

Daniel Héctor Stolfi Rosso

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Employment History

- 2024 –  **Senior R&T Scientist.** Luxembourg Institute of Science and Technology (LIST). **Research topics:** Optimisation algorithms, Data fusion, Computer simulations.
- 2019 – 2024  **Research Associate.** SnT – Interdisciplinary Centre for Security, Reliability and Trust. University of Luxembourg. Parallel Computing & Optimisation Group (PCOG). **Projects:** HUNTED; ADARS. **Research topics:** Optimisation algorithms, Swarm intelligence, Machine learning, Computer simulations, Robotics.
- 2014 – 2018  **PhD Candidate.** University of Málaga. Networking and Emerging Optimization Group (NEO). Thesis title: Bio-inspired Computing and Smart Mobility. Projects: maxCT; MoveON; CI-RTI; 6city. **Research topics:** Intelligent transportation systems, Optimisation algorithms, Machine learning, Computer simulations.
- 2013 – 2014  **Project Researcher.** University of Málaga. Networking and Emerging Optimization Group (NEO). **Project:** RoadMe. **Research topics:** Smart mobility, Metaheuristics, Computer simulations.
- 2010 – 2013  **Project Researcher.** University of Málaga. Research and Applications of Artificial Intelligence Group (IAIA). **Projects:** SCALE@RN; PATIO. **Coding:** Java, Oracle, MySQL.
- 2005 – 2009  **Project Manager and Analyst Programmer.** ctDli: Consultoría Tecnológica de la Información, S.L. – **Software development:** Logistics, Warehouse, Invoicing, Human Resources, etc. **Coding:** Delphi, PHP, SQLServer, MySQL.
- 1999 – 2000  **Telecommunication Technician.** Aucore, S.L. – Service of DECT phones.
- 1993 – 1999  **Vocational Education Teacher.** EET.8235 “Ing. Enrique B. Gomara”. – Teaching: Secondary school level.

Education

- 2018  **PhD in Computer Science,** University of Málaga, Spain.
PhD thesis title: *Bio-inspired Computing and Smart Mobility*. With Cum Laude honours
- 2012  **Master’s degree in Software Engineering and Artificial Intelligence,** University of Málaga, Spain. Thesis title: *Optimization of Road Traffic in Smart Cities*.
- 2010  **M.Sc. Computer Science,** University of Málaga, Spain.
Dissertation title: *CoMVeT – Mentally controlled unmanned vehicles*. With honours.
- 2004  **B.Sc. Computing & Information Systems,** University of Málaga, Spain.
Dissertation title: *The school of computer science modelled in virtual reality – The VRML language*. With honours.
- 1992  **Electronic Technician,** EET.8235 “Ing. Enrique B. Gomara”.

Skills and Interests

Research	■ Combinatorial optimization, Swarm intelligence, Machine learning, Metaheuristics, Bio-inspired algorithms, Robotics, Computer simulations, Intelligent transportation systems, Smart mobility
Languages	■ Spanish (native speaker), English (C1), French (A2.2).
Coding	■ C++, Python, Java, JavaScript, Bash, R, MATLAB, $\text{\LaTeX}$, PHP, Delphi, VRML97.
Databases	■ MySQL, PostgreSQL, ORACLE, SQLite.
Web Dev	■ HTML, CSS, JavaScript, Apache Web Server, Tomcat Web Server.
Others	■ GNU/Linux, GIT, ARDUINO, ANDROID, HPC (High-Performance Computing), Microcontrollers, BCI (Brain-Computer Interface).
Misc.	■ Driving Licence: B
Hobbies	■ Sci-Fi books and TV series, Photography, Simulation & Sandbox video games.

Projects

2021 – 2024	■ ADARS: Automating the Design of Autonomous Robot Swarms, FNR CORE C20/IS/14762457.
2019 – 2021	■ HUNTED: Heterogeneous multi-swarms of UNmanned auTonomous systEmS for mission Deployment, ONRG N62909-18-1-2176.
2018 – 2020	■ 6city: Cross-Intelligence for Smart Cities, TIN2017-88213-R.
2017 – 2018	■ CI-RTI: Research Thematic Network on Smart Cities, TIN2016-81766-REDT.
2015 – 2018	■ MoveON: Holistic Intelligence, and Smart Mobility, TIN2014-57341-R.
2015	■ maxCT: Smart Mobility: Wi-Fi, Routes & Pollution, OTRI #8.06/5.47.4356.
2012 – 2014	■ roadME: Fundamentals for Real World Applications of Metaheuristics: the Vehicular Network Case, TIN2011-28194.
2009 – 2013	■ PATIO: Collaborative Learning and User Modelling Techniques Applied to Multicultural Integration, P08-TIC-4273.
2009 – 2011	■ SCALE@RN: Person Centered Adaptative and Scalable Learning Contents, TSI-020311-2009-6.

