - Times Cited Scopus: 2 - Times Cited Google Scholar: 5
8	Ramos, J., Lopes, Rui J., Marques, P. & Araújo, D. (2017). Hypernetworks: capturing the multilayers of cooperative and competitive interactions in soccer. In Carlota Torrents, Pedro Passos, Francesc Cos (Ed.), International Congress Complex Systems in Sport. (pp. 150-153). Barcelona: Frontiers. - Times Cited Google Scholar: 5
9	Calado, J., Santana, P. & Lopes, R. J. (2017). A unity-based framework for sound transmission and perception in video games. In EPCGI’2017 – 24º Encontro Português de Computação Gráfica e Interação. Guimarães, Portugal: IEEE.
10	Lemos, C., Lopes, R. J., Hélder Coelho & Coelho, H. (2015). Quantitative measures of crowd patterns in agent-based models of street protests. In Proceedings of 2015 IEEE World Conference on Complex Systems, WCCS 2015. (pp. 1-6). Marrakesh: IEEE. - Times Cited Scopus: 1 - Times Cited Google Scholar: 6

11	<p>Lemos, C. M., Hélder Coelho, Coelho, H. & Lopes, R. J. (2015). Network influence effects in agent-based modelling of civil violence. In Wander Jager, Rineke Verbrugge, Andreas Flache, Gert de Roo, Lex Hoogduin, Charlotte Hemelrijk (Ed.), <i>Advances in Social Simulation 2015. Advances in Intelligent Systems and Computing</i>. Groningen: Springer.</p> <p>- Times Cited Google Scholar: 4</p>
12	<p>Ramos, J. P., Araújo, D. & Lopes, R. J. (2015). Híperredes multinível revelam propriedades da dinâmica colectiva do jogo de futebol. In <i>Gymnasium.: Universidade Lusófona de Humanidades e Tecnologias</i>.</p>
13	<p>Lemos, C. M., Lopes, R. J. & Coelho, H. (2015). Analysis of the decision rule in Epstein's agent-based model of civil violence. In <i>Proceedings of 2015 IEEE World Conference on Complex Systems, WCCS 2015</i>. (pp. 1-6). Marrakesh: IEEE.</p> <p>- Times Cited Scopus: 1</p> <p>- Times Cited Google Scholar: 7</p>
14	<p>Lemos, C, Coelho, H. & Lopes, R. J. (2014). Agent-Based modeling of protests and violent confrontation: A micro-situational, multi-player, contextual rule-based approach. In Edward MacKerrow, Takao Terano, Flaminio Squazzoni, Jaime Simao Sichman (Ed.), <i>Proceedings of the 5th World Congress on Social Simulation (WCSS 2014)</i>. (pp. 136-161). São Paulo</p> <p>- Times Cited Google Scholar: 13</p>
15	<p>Lemos, C., Lopes, R. & Coelho, H. (2014). An agent-based model of civil violence with imprisonment delay and legitimacy feedback. In <i>2014 Second World Conference on Complex Systems (WCCS) Proceedings</i>. Agadir: IEEE.</p> <p>- Times Cited Web of Science®: 8</p> <p>- Times Cited Scopus: 7</p> <p>- Times Cited Google Scholar: 16</p>
16	<p>Matos, J.V., Lopes, R. J. & Merali, Y. (2013). Market opportunities, customer desires and purchasing selectiveness modelling in multi-layered cellular automata: A study case on organizational survivability. In Gilbert, T., Kirkilionis, M., and Nicolis, G. (Ed.), <i>Proceedings of the European Conference on Complex Systems 2012. Springer Proceedings in Complexity</i>. (pp. 757-768). Bruxelas: Springer.</p> <p>- Times Cited Google Scholar: 1</p>
17	<p>Lemos, C., Coelho, H. & Lopes, R. J. (2013). Agent-based modeling of social conflict, civil violence and revolution: State-of-the-art-review and further prospects. In Lorini, E. (Ed.), <i>Proceedings of the 11th European Workshop on Multi-Agent Systems (EUMAS 2013)</i>. (pp. 124-138). Toulouse: CEUR-WS.</p> <p>- Times Cited Scopus: 20</p> <p>- Times Cited Google Scholar: 64</p>
18	<p>Sousa, J. & Lopes, R. J. (2011). A distributed management architecture for large scale clouds: Concepts, design, implementation and evaluation. In <i>CETC 2011: Conference on Electronics Telecommunications and Computers</i>. (pp. 1-4). Lisboa</p>
19	<p>Ribeiro, E. & Lopes, R. J. (2011). Assessing the integration of ontology tools in content network architectures. In Freire, J. C., and Pedro, J. C. (Ed.), <i>2011 IEEE EUROCON - International Conference on Computer as a Tool</i>. Lisboa: IEEE.</p>
20	<p>Ribeiro, E. & Lopes, R. J. (2007). An architecture for the provision of content networks based on IMS, metadata, presence and P2P technologies. In <i>MNCNA '07: Proceedings of the 2007 Workshop on Middleware for next-generation converged networks and applications</i>. Port Beach, California: Association for Computing Machinery.</p> <p>- Times Cited Scopus: 1</p> <p>- Times Cited Google Scholar: 4</p>

