José Miguel Aragón-Jurado

Ph.D. in Computer Engineering | Postdoctoral Researcher (FPU Fellow)
Date of Birth: January 21, 1999 (Age: 27)
GOAL Research Group – https://tic259.uca.es/
Department of Computer Engineering, University of Cádiz, Spain
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Languages: Spanish (Native), English (C1+), Japanese (Basic)

Ph.D. in Computer Engineering and Postdoctoral Researcher (FPU Fellow) at the University of Cádiz, Spain. His research advances sustainability in three main areas: green software, sustainable public transport, and software code obfuscation. Using compiler optimization, artificial intelligence, machine learning, and metaheuristics, he works to reduce the environmental impact of software and promote sustainability through intelligent systems. He has authored 10 peer-reviewed journal articles (7 Q1, 3 Q2) and more than 20 conference papers, including presentations at CORE A venues. His academic career includes research stays in Japan (Ritsumeikan University) and Canada (University of Alberta), resulting in multiple joint publications.

RESEARCH INTERESTS

- **Green and Sustainable Computing** – Optimization of software to minimize energy consumption and environmental impact across platforms and applications.
- **Compiler Optimization and Evolutionary Computation** – AI-driven and metaheuristic approaches for multi-objective compilation, automatic software tuning, and performance optimization.
- **Software Obfuscation and Security –** Robust source code protection through evolutionary and optimization-based techniques considering software performance.
- **Sustainable Public Transport Systems and Intelligent Mobility** – Machine learning and optimization for energy-efficient transportation and smart urban mobility.
- **Green Gaming and Entertainment Computing** – Energy-aware optimization of video games and interactive software systems.

WORK EXPERIENCE

POSTDOCTORAL RESEARCHER (FPU FELLOW) **Cádiz, Spain**
University of Cádiz *July 2025–Present*

- Conducting postdoctoral research on modern compiler optimizations and their impact on runtime and energy consumption.
- Designed several experimental frameworks to evaluate compiler configurations on web browsers, CUDA applications on embedded GPUs, and Unity-based video games.
- Analyzed optimization managers in LLVM/Clang and GCC and their effect on performance and energy efficiency.

PREDOCTORAL RESEARCHER (FPU FELLOW) **Cádiz, Spain**
University of Cádiz *January 2023–July 2025*

- Conducted a Ph.D. thesis titled "*Software Optimization for the Green Internet of Things*".
- Proposed and solved 3 novel compiler optimization problems (SCOP, gSCOP, FROP) using evolutionary algorithms and LLVM, achieving up to 62% faster runtimes and 58% energy savings.
- Designed adaptive software optimization frameworks for energy-efficient IoT, gaming, and embedded systems.
- Developed ML-based models (MEPBO, SUTRA, ML-EPBO) for hybrid bus systems, achieving daily reductions of nearly 300 kg of CO_2 and 110 liters of fuel.

- Introduced the TSOP obfuscation model and created the C3GA algorithm, improving code protection by up to 405× in low-power environments.
- Published 9 journal papers (7 Q1, 2 Q2) and 16+ conference papers (incl. CORE A/A*).
- Conducted international research stays in Canada and Japan, leading to ongoing collaborations and joint publications.

RESEARCH ASSISTANT (PROJECT-BASED CONTRACT) **Cádiz, Spain**
University of Cádiz *November 2021–September 2022*

- Analyzed energy consumption data for plug-in hybrid buses and developed predictive regression models.
- Conducted data processing, enrichment, and imputation, including treatment of data uncertainty.
- Optimized operational strategies and validated simulators and predictive tools developed during the project.

EDUCATION

UNIVERSITY OF CÁDIZ **Cádiz, Spain**
Ph.D. in Computer Engineering *November 2022–July 2025*
Graduated *Summa Cum Laude* (Highest distinction)

UNIVERSITY OF CÁDIZ **Cádiz, Spain**
Master of Research in Systems and Computer Engineering *October 2021–September 2022*
Specialization in Big Data
GPA: 9.26/10

- *Master's thesis awarded 10/10 (with distinction)*
- Awarded the Extraordinary Master's Degree Award.
- Received five distinctions for academic excellence.