Research Publications

Journal Articles

- 1 **Stolfi, D. H.** and Danoy, G. ‘Evolutionary swarm formation: From simulations to real world robots’ *Engineering Applications of Artificial Intelligence*, vol. 128, 2024, p. 107501. doi:10.1016/j.engappai.2023.107501.
- 2 **Stolfi, D. H.** and Danoy, G. ‘Design and analysis of an E-Puck2 robot plug-in for the ARGoS simulator’. *Robotics and Autonomous Systems*, vol. 164, 2023, p. 104412. doi:10.1016/j.robot.2023.104412.
- 3 **Stolfi, D. H.** and Danoy, G. ‘Optimising Robot Swarm Formations by Using Surrogate Models and Simulations’. *Applied Sciences*, vol. 13, no. 10, 2023. doi:10.3390/app13105989.
- 4 **Stolfi, D. H.**, Brust, M. R., Danoy, G. and Bouvry, P. ‘SuSy-EnGaD: Surveillance System Enhanced by Games of Drones’. *Drones*, vol. 6, no. 1, 2022. doi:10.3390/drones6010013.
- 5 **Stolfi, D. H.** and Danoy, G. ‘An Evolutionary Algorithm to Optimise a Distributed UAV Swarm Formation System’. *Applied Sciences*, vol. 12, no. 20, 2022. doi:10.3390/app122010218.
- 6 Brust, M. R., Danoy, G., **Stolfi, D. H.** and Bouvry, P. ‘Swarm-based counter UAV defense system’. *Discover Internet of Things*, vol. 1, no. 1, Feb. 2021. doi:10.1007/s43926-021-00002-x.

- 7 **Stolfi, D. H.** and Alba, E. ‘Yellow Swarm: LED panels to advise optimal alternative tours to drivers in the city of Malaga’. *Applied Soft Computing*, vol. 109, 2021, p. 107566. doi:10.1016/j.asoc.2021.107566.
- 8 **Stolfi, D. H.**, Brust, M. R., Danoy, G. and Bouvry, P. ‘A competitive Predator–Prey approach to enhance surveillance by UAV swarms’. *Applied Soft Computing*, vol. 111, 2021, p. 107701. doi:10.1016/j.asoc.2021.107701.
- 9 **Stolfi, D. H.**, Brust, M. R., Danoy, G. and Bouvry, P. ‘CONSOLE: intruder detection using a UAV swarm and security rings’. *Swarm Intelligence*, vol. 15, no. 3, 2021, pp. 205–235. doi:10.1007/s11721-021-00193-7.
- 10 **Stolfi, D. H.**, Brust, M. R., Danoy, G. and Bouvry, P. ‘UAV-UGV-UMV Multi-Swarms for Cooperative Surveillance’. *Frontiers in Robotics and AI*, vol. 8, Feb. 2021. doi:10.3389/frobt.2021.616950.
- 11 **Stolfi, D. H.**, Alba, E. and Yao, X. ‘Can I Park in the City Center? Predicting Car Park Occupancy Rates in Smart Cities’. *Journal of Urban Technology*, vol. 27, no. 4, 2020, pp. 27–41. doi:10.1080/10630732.2019.1586223.
- 12 **Stolfi, D. H.**, Brust, M. R., Danoy, G. and Bouvry, P. ‘Emerging Inter-Swarm Collaboration for Surveillance Using Pheromones and Evolutionary Techniques’. *Sensors*, vol. 20, no. 9, 2020. doi:10.3390/s20092566.
- 13 **Stolfi, D. H.** and Alba, E. ‘Epigenetic algorithms: A New way of building GAs based on epigenetics’. *Information Sciences*, vol. 424, no. Supplement C, 2018, pp. 250–272. doi:10.1016/j.ins.2017.10.005.
- 14 **Stolfi, D. H.** and Alba, E. ‘Generating realistic urban traffic flows with evolutionary techniques’. *Engineering Applications of Artificial Intelligence*, vol. 75, 2018, pp. 36–47. doi:10.1016/j.engappai.2018.07.009.
- 15 **Stolfi, D. H.** and Alba, E. ‘Green Swarm: Greener routes with bio-inspired techniques’. *Applied Soft Computing*, vol. 71, 2018, pp. 952–963. doi:10.1016/j.asoc.2018.07.032.
- 16 **Stolfi, D. H.** and Alba, E. ‘Red Swarm: Reducing travel times in smart cities by using bio-inspired algorithms’. *Applied Soft Computing*, vol. 24, 2014, pp. 181–195. doi:10.1016/j.asoc.2014.07.014.

