

Jonathan Muraña

Curriculum Vitæ. Updated 2026/04/05.

Personal information

Full name Jonathan Muraña Silvera
Birth November 17th 1986, Treinta y Tres, Uruguay
Nationality Uruguayan

Academic education

- 2020–Present **Ph.D. in Computer Science**, PEDECIBA, Faculty of Engineering, Universidad de la República, Uruguay.
- 2014–2019 **M.Sc. in Computer Science**, PEDECIBA, Faculty of Engineering, Universidad de la República, Uruguay., Tesis: Empirical characterization and modeling of power consumption and energy aware scheduling in data centers. Web: <https://www.fing.edu.uy/~jmurana/msc>
- 2005–2012 **Computer Engineering**, PEDECIBA, Faculty of Engineering, Universidad de la República, Uruguay., Tesis: Parallel multi-objective evolutionary algorithms for scheduling problems in heterogeneous environments considering due dates

TI work experience (short version)

- 2018–Present **Java Architect/Developer, JavaScript Developer** , SOCIAL SECURITY INSTITUTE (BPS), URUGUAY
References: Eng. Vanessa Vignola, Development Chief in ATYR BPS, vvignola@bps.gub.uy
My work covers the entire development stack: requirements, usability, user interface design, architecture, deployment, configuration management, and continuous integration. Main technologies: Java EE, Springboot, Angular 2+, Oracle, Maven, Docker, Jenkins, Gitlab. Others: REST, SOAP, JBoss, HTTP Apache.
- 2015–2018 **Java Consultant**, KREITECH S.R.L
References: Eng. Rafael Sisto, CEO Kreitech S.R.L, rsisto@kreitech.com.uy;
Eng. Antonio Malaquina, CTO Kreitech S.R.L, amalaquina@kreitech.com.uy;
Main technologies: Java EE, Oracle, Maven. Others: SOAP, JBoss.
- 2013–2015 **Java Analyst/Developer**, SOFIS SOLUTIONS S.R.L
References: Eng. Santiago Atella, CEO, santiago@sofis.com.uy;
Eng. Gustavo Cirigliano, CTO, gustavo@sofis.com.uy
Main technologies: Java EE, PostgreSQL, jBoss AS.

Julio Herrera y Reissig 565, Montevideo, Uruguay

✉ jmurana@fing.edu.uy • www.fing.edu.uy/~jmurana

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2009–2013 **Genexus Analyst/Developer**, SISTEMAS INFORMÁTICOS S.R.L
References: ACCT. Eduardo Ruiz de Olano, CEO, ruizdeolano@sisinfo.com.uy;
Eng. Cecilia Techera, Líder Técnico, ctechera@sisinfo.com.uy
Main technologies: Genexus.

Positions Held

2019–2020 **Research Assistant**, NUMERICAL CENTER, COMPUTER SCIENCE INSTITUTE,
FACULTY OF ENGINEERING, UNIVERSIDAD DE LA REPÚBLICA, URUGUAY
References: PhD. Sergio Nesmachnow, sergion@fing.edu.uy;
PhD. Santiago Iturriaga, siturria@fing.edu.uy

2022–2024 **Teaching and Research Assistant**, COMPUTER SCIENCE INSTITUTE, FACULTY
OF ENGINEERING, UNIVERSIDAD DE LA REPÚBLICA, URUGUAY
References: PhD. Javier Baliosian, javierba@fing.edu.uy;
PhD. Claudio Risso, crisso@fing.edu.uy;
PhD. Aiala Rosá, aialar@fing.edu.uy;
Dictation of practical classes for the courses Programming 3, Introduction to Operations
Research and Programming 1.

Publications

Publications are available at: <https://www.fing.edu.uy/~jmurana>.

Peer-reviewed journal articles (8)

J. Muraña, S. Nesmachnow. Synthetic energy data generation using Wasserstein GANs for high performance computing nodes. *Programming and Computer Software* XX.X (2025), pp. 1–19.

R. Massobrio, S. Nesmachnow, J. Muraña, B. Dorrnosoro. Learning to optimize timetables for efficient transfers in public transportation systems. *Applied Soft Computing* 119.x (2022), pp. 1-32.

S. Iturriaga, J. Muraña, S. Nesmachnow. Bio-inspired negotiation approach for smart-grid colocation datacenter operation. *Mathematical Biosciences and Engineering* 19.3 (2022), pp. 2403-2423.

J. Muraña, S. Nesmachnow. Simulation and evaluation of multicriteria planning heuristics for demand response in datacenters. *Simulation: Transactions of the Society for Modeling and Simulation International* Online first (2021), pp. 1–18.

J. Muraña, S. Nesmachnow, S. Iturriaga, S. Montes de Oca, G. Belcredi, P. Monzón, V. Shepelev, A. Tchernykh. Smart grid demand response strategies for datacenters. *Proceedings of the Institute for System Programming* 33.2 (2021), pp. 125–136.