UNIVERSITY OF CÁDIZ **Cádiz, Spain**
Bachelor of Engineering in Computer Engineering *September 2017–July 2021*
Specialization in Computer Science
GPA: 8.73/10

- Bachelor's thesis graded 10/10 (with distinction)
- Received eight academic honors.
- Student Research Assistant. *November 2018 – September 2020*

PUBLICATIONS

JOURNAL PAPERS

J10. Rosa F. J.; de la Torre J. C.; **Aragón-Jurado J. M.**; Valderas-González A.; Dorronsoro B. 2026. *Energy–Performance Trade-Offs of LU Matrix Decomposition in Java Across Heterogeneous Hardware and Operating Systems*. Applied Sciences. MDPI. 16(2). 1002. DOI: 10.3390/app16021002 (**IF 2.5, CiteScore 5.5, Q2**)

J9. Aragón-Jurado J. M.; Bangash A. A.; Dorronsoro B.; Ali K.; Hindle A.; Ruiz P. 2025. *Does Faster Mean Greener? Runtime and Energy Trade-offs in iOS Applications with Compiler Optimizations*. Sustainable Computing: Informatics and Systems. Elsevier. 47. 101166. DOI: 10.1016/j.suscom.2025.101166 (**Outcome of research stay at the University of Alberta**) (**IF 5.7, CiteScore 12.3, Q1**)

J8. Díaz-Jiménez M.**; Aragón-Jurado J. M.;** Dorronsoro B.; Pavón-Domínguez P.; Seredynski M.; Ruiz P. 2025. *Sustainable driving operations of urban plugin hybrid buses considering restricted emission mapping zones*. Engineering Applications of Artificial Intelligence. Elsevier. 157. 111179. DOI: 10.1016/j.engappai.2025.111179 (**IF 8.0, CiteScore 9.5, Q1**)

J7. Aragón-Jurado J. M.; Ruiz P.; Dorronsoro B.; Thawonmas R. 2025. *Green Gaming: Automated Energy Consumption Reduction for Doom Engine*. IEEE Consumer Electronics Magazine. IEEE. 15(1), pp. 15-21. DOI: 10.1109/MCE.2025.3565227 (**Outcome of research stay at Ritsumeikan University**) (**IF 4.1, CiteScore 11.1, Q1**)

J6. Aragón-Jurado J. M.; de la Torre J. C.; Ruiz P.; Dorronsoro B. 2025. *Automatic software tailoring for Green Internet of Things*. Internet of Things. Elsevier. 30. 101521. DOI: 10.1016/j.iot.2025.101521 (**IF 7.6, CiteScore 12.4, Q1**)

J5. Aragón-Jurado J. M.; de la Torre J. C.; Ruiz P.; Galindo P. L.; Zomaya A. Y.; Dorronsoro B. 2024. *Automatic Software Tailoring for Optimal Performance. IEEE Transactions on Sustainable Computing*. IEEE. 9(3), pp. 464-481. DOI: 10.1109/TSUSC.2023.3330671 (**IF 3.9, CiteScore 8, Q1**, 2024)

J4. de la Torre J. C.; **Aragón-Jurado J. M.**; Crespo-Álvarez A.; Bárcena-González G. 2024. *GAGI: Game engine for Artificial General Intelligence experimentation*. SoftwareX. Elsevier. 26. DOI: 10.1016/j.softx.2024.101665 (**IF 2.4, CiteScore 4.2, Q2**, 2024)

J3. de la Torre J. C.; Jareño J.; **Aragón-Jurado J. M.**; Varrette S.; Dorronsoro B. 2024. *Source code obfuscation with genetic algorithms using LLVM code optimizations.* Logic Journal of the IGPL. Oxford University Press. DOI: 10.1093/jigpal/jzae069 (**IF 0.8, CiteScore 2.4, Q2**, 2024)

J2. Aragón-Jurado J. M.; de la Torre J. C.; Jareño J.; Dorronsoro B.; Zomaya A. Y.; Ruiz P. 2023. *Neuroevolved bi-directional LSTM applied to zero emission zones management in urban transport*. Applied Soft Computing. Elsevier. 148. 110943. DOI: 10.1016/j.asoc.2023.110943 (**IF 7.2, CiteScore 15.8, Q1**, 2023)

J1. Ruiz P.; **Aragón-Jurado J. M.**; Seredynski M.; Cabrera J. F.; Peña D.; de la Torre J. C.; Zomaya A. Y.; Dorronsoro B. 2023. *Optimal battery management strategies for plug-in electric hybrid buses on routes including green corridors*. Sustainable Cities and Society. Elsevier. 94. 104556. DOI: 10.1016/j.scs.2023.104556 (**IF 10.5, CiteScore 22.0, Q1**, 2023) (**Best paper award**)