Conference Proceedings

- 1 **Stolfi, D. H.** and Danoy, G. ‘Evaluating Surrogate Models for Robot Swarm Simulations’. *Optimization and Learning*, edited by B. Dorronsoro, F. Chicano, G. Danoy and E.-G. Talbi, Springer Nature Switzerland, 2023, pp. 224–235.
- 2 **Stolfi, D. H.** and Danoy, G. ‘Spacecraft Swarm Orbital Formation Optimisation Using Evolutionary Techniques’. *Proceedings of the Companion Conference on Genetic and Evolutionary Computation, GECCO ’23 Companion*, Association for Computing Machinery, 2023, pp. 771–774.
- 3 **Stolfi, D. H.** and Danoy, G. ‘Optimising Autonomous Robot Swarm Parameters for Stable Formation Design’. *Proceedings of the Genetic and Evolutionary Computation Conference, GECCO ’22*, Association for Computing Machinery, 2022, pp. 1281–1289.
- 4 **Stolfi, D. H.**, Brust, M. R., Danoy, G. and Bouvry, P. ‘Improving Pheromone Communication for UAV Swarm Mobility Management’. *Computational Collective Intelligence*, edited by N. T. Nguyen, L. Iliadis, I. Maglogiannis and B. Trawiński, Springer International Publishing, 2021, pp. 228–240.
- 5 **Stolfi, D. H.**, Brust, M. R., Danoy, G. and Bouvry, P. ‘Optimising Pheromone Communication in a UAV Swarm’. *Proceedings of the Genetic and Evolutionary Computation Conference Companion, GECCO ’21*, Association for Computing Machinery, 2021, pp. 323–324.
- 6 **Stolfi, D. H.**, Brust, M. R., Danoy, G. and Bouvry, P. ‘A Cooperative Coevolutionary Approach to Maximise Surveillance Coverage of UAV Swarms’. *2020 IEEE 17th Annual Consumer Communications Networking Conference (CCNC)*, 2020, pp. 1–6.
- 7 **Stolfi, D. H.**, Brust, M. R., Danoy, G. and Bouvry, P. ‘Competitive Evolution of a UAV Swarm for Improving Intruder Detection Rates’. *2020 IEEE International Parallel and Distributed Processing Symposium Workshops (IPDPSW)*, 2020, pp. 528–535.

