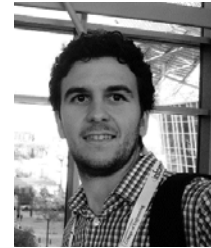


CONTACT INFORMATION University of Malaga
Department of Applied Mathematics
OASYS Research Group
Address: *Edificio de Investigación Ada Byron A.2.7*
C/Arquitecto Francisco Peñalosa, 18
29010, Malaga, Spain
e-mail: miguelangeljmd@uma.es
tel: +34 951 952 925



PERSONAL Spanish (D.O.B. 29th of July 1992, Malaga, Spain)

RESEARCH INTEREST Mathematical programming, Statistical data analysis, Data-driven decision making under uncertainty; Time series analysis; Machine Learning; Renewable energy sources; Energy systems modeling; Energy analytics, markets, and economics; Power system operations, planning and control; Smart grids.

EXPERIENCE

- 10 / 2019 – present **Research assistant**
University of Malaga, Malaga, (Spain). Applied Mathematics department. OASYS research group.
Researching on power systems, electrical markets, wind power production forecasting, using Python and its main packages (Pandas, Numpy, Matplotlib, Scikit-learn...) to forecast and improve profitability of wind power production under uncertainty by data-driven decisions.
- 05 / 2019 – 09 / 2019 **Research trainee at the SGIL Laboratory**
Joint Research Centre, Unit C3, European Commission, Petten (The Netherlands).
Worked in the SGIL Smart Grid Interoperability Laboratory (<https://ses.jrc.ec.europa.eu/sgil-petten>) developing optimization models with Python and Pyomo to improve the management of the electrical battery of the laboratory.
- 01 / 2018 – 04 / 2018 **Research assistant**
University of Malaga, Malaga, (Spain). Applied Mathematics department. OASYS research group.
Researching on power systems, electrical markets, wind power production forecasting, using Python and its main packages (Pandas, Numpy, Matplotlib, Scikit-learn...) to forecast and improve profitability of wind power production under uncertainty by data-driven decisions.
- 05 / 2017 – 10 / 2017 **Mechanical & Electrical Engineer**
San José Construction Company, Malaga (Spain)
Design review of the M&E systems (electricity, air conditioning, IT, plumbing, firefighting, etc...) working on a project of important hotel in Malaga.
- 10 / 2016 – 04 / 2017 **Mechanical & Electrical Engineer**
Soluciones tecnológicas aplicadas al medio STM-aplicada, Malaga (Spain)
Project engineer of electrical and mechanical installations (M&E) as OHL technical assistance, supporting the review and construction of the electrical systems in a tunnel and annex building in the Rock of Gibraltar according to British Standard.
- 02 / 2015 – 06 / 2016 **Project engineer at electrical department (trainee)**
Empresarios Agrupados, Madrid (Spain)
Detail engineering of electrical auxiliary systems (BoP-E) for gas (Recka) and solar thermal (Redstone) power plants.

EDUCATION

- 04 / 2018 – Present **Ph.D. student on Power Systems**
Research building Ada Byron, university of Malaga

- The official length of the programme is 3 years.
- Research in power systems, electrical markets, wind power production forecasting, using Python and its main packages (Pandas, Numpy, Matplotlib, Scikit-learn...) to forecast and improve profitability of wind power production under uncertainty by data-driven decisions.

10 / 2017 – 06 / 2018 **M. Ed. Teaching of ESO, Bachillerato & FP specialized in Technology, Informatics and Industrial Processes**

Faculty of Science of Education, university of Malaga, Malaga, Spain

- The official length of the programme is 1 years and the total time of taught classes and practical training is 1500 hours. Average grade: 8.76
- The main fields of study for the qualification are curriculum and instruction, counselling and teenager psychology. Although the program is focused at High School and Vocational Training level, a strong general background in Education is provided.

09 / 2014 – 07 / 2016 **M. Sc. Industrial Engineering**

Escuela Politécnica Superior, university Carlos III of Madrid, Madrid, Spain

- The official length of the programme is 2 years and the total time of taught classes and practical training is 2250 hours. Average grade: 7.32
- The main fields of study for the qualification are Electricity, electronics, systems and automatics; Industrial facilities, building and architecture; Mechanical and material engineering; Manufacturing processes and product design; Hydraulic, thermal, nuclear and alternative energy supplies; Environmental technology; Business organization and administration, and Project methodology, organization, and management

09 / 2010 – 07 / 2014 **B.Sc. Electrical Engineering**

Escuela Politécnica Superior, university of Málaga, Málaga, Spain

- The official length of the programme is 4 years and the total time of taught classes and practical training is 6000 hours. Average grade: 7.82
- The main fields of study for the qualification are Electricity, Power plants, low and high voltage electrical facilities electronics, systems and automatics; Industrial facilities, building and architecture; Hydraulic, thermal, nuclear and alternative energy supplies; Environmental technology; Business organization and administration, and Project methodology, organization, and management.