JOURNAL PAPERS UNDER REVIEW

J18. Aragón-Jurado J. M.; Xia Y.; Khan I.; Thawonmas R. 2025. *A Framework for Energy–Quality Efficiency Assessment in Large Language Models.* Under review in Sustainable Computing: Informatics and Systems. (**IF 5.7, CiteScore 12.3, Q1**)

J17. Aragón-Jurado J. M.; Dorronsoro B.; Ruiz P.; Nojima Y. 2025. *A Systematic Review of Code Obfuscation in Blockchain Systems.* Under review in ACM Computing Surveys. (**IF 28.0, CiteScore 51.6, Q1**)

J16. Aragón-Jurado J. M.; de la Torre J. C.; Ruiz P.; Dorronsoro B. 2025. *Automated Tailoring of the Doom Engine for Handheld Gaming Devices*. Under review in IEEE Transactions on Games. (**IF 2.8, CiteScore 5.2, Q2**)

J15. Aragón-Jurado J. M.; Ruiz P.; Dorronsoro B. 2025. *Energy–Performance Trade-offs of CUDA Compiler Optimizations in Embedded GPUs*. Under review in Journal of Systems Architecture. (**IF 4.1, CiteScore 10.5, Q1**)

J14. Aragón-Jurado J. M.; Thawonmas R.; Ruiz P.; Dorronsoro B. 2025. *Native Code, Greener Games? Investigating Energy Efficiency in Unity Builds*. Under review in Entertainment Computing. (**Outcome of research stay at Ritsumeikan University**) (**IF 2.4, CiteScore 5.6, Q2**)

J13. Aragón-Jurado J. M.; Dorronsoro B.; Ruiz P. 2025. *Evaluating Compiler Optimizations for Faster and Greener Web Browsing*. Under major review Information and Software Technology. (**IF 4.3, CiteScore 10.8, Q1**)

J12. Jareño J.; **Aragón-Jurado J. M.**; de la Torre J. C.; Ruiz P.; Dorronsoro B. 2025. E*nergy-Efficient Large Language Models*. Under 2nd major review in Future Generation Computer Systems. (**IF 6.1, CiteScore 17.1, Q1**)

J11. Aragón-Jurado J. M.; de la Torre J. C.; Nojima Y.; Ruiz P.; Dorronsoro B. 2025. *Two-Level Automatic Software Optimization Using Cooperative Co-Evolutionary Algorithms.* Under 2nd major review in Applied Soft Computing. (**IF 6.6, CiteScore 14.5, Q1**)

BOOK CHAPTERS

B1. Dorronsoro B.; **Aragón-Jurado J. M.**; Jareño J.; de la Torre J. C.; Ruiz P. 2024. A Survey on Automatic Source Code Transformation for Green Software Generation. Encyclopedia of Sustainable Technologies (Second Edition). Elsevier. 3, pp.765-779. DOI: 10.1016/B978-0-323-90386-8.00122-4

INTERNATIONAL CONFERENCE PAPERS

C16. Rosa F. J.; Valderas-González A.; **Aragón-Jurado J. M.**; de la Torre J. C.; Dorronsoro B. *Performance and Consumption Analysis of LU Matrix Decomposition on Heterogeneous and Traditional Multicore CPUs*. In International Conference on Computational Science and Computational Intelligence. CSCI. 2025. Las Vegas, USA.

C15. Valderas-González A.; Rosa F. J.; **Aragón-Jurado J. M.**; de la Torre J. C.; Dorronsoro B. *Code Obfuscation with LLVM: An Analysis of the Impact of the LLVM Version*. In International Conference on Computational Science and Computational Intelligence. CSCI. 2025. Las Vegas, USA.

C14. Xia Y.; **Aragón-Jurado J. M.**; Thawonmas R. *Green by Design: Energy-Guided Reranking of LLM-Generated Programs*. In 1st Open Conference of AI Agents for Science. 2025. Virtual Conference.