- 8 **Stolfi, D. H.**, Brust, M. R., Danoy, G. and Bouvry, P. 'Optimizing the Performance of an Unpredictable UAV Swarm for Intruder Detection'. *Optimization and Learning*, edited by B. Dorronsoro, P. Ruiz, J. C. de la Torre, D. Urda and E.-G. Talbi, Springer International Publishing, 2020, pp. 37–48.
- 9 Camero, A., Toutouh, J., **Stolfi, D. H.** and Alba, E. 'Evolutionary Deep Learning for Car Park Occupancy Prediction in Smart Cities'. *Learning and Intelligent Optimization*, edited by R. Battiti, M. Brunato, I. Kotsireas and P. M. Pardalos, Springer International Publishing, 2019, pp. 386–401.
- 10 Alcaraz, C., Abdo-Sánchez, E., Toutouh, J., Halir, R., Ruiz, M. and **Stolfi, D. H.** 'Some Ingredients to Improve Gamification in Engineering'. *EDULEARN18 Proceedings*, 10th International Conference on Education and New Learning Technologies, IATED, Feb. 2018, pp. 7040–7044.
- 11 **Stolfi, D. H.**, Cintrano, C., Chicano, F. and Alba, E. 'An Intelligent Advisor for City Traffic Policies'. *Advances in Artificial Intelligence*, Springer International Publishing, 2018, pp. 383–393.
- 12 **Stolfi, D. H.**, Cintrano, C., Chicano, F. and Alba, E. 'Natural Evolution Tells Us How to Best Make Goods Delivery: Use Vans'. *Proceedings of the Genetic and Evolutionary Computation Conference Companion*, GECCO '18, ACM, 2018, pp. 308–309.
- 13 Alcaraz, C., Abdo, E., Halir, R., Toutouh, J., Ruiz, M. and **Stolfi, D. H.** 'Gamification to Fight Lack of Motivation and Heterogeneity in Engineering'. *EDULEARN17 Proceedings*, 9th International Conference on Education and New Learning Technologies, IATED, 2017, pp. 3662–3668.
- 14 **Stolfi, D. H.** and Alba, E. 'Computing New Optimized Routes for GPS Navigators Using Evolutionary Algorithms'. *Proceedings of the Genetic and Evolutionary Computation Conference*, GECCO '17, ACM, 2017, pp. 1240–1247.
- 15 **Stolfi, D. H.**, Alba, E. and Yao, X. 'Predicting Car Park Occupancy Rates in Smart Cities'. *Smart Cities: Second International Conference, Smart-CT 2017, Málaga, Spain, June 14-16, 2017, Proceedings*, edited by E. Alba, F. Chicano and G. Luque, Springer International Publishing, 2017, pp. 107–117.
- 16 Cintrano, C., **Stolfi, D. H.**, Toutouh, J., Chicano, F. and Alba, E. 'CTPATH: A Real World System to Enable Green Transportation by Optimizing Environmentally Friendly Routing Paths'. *Smart Cities: First International Conference, Smart-CT 2016, Málaga, Spain, June 15-17, 2016, Proceedings*, edited by E. Alba, F. Chicano and G. Luque, Springer International Publishing, 2016, pp. 63–75.
- 17 **Stolfi, D. H.**, Armas, R., Alba, E., Aguirre, H. and Tanaka, K. 'Fine Tuning of Traffic in Our Cities with Smart Panels: The Quito City Case Study'. *Proceedings of the Genetic and Evolutionary Computation Conference 2016*, GECCO '16, ACM, 2016, pp. 1013–1019.
- 18 **Stolfi, D. H.** and Alba, E. 'An Evolutionary Algorithm to Generate Real Urban Traffic Flows'. *Advances in Artificial Intelligence*, edited by J. M. Puerta, J. A. Gámez, B. Dorronsoro, E. Barrenechea, A. Troncoso, B. Baruque and M. Galar, Lecture Notes in Computer Science, Springer International Publishing, 2015, pp. 332–343.
- 19 **Stolfi, D. H.** and Alba, E. 'Smart Mobility Policies with Evolutionary Algorithms'. *Proceedings of the 2015 on Genetic and Evolutionary Computation Conference*, GECCO '15, ACM, 2015, pp. 1287–1294.
- 20 **Stolfi, D. H.** and Alba, E. 'Un Algoritmo Evolutivo para la Reducción de Tiempos de Viaje y Emisiones Utilizando Paneles LED'. *X Congreso Español sobre Metaheurísticas, Algoritmos Evolutivos y Bioinspirados*, MAEB 2015, 2015, pp. 27–34.
- 21 **Stolfi, D. H.** and Alba, E. 'Eco-friendly Reduction of Travel Times in European Smart Cities'. *Proceedings of the 2014 Conference on Genetic and Evolutionary Computation*, GECCO '14, ACM, 2014, pp. 1207–1214.
- 22 **Stolfi, D. H.** and Alba, E. 'Red Swarm: Smart Mobility in Cities With EAs'. *Proceeding of the Fifteenth Annual Conference on Genetic and Evolutionary Computation Conference*, GECCO '13, ACM, 2013, pp. 1373–1380.

- 23 Stolfi, D. H. and Alba, E. ‘Reducing Gas Emissions in Smart Cities by Using the Red Swarm Architecture’. *Advances in Artificial Intelligence*, edited by C. Bielza, et al., Lecture Notes in Computer Science, Springer Berlin Heidelberg, 2013, pp. 289–299.

Books and Chapters

- 1 Stolfi, D. H. and Alba, E. ‘Chapter 14 - Sustainable Road Traffic Using Evolutionary Algorithms’. *Sustainable Transportation and Smart Logistics*, Elsevier, 2019, pp. 361–380, doi:10.1016/B978-0-12-814242-4.00014-4.
- 2 Stolfi, D. H. and Gálvez Rojas, S. *CoMVeT - Control Mental de Vehículos Teledirigidos*. Vol. 129, 2011, p. 130.
- 3 Stolfi, D. H. and Gálvez Rojas, S. *Mundos Virtuales 3D con VRML97*. 2010, p. 160.

Stays Abroad

- 2016 ■ **University of Birmingham:** CERCIA, Centre of Excellence for Research in Computational Intelligence and Applications, Birmingham, U.K. (3 months)
- 2015 ■ **Shinshu University:** Faculty of Engineering, Nagano, Japan (1 month)

Grants / Fellowships / Awards

- 2019 ■ **Car Park Occupation and Prediction:** 1st Contest of Reuse of Open Data 2019 – Malaga local council, Spain.
- 2014 ■ **FPU:** Spanish research and teaching fellowship (FPU13/00954) from the Spanish Ministry of Education, Culture and Sports.