21	Simões, J., Costa, R., Nunes, P., Lopes, R. & Mathy, L. (2006). An architecture for centralized SIP-based audio conferencing using application layer multicast. In PGNNet 2006 - The 7th Annual PostGraduate Symposium on The Convergence of Telecommunications, Networking and Broadcasting. (pp. 383-387). Liverpool, UK: Liverpool John Moores University, School of Computing & Mathematical Sciences.
22	Lopes, Rui J., Laurent Mathy & Hutchison, D. (2001). Bandwidth Measurements of ALM Trees for Content Distribution. In International Conference on Protocols for Multimedia Systems. (pp. 89-102). Enschede: Springer-Verlag. - Times Cited Google Scholar: 2
23	Luís Botelho, Lopes, Rui J., Sequeira, M., Paulo Almeida & Sérgio Martins (1999). Inter-agent communication in a FIPA compliant intelligent distributed dynamic-information system. In International Conference Information Systems Analysis and Synthesis (ISAS99). Orlando - Times Cited Google Scholar: 9
24	Lopes, Rui J. & José Manuel Brázio (1997). An Object-Oriented Framework for the Modeling and Simulation of a Mobile Cellular Radio System. In Jeffrey W Wallace; Yasser Dessouky ; Terrence G Beaumariage (Ed.), Object-Oriented Simulation Conference (OOS'97). (pp. 93-98). Phoenix: The Society for Computer Simulation International (SCS).
25	Lopes, Rui J. & José Manuel Brázio (1995). Geometry-based statistical model for fast fading in millimeterwave communications. In IEEE VTS (Ed.), IEEE Vehicular Technology Conference. (pp. 459-463). Chicago, IL: IEEE. - Times Cited Scopus: 2 - Times Cited Google Scholar: 3

- Talk

1	Lopes, Rui J., Ramos, J. P., Pereira, Luis Ramada & Araújo, D. (2021). Capturing football dynamics via multilayer hypernetworks. Sport Sciences Congress.
2	Coelho, Nuno B. , Monteiro, F. A. & Lopes, Rui J. (2019). Self-adapting linear network coding emulation. IEEE International Symposium on Networks, Computers and Communications (ISNCC'19).
3	Lopes, Rui J., Adam T. Lindsay & Hutchison, D. (2003). Desafios e contribuições resultantes da utilização da XML na norma ISO/MPEG-7 e suas aplicações. Actas da XML, aplicações e tecnologias associadas (XATA).
4	Lopes, Rui J., Laurent Mathy & David Hutchison (2001). Bandwidth Measurements of ALM Trees for Content Distribution. Proc. of the 6th International Conference on Protocols for Multimedia Systems (PROMS2001). 2213, 89-102
5	Lopes, Rui J. & José Manuel Brázio (1997). An Object-Oriented Framework for the Modeling and Simulation of a Mobile Cellular Radio System. Proc. of the Object Oriented Simulation Symposium.
6	Lopes, Rui J. & José Manuel Brázio (1995). A geometry-based statistical model for fast fading in millimeterwave communications. IEEE Vehicular Technology Conference. - Times Cited Web of Science®: 2