C13. de la Torre J. C.; **Aragón-Jurado J. M.**; Jareño J.; Dorronsoro B.; Ruiz P. *A Two-step Approach to Find Short Compilation Transformation Sequences for Optimal Software Runtime Performance*. In Proceedings of the Genetic and Evolutionary Computation Conference Companion. ACM. 2025. Málaga, Spain. DOI: 10.1145/3712255.3726624 (**CORE A main**)

C12. Kalaica M.; **Aragón-Jurado J. M.;** Jakus I.; Dorronsoro B.; Ruiz P. *Comparison on the use of Hybrid and Plugin Hybrid Electric Buses for Sustainable Urban Transportation - Split Use Case*. 10th North American Conference on Industrial Engineering and Operations Management (2025 IEOM). 2025. Orlando, Florida, USA. DOI: 10.1007/978-3-031-98235-4_12

C11. Aragón-Jurado J. M.; de la Torre J. C.; Ruiz P.; Dorronsoro B. *Automatic Generation of Greener Software Program Versions with Genetic Algorithms*. International Conference in Optimization and Learning (OLA2025). 2025. Dubai, United Arab Emirates.

C10. Aragón-Jurado J. M.; Jareño J.; de la Torre J. C.; Ruiz P.; Dorronsoro B. *Two-level Software Obfuscation with Cooperative Co-evolutionary Algorithms*. In 2024 IEEE Congress on Evolutionary Computation (CEC) (pp. 1-8). IEEE. 2024. Yokohama, Japan. DOI: 10.1109/CEC60901.2024.10612116 (**CORE B**, **GGS A-**)

C9. Aragón-Jurado J. M.; Dorronsoro B.; Ruiz P. *Bus Route Segmentation for Performance Optimization Using Geographical Mapping Tools*. INGEGRAF 2024. Lecture Notes in Mechanical Engineering. Springer, Cham. Valencia, Spain. DOI: 10.1007/978-3-031-72829-7_60

C8. Aragón-Jurado J. M.; Díaz-Jiménez M.; Dorronsoro B.; Pavón-Domínguez P.; Seredynski M.; Ruiz P. *Electric Drive Assignment Strategies Optimization for Plugin Hybrid Urban Buses on Tailored Emissions Mapping*. In 2024 IEEE International Parallel and Distributed Processing Symposium Workshops (IPDPSW) (pp. 909-918). IEEE. 2024. San Francisco, USA. DOI: 10.1109/IPDPSW63119.2024.00160 (**CORE A main**)

C7. de la Torre J. C.; **Aragón-Jurado J. M.**; Jareño J.; Ruiz P.; Dorronsoro B. *Software Performance Optimization with Genetic Algorithms.* Tenth Spanish-German Symposium on Applied Computer Science (SGSOACS 2024). 2024. Cádiz, Spain.

C6. Jareño J.; **Aragón-Jurado J. M.**; de la Torre J. C.; Dorronsoro B.; Ruiz P. *Management of Zero Emissions Zones in Urban Transport by Means of Neuroevolution*. Tenth Spanish-German Symposium on Applied Computer Science (SGSOACS 2024). 2024. Cádiz, Spain.

C5. Ruiz P.; **Aragón-Jurado J. M.**; Cabrera J. F.; de la Torre J. C.; Dorronsoro B. *Battery Management Strategies Optimization for Urban Plug-in Hybrid Buses*. International Conference in Optimization and Learning (OLA2024). 2024. Dubrovnik, Croatia.

C4. Aragón-Jurado J. M.; de la Torre J. C.; Ruiz P.; Dorronsoro B. *Automatic Software Performance Optimization using Genetic Algorithms*. International Conference in Optimization and Learning (OLA2024). 2024. Dubrovnik, Croatia.

C3. Aragón Jurado J. M.; Dorronsoro B.; Ruiz P. *Multivariable Visualization Tool of the Performance of Plug-In Hybrid Electric Buses*. Advances in Design Engineering IV. INGEGRAF 2023. Lecture Notes in Mechanical Engineering. Springer, Cham. Cádiz, Spain. DOI: 10.1007/978-3-031-51623-8_30 (**Best paper award**)

C2. de la Torre J. C.; **Aragón-Jurado J. M.**; Jareño J.; Varrette S.; Dorronsoro B. *Obfuscating LLVM Intermediate Representation Source Code with NSGA-II*. International Joint Conference 15th International Conference on Computational Intelligence in Security for Information Systems (CISIS 2022). Lecture Notes in Networks and Systems, vol 532. Springer, Cham. Salamanca, Spain. DOI: 10.1007/978-3-031-18409-3_18

C1. Aragón-Jurado J. M.; de la Torre J. C.; Talbi E. G.; Dorronsoro B. *A Study on the Influence of Runtime Uncertainty in the Optimization of Software Programs.* 8th International Conference on Metaheuristics and Nature Inspired Computing META. Marrakech, Morocco. 2021.