Teaching Experience

- 2022 – 2023 ■ **Algorithms 3:** Bachelor in Applied Information Technology – BINFO, University of Luxembourg, 10 TUs.
- 2019 – 2023 ■ **Optimisation for Computer Science:** Group supervisor in the Master in Information and Computer Sciences (MICS), University of Luxembourg.
- 2017 – 2018 ■ **Recursos Informáticos Aplicados a la Traducción e Interpretación:** Facultad de Filosofía y Letras, University of Malaga, 33.2 Hs.
- 2016 – 2017 ■ **Programación II:** ETSI Telecomunicación, University of Malaga, 18.6 Hs.
■ **Informática Aplicada a la Gestión Pública:** Facultad de Comercio y Gestión, University of Malaga, 13.9 Hs.
- 2013 – 2014 ■ **Lenguajes de Programación y Procesadores:** UNED, Malaga, 8 Hs.

Administrative/Organizational Experience

- 2024 ■ **Program Committee Member:** Genetic and Evolutionary Computation Conference: GECCO 2024, Melbourne, Australia
- 2023 ■ **Program Committee Member:** VI Ibero-American Congress of Smart Cities, ICSC-CITIES 2023, Mexico City and Cuernavaca, Mexico
- **Guest Editor:** Special Issue “Swarm Intelligence and Swarm Robotics: Latest Advances and Prospects”, Applied Sciences
- **Program Committee Member:** International Conference on Optimization and Learning, OLA’2023, Malaga, Spain

Administrative/Organizational Experience (continued)

- **Workshop Committee Member:** 37th IEEE International Parallel and Distributed Processing Symposium: IPDPS 2023 – 13th IEEE Workshop PDCO, St. Petersburg, Florida, USA
- **Program Committee Member:** Genetic and Evolutionary Computation Conference: GECCO 2023, Lisbon, Portugal
- 2022 ■ **Program Committee Member:** V Ibero-American Congress of Smart Cities, ICSC-CITIES 2022, Cuenca, Ecuador
- **Program Committee Member:** Genetic and Evolutionary Computation Conference: GECCO 2022, Boston, USA
- **Program Committee Member:** 8th IEEE Latin American Conference on Computational Intelligence: IEEE LA-CCI 2022, Montevideo, Uruguay
- **Workshop Committee Member:** 36th IEEE International Parallel and Distributed Processing Symposium: IPDPS 2022 Workshop, Lyon, France
- 2021 ■ **Program Committee Member:** IV Ibero-American Congress of Smart Cities, ICSC-CITIES 2021, Cancun, Mexico
- **Program Committee Member:** Genetic and Evolutionary Computation Conference: GECCO 2021, Lille, France
- 2020 ■ **Program Committee Member:** The 4th International Workshop on Synergy of Parallel Computing, Optimization and Simulation: PaCOS 2020, Barcelona, Spain
- **Program Committee Member:** Genetic and Evolutionary Computation Conference: GECCO 2020, Cancun, Mexico
- **Workshop Committee Member:** 34th IEEE International Parallel and Distributed Processing Symposium: IPDPS 2020 Workshop, New Orleans, USA
- **Program Committee Member:** 12th Asian Conference on Intelligent Information and Database Systems: ACID 2020, Phuket, Thailand
- 2019 ■ **Program Committee Member:** Genetic and Evolutionary Computation Conference: GECCO 2019, Prague, Czech Republic
- 2018 ■ **Program Committee Member:** Genetic and Evolutionary Computation Conference: GECCO 2018, Kyoto, Japan
- 2017 ■ **Program Committee Member:** Genetic and Evolutionary Computation Conference: GECCO 2017, Berlin, Germany
- **Organizing Committee Member:** International Conference on Smart Cities: SmartCT'17, Malaga, Spain
- **Organizing Committee Member:** Second International Summer School on Search-Based Software Engineering: SS-SBSE 2017, Malaga, Spain
- **Organizing Committee Member:** Fourth Euro-China Conference on Intelligent Data Analysis and Applications: ECC 2017, Malaga, Spain
- 2016 ■ **Program Committee Member:** Genetic and Evolutionary Computation Conference: GECCO 2016, Denver, Colorado, USA
- **Organizing Committee Member:** International Conference on Smart Cities: SmartCT'16, Malaga, Spain