- Conference paper not in proceedings

1	Freitas, Rui Fernandes, Lopes, Rui J., Volossovitch, Anna & Sarajärvi, Jani (2024). Elite-Level Cooperation and Opposition Dynamics During Defensive Transitions: Using Computer Vision Data to Estimate the Pass and Dribbling Progression Conceded. 12th International Conference on Sport Sciences Research and Technology Support.
2	João Ribeiro, Ricardo Santos, Júlio Garganta, Daniel Barreira, Keith Davids & Lopes, Rui J. (2024). Assessing Individual Attractors in Elite Football Teams Using GPS Positional Data. 14th World Congress of Performance Analysis of Sport . 54-54
3	Ricardo Santos, João Ribeiro, Lopes, Rui J. & Júlio Garganta (2023). Capturing meso-level synchronisation tendencies in elite football teams: the effects of angle and distance to the goal. International Congress of CIDESD 2023 - ICCIDESD 2023.
4	Ricardo Santos, João Ribeiro, Lopes, Rui J. & Júlio Garganta (2023). Quantifying the frequency of simplices types in elite football teams according to pitch areas. International Congress of CIDESD 2023 - ICCIDESD 2023.
5	Caldeira, L., Ramos, J. P. & Lopes, Rui J. (2023). Gender differences in collective behaviour patterns of corner executions: an exploratory analysis of Statsbomb data from the FIFA World Cup's and UEFA Euro's competitions. European Football Congress 2023.
6	João Ribeiro, Júlio Garganta, Guilherme, José, Daniel Barreira, Silva, Pedro, Lopes, Rui J....Keith Davids (2022). Capturing bi-directional synergy formation in elite football teams through multilevel hypernetworks. World Congress on Science and Soccer 2022. 274-274
7	Caldeira, L., Ramos, J. P. & Lopes, Rui J. (2022). Diferenças de género em padrões de comportamento coletivo: análise HMFA de dados StatsBomb. XXIII Jornadas de Psicologia do Desporto.
8	Pereira, Luis Ramada, Lopes, Rui J., Araújo, D. & Ramos, J. P. (2022). A soccer match as a temporal network: Sampling frequency and loss of information. CXSPORTS-2022: Complexity and Sports Satellite.
9	Ribeiro, J., Keith Davids, Daniel Barreira, Júlio Garganta & Lopes, Rui J. (2022). Evaluating micro-meso synchronization tendencies in elite football teams: the effects of distance and angle to the goal. 13th World Congress of Performance Analysis of Sport 2022 & 13th International Symposium on Computer Science in Sport .
10	almeida, H., Carrilho, J.M., Eloy, S. & Lopes, Rui J. (2020). Public space and soft mobility flows: a comparative network analysis. URBAN COMPLEX SYSTEMS 2020.
11	Pereira, Luis Ramada, Lopes, Rui J. & Louçã, Jorge (2019). A Soccer Game as a Clustered Temporal Network, an Analysis Based on Shared Information Distance. Complex Systems Society Conference.
12	Ramos, J. P., Lopes, Rui J. & Araújo, D. (2017). A dinâmica das interações de cooperação e competição num jogo de futebol captadas por hiperredes. XVIII Jornadas da Sociedade Portuguesa de Psicologia do Desporto.
13	Ramos, J., Lopes, Rui J. & Araújo, D. (2015). Análise de desempenho de equipas de futebol através de hiperredes multinível: determinação da estrutura mínima representativa do jogo nos níveis micro-macro das equipas . XVI Jornadas da Sociedade Portuguesa de Psicologia do Desporto.
14	Ramos, J., Araújo, D., Lopes, Rui J., Ramos, J., Araújo, D. & Rui Lopes (2015). Híperredes multinível revelam propriedades da dinâmica colectiva do jogo de futebol. Actas 1º Congresso Ibero-americano de Desporto, Actividade Física, Educação e Saúde.