NATIONAL CONFERENCE PAPERS

NC9. Vázquez-Rodríguez E.; **Aragón-Jurado J. M**.; de la Torre J. C.; Dorronsoro B. *Evolución de la infraestructura de compilación LLVM según las optimizaciones de código disponibles*. XXIX Jornadas de Ingeniería del Software y Bases de Datos (JISBD 2025). SISTEDES. 2025. Córdoba, Spain.

NC8. Pérez-Vargas A.; **Aragón-Jurado J. M.**; de la Torre J. C.; Dorronsoro B. *LinuxVerde: Un sistema operativo para la medición precisa del consumo energético del software*. XXIX Jornadas de Ingeniería del Software y Bases de Datos (JISBD 2025). SISTEDES. 2025. Córdoba, Spain.

NC7. de la Torre J. C.; **Aragón-Jurado J. M.**; Jareño J.; Dorronsoro B.; Ruiz P. *Optimización en dos pasos del rendimiento del software usando transformaciones de compilación*. XVI Congreso Español de Metaheurísticas, Algoritmos Evolutivos y Bioinspirados. AEPIA. 2025. San Sebastián, Spain.

NC6. Aragón-Jurado J. M.; Jareño J.; de la Torre J. C.; Ruiz P.; Dorronsoro B. *Ofuscación de Software en dos Niveles usando Algoritmos Cooperativos Coevolutivos*. XV Congreso Español de Metaheurísticas, Algoritmos Evolutivos y Bioinspirados. AEPIA. 2024. A Coruña, Spain.

NC5. Aragón-Jurado J. M.; de la Torre J. C.; Ruiz P.; Dorronsoro B. *Optimización automática del videojuego Doom para un rendimiento óptimo en Steam Deck*. III Congreso Español de Videojuegos. Sociedad Científica Informática de España. 2024. A Coruña, Spain. (**Best paper award**)

NC4. Aragón-Jurado J. M.; Acuña-Vega L. E.; Ortiz G.; Boubeta-Puig J.; Muñoz A. *Detección Inteligente de Sucesos en Smart Cities con Feedback de los Ciudadanos*. XVII Jornadas de Ingeniería de Ciencia e Ingeniería de Servicios (JCIS 2022). SISTEDES. 2022. Santiago de Compostela, Spain.

NC3. Aragón-Jurado J. M.; de la Torre J. C.; Benito-Jareño C.; Dorronsoro B. *Optimización de programas software considerando la incertidumbre del tiempo de ejecución*. XXVI Jornadas de Ingeniería del Software y Bases de Datos (JISBD 2022). SISTEDES. 2022. Santiago de Compostela, Spain.

NC2. Aragón-Jurado J. M.; Acuña-Vega L. E.; Ortiz G.; Boubeta-Puig J.; Muñoz A. *Hacia la Detección Inteligente de Sucesos en Ciudades Inteligentes con la Participación Ciudadana*. II Jornadas de Investigación Predoctoral en Ingeniería Informática (JIPII 2022). University of Cádiz. 2022. Cádiz, Spain.

NC1. Aragón-Jurado J. M.; de la Torre J. C.; Benito-Jareño C.; Dorronsoro B. *Optimización robusta del tiempo de ejecución de programas software con Algoritmos Genéticos*. II Jornadas de Investigación Predoctoral en Ingeniería Informática (JIPII 2022). University of Cádiz. 2022. Cádiz, Spain.

AWARDS AND GRANTS

PAPER AND PRESENTATION AWARDS

BP3. 2024 Best Paper Award - III Congreso Español de Videojuegos. Sociedad Científica Informática de España.

Awarded for the paper "*Optimización automática del videojuego Doom para un rendimiento óptimo en Steam Deck*".

BP2. 2023 Best Journal Paper Award - Cepsa Foundation Chair Award. Cepsa.

Awarded for the article "Optimal Battery Management Strategies for Plug-in Electric Hybrid Buses on Routes Including Green Corridor," published in Sustainable Cities and Society.

BP1. 2023 Best Paper Award - International Conference on The Digital Transformation in Graphic Engineering 2023 (INGEGRAF 2023). INGEGRAF.

Recognized for the paper "*Multivariable Visualization Tool of the Performance of Plug-In Hybrid Electric Buses*."

FELLOWSHIPS

F2. 2025 FPU Mobility Grant - Spanish Ministry of Science, Innovation and Universities.