J. Muraña. Empirical power consumption characterization and energy aware scheduling in data centers. *CLEI Electronic Journal* 24.1 (2021), pp. 1–28.

J. Muraña, S. Nesmachnow, S. Iturriaga, S. Montes de Oca, G. Belcredi, P. Monzón, V. Shepelev, A. Tchernykh. Negotiation approach for the participation of datacenters and supercomputing facilities in smart electricity markets. *Programming and Computer Software* 46.8 (2020), pp. 636–651.

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J. Muraña, S. Nesmachnow, F. Armenta-Cano y A. Tchernykh. Characterization, modeling and scheduling of power consumption of scientific computing applications in multicores. *Cluster Computing* 22.3 (2019), pp. 839–859.

Thesis (2)

J. Muraña. Empirical characterization and modeling of power consumption and energy aware scheduling in data centers. M.Sc. thesis, Universidad de la República, 2019.

M. Bellucci, J. Muraña. Algoritmos evolutivos multiobjetivo paralelos para planificación en entornos heterogéneos considerando fechas de finalización. Undergraduate thesis, Universidad de la República, 2012.

Articles in conference proceedings (14)

J. Muraña, S. Nesmachnow. Lightweight energy consumption models for high performance computing. In *VIII Ibero-American Congress on Smart Cities*. 2025, pp 1-15.

J. Muraña, J. Durillo, S. Nesmachnow. Understanding Energy Consumption Trends in high performance computing nodes. In *Winter Simulation Conference*. 2024, pp 1-12.

J. Muraña, S. Nesmachnow, J. Durillo. WGAN to augment tabular energy consumption data of high performance computing nodes. In *VII Ibero-American Congress on Smart Cities*. 2024, pp 1-15.

J. Muraña, S. Nesmachnow. Multi-objective analysis of power consumption and quality of service in datacenters for effective demand response. In *High Performance Computing*. 2023, pp 1-15.

J. Muraña, S. Iturriaga, S. Nesmachnow. Learning tenant behavior and evolutionary approach for demand response in colocation datacenters. In *HPC for International Collaboration between Europe and Latin America*. 2022, pp 1-6.

J. Muraña, C. Navarrete, S. Nesmachnow. Machine learning for generic energy models of high performance computing resources. In *High Performance Computing*. 2021, pp 1-16.

S. Nesmachnow, J. Muraña, C. Risso. Exact and metaheuristic approach for bus timetable synchronization to maximize transfers. In *III Ibero-American Congress on Smart Cities*. 2021, pp 1-15.

J. Muraña, S. Nesmachnow, S. Iturriaga, S. Montes de Oca, G. Belcredi, P. Monzón, A. Tchernykh. Two Level Demand Response Planning for Retail Multi-Tenant Datacenters. In *International Symposium on Cloud Computing and Services for High Performance Computing Systems*. 2021, pp 1-8.

S. Montes de Oca, J. Muraña, P. Monzón, G. Belcredi, S. Nesmachnow, S. Iturriaga. Demand Response Program for Supercomputing and Datacenters Providing Ancillary Services in the Electricity Market. In *PES Transmission and Distribution Conference and Exposition – Latin American*. 2020, pp 1-5.

S. Nesmachnow, J. Muraña, G. Goñi, R. Massobrio y A. Tchernykh. Evolutionary approach for bus synchronization. In *High Performance Computing Latin America*. 2019, pp 320-336.

S. Nesmachnow, S. Iturriaga, J. Muraña, S. Montes de Oca, G. Belcredi, P. Monzón, P. Belzarena y J. Bazerque. Demand Response and Ancillary Services for Supercomputing and Datacenters. In *International Supercomputing in México*. 2019, pp 203-217.

J. Muraña, S. Nesmachnow, S. Iturriaga y A. Tchernykh. Power Consumption Characterization of Synthetic Benchmarks in Multicores. In *High Performance Computing Latin America*. 2017, pp 21-37.

S. Nesmachnow y J. Muraña. Multiobjective scheduling with service levels in heterogeneous computing systems. In *VIII ALIO/EURO Workshop on Applied Combinatorial Optimization*. 2014, pp. 1-6.

J. Muraña, S. Nesmachnow y S. Iturriaga. A multiobjective evolutionary algorithm for QoS-aware planning in heterogeneous computing systems. In *XL Latin American Computing Conference*. 2014, pp. 1-12.

Technical reports (1)

Universidad de la República (Uruguay). Facultad de Ingeniería. Instituto de Computación. Actas de las Jornadas Uruguayas de Ciencias de la Computación 2024 "Jorge Vidart". 2025.

■ Scholarships

- 2020 **Short-term stay grant**, *German Academic Exchange Service (DAAD)*, Germany.
- 2017 **School grant**, *Latin american center for interdisciplinary training (CELF)*, Buenos Aires, Argentina. High-performance computing school (ECAR-HPC School).

■ Awards

- 2020 **Second best master thesis award**, *XXVII Latin American Contest of Master Thesis*, XLVI Latin American Computing Conference.
- 2020 **First place**, *XII Annual Contest of Master Thesis*, National Academy of Engineering of Uruguay.