15	Silva, J.P., Silva, C.M., Araújo, D., Ramos, J. P. & Lopes, Rui J. (2014). As redes sociais como ferramenta de análise do desempenho ao serviço do treinador. Simposium XV Jornadas da Sociedade Portuguesa de Psicologia do Desporto.
16	Lopes, Rui J., Ramos, J. P., Araújo, D., Silva, J.P. & Silva, C.M. (2014). Metodologia e ferramentas para recolha e processamento de dados em eventos desportivos - aplicação ao campeonato mundial de futebol 2014. Simposium XV Jornadas da Sociedade Portuguesa de Psicologia do Desporto.
17	Ramos, J., Lopes, Rui J., Araújo, D., Silva, J.P. & Silva, C.M. (2014). Equipas de futebol como redes complexas – O caso da equipa campeã mundial. Simposium XV Jornadas da Sociedade Portuguesa de Psicologia do Desporto.
18	Lemos, C. M., Lopes, Rui J., Hélder Coelho & Coelho, H. (2014). Quantitative measures of emergent properties in Agent-Based models of street protests and violent confrontation. Brazilian Workshop on Social Simulation.
19	Matos, J.V., Lopes, Rui J. & Merali, Y. (2013). Quantifying Competitive Strategy Impact On Supply Chain Market Behaviour: A Cellular Automata And Information Theory Approach. ECCS2013.
20	Ramos, J. P., Araújo, D. & Lopes, Rui J. (2012). Análise de Redes Sociais como Instrumento de estudo de desportos colectivos com bola: uma aplicação ao Voleibol. Simposium in XIII Jornadas da Sociedade Portuguesa de Psicologia do Desporto.
21	Gonçalves, T., Lopes, Rui J. & Nunes, P. (2010). Using metadata in video quality assessment based on the structural similarity (SSIM) index metric. International Workshop on Quality of Experience for Multimedia Content Sharing - QoEMCS. -, - - Times Cited Google Scholar: 3
22	Shelley Buchinger, Lopes, Rui J., Satu Jumisko-Pyykko & Hans-Jurgen Zepernick (2010). Quality of experience for multimedia content sharing. EuroITV'10 - Proceedings of the 8th International Interactive TV and Video Conference. 305-306 - Times Cited Scopus: 1 - Times Cited Google Scholar: 2
23	Lopes, Rui J., Adam T. Lindsay & Hutchison, D. (2003). Desafios e contribuições resultantes da utilização da XML na norma ISO/MPEG-7 e suas aplicações. Actas da XML, aplicações e tecnologias associadas (XATA).
24	Eduard Hartley, Lopes, Rui J. & Hutchison, D. (1999). Use of distributed platforms in the provision of content index based services. IEE Seminar Digests. - Times Cited Google Scholar: 1

• Other Publications

- Non-peer-reviewed papers

1	Botelho, L., Nunes, Luis, Ribeiro, R. & Lopes, Rui J. (2022). Learning Rhetorical Structure Theory-based descriptions of observed behaviour. arXiv.
2	Botelho, L., Nunes, Luis, Ribeiro, R. & Lopes, Rui J. (2015). Software Agents with Concerns of their Own. arXiv. - Times Cited Google Scholar: 1

- Other publications

1	Pereira, Luis Ramada, Lopes, Rui J. & Louçã, Jorge (2019). A Soccer Game as a Clustered Temporal Network, an Analysis Based on Shared Information Distance.
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Academic Management Positions

Director (2020) Unit/Area: [043] Complexity Sciences
Director (2018 - 2020) Unit/Area: [043] Complexity Sciences
Director (2017 - 2019) Unit/Area: [B58] Complexity Sciences

Awards

C.L. Lemos, R.J. Lopes, H. Coelho, Quantitative Measures of Crowd Patterns in Agent- Based Models of Street Protests, Best PhD student paper (2015)

Organization/Coordination of Events

Type of Organization/Coordination	Event Title	Organizer	Year
Member of scientific event committee	IEEE Globecom'13 Next Generation Networking Symposium		2013
Member of scientific event committee	Conferência Ibérica de Sistemas e Tecnologias de Informação - CISTI		2011
Member of scientific event committee	EuroITV		2011
Member of scientific event committee	IEEE International Conference on Networks - ICON		2011
Member of scientific event committee	International Conference on Computer and Communication Technology - ICCCT		2011

Diffusion Activities

Activity Type	Event Title	Activity Description	Year
Talk/Conference in public diffusion event	Networks and urban space: observe and understand them		2022
Talk/Conference in public diffusion event	Open Classes (CIUL - Iscte)	Networks and urban space: bridges and other connections	2016