Competitive national mobility grant awarded under the FPU program to support international research stays. Ranked first in Computer Science with the highest possible evaluation score.

F1. 2021 National FPU Fellowship, competitive research grant awarded by the Spanish Ministry of Universities.

Prestigious and highly competitive national grant for doctoral studies, awarded based on academic excellence and research potential.

OTHER AWARDS

OA4. 2025 Doctoral Defense Incentive – Modality B (€1000), University of Cádiz.

Grant awarded to support the final stage and defense of the PhD thesis.

OA3. 2022 Extraordinary Master's Degree Award, awarded to the top student in the Master's program.

Granted to the top-performing student in the Master of Research in Systems and Computing Engineering.

OA2. 2022 INICIA-INV Research Initiation Grant, University of Cádiz.
Competitive research grant awarded under the UCA Research and Transfer Plan to support early-stage researchers based on academic excellence and the quality of the master's thesis.

OA1. 2019 First Prize – atrÉBT! Entrepreneurship Competition (13th Edition), University of Cádiz.
Awarded for an innovative student-led technology project as part of a university-wide competition promoting entrepreneurship and innovation.

TEACHING EXPERIENCE

Over 150 teaching hours delivered across Machine Learning, Perception, and Automata Theory courses at the undergraduate level.

TEACHING ASSISTANT

Total hours delivered: 152

T5. Course/Subject: 2024-25 PERCEPTION. **Department/Center:** Department of Computer Engineering, University of Cádiz. **Hours delivered:** 24 (**Bachelor's level**)

T4. Course/Subject: 2024-25 MACHINE LEARNING. **Department/Center:** Department of Computer Engineering, University of Cádiz. **Hours delivered:** 36 (**Bachelor's level**)

T3. Course/Subject: 2023-24 PERCEPTION. **Department/Center:** Department of Computer Engineering, University of Cádiz. **Hours delivered:** 24 (**Bachelor's level**)

T2. Course/Subject: 2023-24 MACHINE LEARNING. **Department/Center:** Department of Computer Engineering, University of Cádiz. **Hours delivered:** 36 (**Bachelor's level**)

T1. Course/Subject: 2022-23 AUTOMATA THEORY AND FORMAL LANGUAGES. **Department/Center:** Department of Computer Engineering, University of Cádiz. **Hours delivered:** 32 (**Bachelor's level**)

ACADEMIC SUPERVISION

BT5. David Castillo Reguera – *Optimization through metaheuristic techniques of the design of positioning networks for the location of terrestrial laser scanners*, B.Eng. Thesis, University of Cádiz, expected 2026. (in progress)

BT4. Maria Elena Vazquez Rodriguez – *Analysis of the impact of the evolution of the LLVM compilation infrastructure on source code obfuscation*, B.Eng. Thesis, University of Cádiz, expected 2025. (completed – Grade: 10.0/10.0)

Resulted in a national conference paper: *XXIX Jornadas de Ingeniería del Software y Bases de Datos (JISBD 2025)*

BT3. Alvaro Perez Vargas – *GreenLinux, a version of Linux designed to have a low impact on energy consumption in microPCs*, B.Eng. Thesis, University of Cádiz, expected 2025. (completed – Grade: 10.0/10.0)

Resulted in a national conference paper: *XXIX Jornadas de Ingeniería del Software y Bases de Datos (JISBD 2025)*

BT2. Ignacio Gilabert Rodriguez – *Evaluating the quality of obfuscation in compiled codes*, B.Eng. Thesis, University of Cádiz, 2025. (completed – Grade: 8.0/10.0)

BT1. Francisco Jose Sanchez Moreno – *Design and development of a markup language for the description of cooking recipes*, B.Eng. Thesis, University of Cádiz, 2024. (completed – Grade: 10.0/10.0)

EXAMINATION COMMITTEES

EC8. Member of the evaluation committee for the B.Eng. Thesis. *A Platform for Generating Personalized Portfolios from Repositories as a Curriculum Support Tool*, November 2025. Grade: 10.0/10.0.

EC7. Member of the evaluation committee for the B.Eng. Thesis. *Simulation-Based Training in Software Project Management: A Systematic Literature Review*, November 2025. Grade: 10.0/10.0.

EC6. Member of the evaluation committee for the B.Eng. Thesis. *Analysis of the Impact of Artificial Intelligence on the Development of Computational Thinking in Programming Students: A Systematic Literature Review*, November 2025. Grade: 10.0/10.0.