LANGUAGE SKILLS

- Spanish: Mother tongue
- English: Fluent
- French: Basic

COMPUTER SKILLS

- Data analysis and modelling: Excel, Matlab / Simulink
- Programing: Python 3 (Scikit-learn, Pandas, Numpy...), Java, basics of VBA, SQL and C++
- Optimization: Pyomo, GLPK, CPLEX, Gurobi, CONOPT, IPOPT

JOURNAL ARTICLES List of publications in international journals:

1. **M. A. Muñoz**, J. M. Morales, and S. Pineda, "Feature-driven Improvement of Renewable Energy Forecasting and Trading," *IEEE Transactions on Power Systems*, vol. 35, no. 5, pp. 3753 - 3763, 2020.

CONFERENCE ARTICLES List of publications in international conferences:

1. R. Vazquez, **M. A. Muñoz**, M. Alonso, H. Amaris, C. Alvarez, "Background harmonic distortion measurement at power networks with wind farms," *International Conference on Renewable Energies and Power Quality ICREPQ'16*, Madrid, Spain, May 2016.

CONFERENCE CONTRIBUTIONS List of presentations in international conferences:

1. **M.A. Muñoz**, S. Pineda, J.M. Morales, "Optimal Strategy of a Cournot Firm through Profit-Driven Learning," *INFORMS Annual Meeting*, Washinton DC, USA, 7-13 November 2020 (virtual conference).
2. **M.A. Muñoz**, J.M. Morales and S. Pineda, "A Bilevel Framework for Decision-making Under Uncertainty with Contextual Information," *Autumn School on Bilevel Optimization*, Trier University, Germany, 12-14 October 2020 (virtual conference).
3. J.M. Morales, **M.A. Muñoz** and S. Pineda "A Mathematical Optimization Approach to Enhanced Renewable Energy Forecasting and Trading," *INFORMS Annual Meeting*, Seattle,

USA, 20-23 October 2019.

4. **M.A. Muñoz**, J.M. Morales, S. Pineda, "Data-driven Strategies for Trading Renewable Energy Production," *INFORMS Annual meeting*, Phoenix, USA, 4 -7 November 2018.

OTHER PUBLICATIONS List of publicly available reports:

1. C.F. Covrig, **M.A. Muñoz**, S. Georgiopoulos and A. Marinopoulous, "Smart Grid Interoperability Laboratory: A toolkit for smart energy management," EUR 30211 EN, Publications Office of the European Union, Luxembourg, 2020, ISBN 978-92-76-18820-9, doi:10.2760/822668, JRC120540, EUR 30211 EN.

PROJECTS Participated in the following funded research projects as co-investigator:

Spanish projects:

- PowerMath, *Mathematical Methods for Electric Power Systems Based on Data*. Reference ENE2017-83775-P (2018 - present)
- SAND. *SmArt distribution griD simulator*, Iberdrola 2018. Reference 0809055613.

GRANTS
AND AWARDS

- Predoctoral fellowship, "Beca de Formación Personal Investigador FPI", 2019 - present.
- Predoctoral fellowship, "Joven Personal Investigador programa Garantía Juvenil", 01/2018 – 09/2018
- Distinction to the best record in Electrical Engineering degree years 2010-2014.
- Honors in my degree's final thesis.

COURSES &
WORKSHOPS

- 10/2020 – Autumn School on Bilevel Optimization
- 09/2018 – Workshop on Data Science in Seville
- 05/2018 – Deep Artificial Neuronal Networks. Fguma. UMA.
- 02/2018 – Advanced Java. Aula Mentor.
- 07/2016 – IMDEA Energy. Summer school. (Madrid)
- 03/2016 – Calculating a ground installation in a power plant.
- 05/2014 – Plan your project using Microsoft Project.
- 05/2014 – Quality Management. ISO 9001:2008 Standard. Fguma. UMA.
- 05/2014 – 27 workshop: "De la Gestión de proyectos (ingeniería) a la Dirección Basada en Proyectos (empresas)"
- 02/2014 – Matlab/Simulink in Engineering. Application to wind energy. Fguma. UMA.
- 05/2013 – Entrepreneurship Seminar 21.
- 05/2013 – Electronics instrumentation in the cardiovascular system.