■ Research internships

- Oct 2018 **Computer Science Department, CICESE Research Center**, *Ensenada, Baja California, México*. Transport planning in smart cities

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Jun 2021 - **Leibniz Supercomputing Centre**, *Munich, Bavaria, Germany*. Machine learning
Aug 2021 for energy consumption models

Research projects

Set 2018 - **Active role of data centers and other large consumers of electrical energy:
Dic 2020 demand response and auxiliary services.**

Web: <https://www.fing.edu.uy/inco/grupos/cecal/hpc/DRAS>

Grants: Energy Sector Fund (FSE, Uruguay) and National Agency of Research and Innovation (ANII, Uruguay)

Role: Research group member

2018 - 2020 **Urban transport planning in smart cities.**

Web: <https://www.fing.edu.uy/inco/grupos/cecal/hpc/bus-sync>

Grants: Uruguay-México cooperation fund.

Role: Research group member

Presentations

Oral presentations at conferences

- 2025 "Lightweight energy consumption models for high performance computing", VII Ibero-American Congress on Smart Cities, Puebla, Mexico (Online).
- 2024 "Understanding Energy Consumption Trends in high performance computing nodes", Winter Simulation Conference, Orlando, USA (Online).
- 2024 "WGAN to augment tabular energy consumption data of high performance computing nodes", VII Ibero-American Congress on Smart Cities, Costa Rica (Online).
- 2021 "Machine learning for generic energy models of high performance computing resources", High Performance Computing (ISC 2021), Frankfurt, Germany (Online).
- 2021 "Two Level Demand Response Planning for Retail Multi-Tenant Datacenters", International Conference on High Performance Computing & Simulation (HPCS 2020), Barcelona, Spain (Online, Pre-recorded presentation, live Q&A).
- 2020 "Empirical characterization and modeling of power consumption and energy aware scheduling in data centers", XLVI Latin American Computing Conference, Loja, Ecuador. (Online)
- 2017 "Power Consumption Characterization of Synthetic Benchmarks in Multicores", High Performance Computing Latin America (CARLA), Universidad de Buenos Aires, Buenos Aires, Argentina.
- 2014 "Multiobjective scheduling with service levels in heterogeneous computing systems.", *VIII ALIO/EURO Workshop on Applied Combinatorial Optimization.*, Faculty of Engineering, Universidad de la República, Montevideo, Uruguay.
- 2014 "A multiobjective evolutionary algorithm for QoS-aware planning in heterogeneous computing systems", *XL Latin American Computing Conference (CLEI)*, Faculty of Engineering, Universidad de la República, Montevideo, Uruguay.

Other Oral Presentations

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- 2024 "WGAN para aumentar datos de consumo de energía de nodos de cómputo de alto desempeño", *Workshop on Generative Neural Networks, Uruguayan Conference on Computer Science (JUCC 2024)*, Facultad de Ingeniería, Universidad de la República, Montevideo, Uruguay.
- 2024 "Computational intelligence for energy management of datacenters (PhD. thesis)", *Students seminar, PEDECIBA - Computer science*, Faculty of Engineering, Universidad de la República, Montevideo, Uruguay.
- 2022 "Computational intelligence for energy management of datacenters (PhD. thesis)", *Students seminar, PEDECIBA - Computer science*, Faculty of Engineering, Universidad de la República, Montevideo, Uruguay.
- 2021 "Empirical characterization and modeling of power consumption and energy aware scheduling in data centers", My thesis in 180 seconds, Montevideo, Uruguay
- 2017 "Power Consumption Characterization of Workload, Cloud Simulation and Energy Aware Scheduling (Master thesis)", *Students seminar, PEDECIBA - Computer science*, Faculty of Engineering, Universidad de la República, Montevideo, Uruguay.

■ Certifications

- 2014 OCA Java SE 7 Programmer, ORACLE
- 2008 GeneXus Analyst 9.0, ARTECH

■ Further education

- 2017 High-performance computing school (ECAR-HPC School), Track High Performance Computing Operations (64hs), *Universidad de Buenos Aires, Buenos Aires, Argentina*

■ Evaluations

Journal manuscript reviews

- 2026 IEEE Latin America Transactions, *IEEE*
1 review
- 2023 SN Computer Science, *Springer Nature*
1 review

Reviews for conferences

- 2020–2025 3rd, 4th, 5th, 6th, 7th, and 8th Ibero-American Congress on Smart Cities.
1, 1, 2, 2, 1, 2 reviews (total: 9)

Bachelors final project assessments

- 2022 Appraisal of car accidents through image recognition applying computational intelligence, *Computer Science Engineering, Universidad de la República*. Estudiantes: Franco Cuevas, Lucas Barenchi y Ignacio Alonso

■ Languages

Spanish Native

English Listening, Reading, Speaking, Writing (Good)
Portuguese Listening, Reading (Good), Speaking (Intermediate), Writing (Basic)