EC5. Member of the evaluation committee for the B.Eng. Thesis. *Design and Fabrication of an Electrical Power Consumption Measurement Instrument for Mobile Telephony*, November 2025. Grade: 10.0/10.0.

EC4. Member of the evaluation committee for the B.Eng. Thesis. *Optimization of Maritime Routes Using Parallel Ant Colony Algorithms for a Weather Routing System*, September 2025. Grade: 9.5/10.0.

EC3. Member of the evaluation committee for the B.Eng. Thesis. *Reference-based Super-Resolution Techniques Applied to Ultrasound Imaging*, September 2025. Grade: 7.5/10.0.

EC2. Member of the evaluation committee for the B.Eng. Thesis. *Methodologies for Video Game Development: A Review from a Software Engineering Perspective*, September 2025. Grade: 9.0/10.0.

EC1. Member of the evaluation committee for the B.Eng. Thesis. *Optimization of Season Ticket Renewal Campaigns in Football Clubs through Personalized Price Simulation*, September 2025. Grade: 7.0/10.0.

EDUCATIONAL CONTRIBUTIONS AND INNOVATION

Published papers on pedagogical innovation in computer engineering education:

- **Aragón-Jurado J. M.** 2026. *Project-Based Learning for Teaching Server Administration: Implementing Secure Dockerized Infrastructures in the University Classroom.* Conference Proceedings EDUNOVATIC 2025: 10th Virtual International Conference on Education, Innovation and ICT. 2026. p. 256.
- de la Torre J. C.; **Aragón-Jurado J. M.** 2026. *Learning to Code through Creation: Project-Based Learning with Automated Feedback in Industrial Design*. Conference Proceedings EDUNOVATIC 2025: 10th Virtual International Conference on Education, Innovation and ICT. Adaya Press. p. 338.

These works derive from teaching activities from teaching experiences in the B.Eng. Computer Engineering and B.Eng. Design Engineering programs, focusing on project-based learning and automated assessment.

PRESENTATIONS AND LECTURES

INVITED TALKS

L7. Toward Greener Games: Reducing Energy for a Sustainable Future. 6th RCGS Research Workshop. Ritsumeikan University, Ibaraki, Japan. 2025-06-25

L6. Software Optimization for the Green Internet of Things. Computational Intelligence Lab. Osaka Metropolitan University, Osaka, Japan. 2025-06-04

L5. Source Code Obfuscation with Evolutionary Algorithms. Amii Artificial Intelligence Seminar. University of Alberta, Edmonton, Canada. 2024-07-29

ACADEMIC LECTURES

L4. Multi-objective optimization for the obfuscation of software programs using LLVM. Master of Science in Cybersecurity. University of Cádiz, Cádiz, Spain. 2022-05-06

L3. Reducing energy consumption of programs on Android smartphones using genetic algorithms. Bachelor of Engineering in Computer Engineering. University of Cádiz, Cádiz, Spain. 2021-09-29

L2. Parallel genetic algorithms for software optimization: an analysis of performance on different platforms. Bachelor of Engineering in Computer Engineering. University of Cádiz, Cádiz, Spain. 2021-09-29

L1. Parallel genetic algorithms: designs and applications. Bachelor of Engineering in Computer Engineering. University of Cádiz, Cádiz, Spain. 2021-09-29

OVERSEAS RESEARCH EXPERIENCE

RESEARCH STAYS

RS3. Visiting researcher at University of Antwerp, Antwerp, Belgium. *February 2026 – March 2026*

Host: Dr. Renzo Massobrio

Project Objective: Develop a model to dynamically determine electric drive assignments for plug-in hybrid electric buses.

Outcomes: Preparation of a journal manuscript for submission to *IEEE Transactions on Intelligent Transportation Systems* (**IF 8.4, CiteScore 17.8, Q1**).

RS2. Visiting Ph.D. student at Ritsumeikan University, Ibaraki, Japan. *April 2025 – June 2025*

Host: Prof. Ruck Thawonmas

Project Objective: Empirical study on the impact of compiler optimizations on the energy consumption of video game engines, focusing on optimizing the energy usage of the popular video game Doom.

Outcomes: Journal paper published in *IEEE Consumer Electronics Magazine* (**IF 4.1, CiteScore 11.1, Q1**).

RS1. Visiting Ph.D. student at the University of Alberta, Edmonton, Canada. *May 2024 – August 2024*

Host: Prof. Abram Hindle

Project Objective: Empirical study on the impact of compiler optimizations on the energy consumption of applications on iOS devices.

Outcomes: Journal paper published in *Sustainable Computing: Informatics and Systems* - Elsevier (**IF 5.7, CiteScore 12.3, Q1**, 2025).

INTERNATIONAL COLLABORATIONS

IC2. Prof Yusuke Nojima – Osaka Metropolitan University, Japan. *June 2025 – Present*

Initiated collaborative research on robust evolutionary algorithms for sustainable computing following an in-person lab visit in June 2025. During the visit, I gave a research talk and held technical discussions with Prof. Nojima's group, laying the groundwork for ongoing joint work.

IC1. Prof. Ruck Thawonmas – Ritsumeikan University, Japan. *April 2025 – Present*

Continued collaboration on green video games and energy-efficient LLMs after completing an in-person research stay. Ongoing joint research initiatives are being developed.

Ongoing joint projects with Prof. Yusuke Nojima (Osaka Metropolitan University) and Prof. Ruck Thawonmas (Ritsumeikan University), focused on evolutionary computation and energy-efficient AI systems.

INVOLVEMENT IN FUNDED RESEARCH PROJECTS

P5. Automatic Generation of Green and Secure Software [FEDER-UCA-2024-A2-23]

National R&D Project | Ministry of Economy, Innovation and Science of Andalucia. Spain | **Team Member**

P4. Intelligent eco-driving solutions for sustainable mobility [PID2022-137858OB-I00]

National R&D Project | Ministry of Science and Innovation, Spain | **Team Member**

P3. Characterization of energy efficiency in the software/hardware binomial using multifractal analysis. [TED2021-131880B-I00].

National R&D Project | Ministry of Science and Innovation, Spain | **Team Member**

P2. Intelligent Generation of Sustainable Software - GENIUS [P18-FR-2399].

National R&D Project | Ministry of Economy, Innovation and Science of Andalucia. Spain | **Team Member**

P1. Intelligent Sustainable Urban Transportation Systems [RTI2018-100754-B-I00]

National R&D Project | Ministry of Science, Innovation and Universities, Spain | **Team Member**

SERVICE

CONFERENCE ORGANIZATION

O3. 2026 Special Session Organization - *AI for a sustainable future: transforming engineering, mobility, and smart cities* in the 9th International Conference on Optimization and Learning (OLA).

O2. Collaborator in International Conference on The Digital Transformation in Graphic Engineering 2023 (INGEGRAF 2023).

O1. 2023 Special Session Organization - *Artificial Intelligence for Sustainability* in the 6th International Conference on Optimization and Learning (OLA).

REVIEWER

Selected reviewing: Sustainable Cities and Society (Elsevier), Applied Soft Computing (Elsevier), Sustainable Computing: Informatics and Systems (Elsevier), Future Generation Computer Systems (Elsevier), IEEE Conference on Games (CoG).

JOURNAL

R13. Reviewer for the journal: Green Technologies and Sustainability – Elsevier.

R12. Reviewer for the journal: Energy Informatics – Springer.

R11. Reviewer for the journal: Sustainable Cities and Society – Elsevier.

R10. Reviewer for the journal: Urban Transitions – Elsevier.

R9. Reviewer for the journal: Computers & Security – Elsevier.

R8. Reviewer for the journal: Journal of Supercomputing – Springer.

R7. Reviewer for the journal: Future Generation Computer Systems – Elsevier.

R6. Reviewer for the journal: Sustainable Computing: Informatics and Systems – Elsevier.

R5. Reviewer for the journal: Applied Soft Computing – Elsevier.

R4. Reviewer for the journal: Engineering Applications of Artificial Intelligence – Elsevier.

CONFERENCE

R3. Reviewer for the conference: IEEE Global Conference on Consumer Electronics (GCCE) 2025.

R2. Reviewer for the conference: IEEE Conference on Games (CoG) 2025.

BOOK

R1. Reviewer for the book: Data Analytics and Computational Intelligence (2022)

PROFESSIONAL MEMBERSHIP

PM4. Member, Association for Computing Machinery (ACM) – *April 2025 – Present*

PM3. Member, IEEE Computer Society – *March 2024 – December 2025*

PM2. Council Member, Department of Computer Engineering, University of Cádiz – *June 2023 – Present*

PM1. Member, GOAL Research Group – *July 2021 – Present*

REFERENCES

References available upon request.