

PERSONAL INFORMATION

Jose Angel Velasco Rodríguez



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📄 ResearchGate

Sex Male | Date of birth 18/03/1991 | Nationality Spanish

WORK EXPERIENCE

April. 2021- present

Senior Data Scientist

WCC Tessella Spain - Capgemini Engineering (Former Altran) (Madrid, Spain)

Working as Senior Data Scientist at the Spanish division of the Tessella World Class Centre for Analytics, delivering data analytics and artificial intelligence-based services in logistic and energy markets:

Customer:

- **Repsol Data & Analytics Hub**

Tasks:

- Supporting the decision-making process in different portfolios of the company through prescriptive analytics (optimization)
- Building large-scale optimization models with mathematical programming techniques to provide data-driven optimal decisions in different digital cases of the company: Minimizing circulant capital costs in refinery stocks, optimal scheduling of fuel-oil blending, optimal trading of fuel-oil components, optimal inventory management and optimal pricing in gas stations.
- Technologies: Python (main programming language), Pyomo, LocalSolver, Tensorflow, GAMS and Azure DevOps.

Also, participation in different public and private proposals and project calls within the Tessella WCC in energy and logistic markets.

Sept. 2019-April.2021

Data Scientist

Indra (Madrid, Spain)

Working as Data Scientist at the Artificial Intelligence unit of the company

- Engaging with business teams to find opportunities and address public/private offers, understand requirements from projects, and translate them into analytics solutions
- Exploratory Data Analysis and Descriptive modelling with statistical techniques and big data tools (Spark)
- Time series modelling and analysis / Data visualization and data story telling
- Predictive and prescriptive (optimization) modelling
- Collaboration with data engineers and platform architects to implement robust production real-time and batch decisioning solutions

Defence Projects

FCAS (Future Combat Air System) (Sept 2020 - present)

- Research about applications of Smart Data fusion & synchronization / differential data flow in N-SDAS

SIGLE (Sistema Integrado de Gestión Logística del Ejército) (Sept 2020 - present)

- Optimization of the Logistic and Supply chain via mathematical programming

Transport Projects

Horus Mova Traffic (Feb 2020 - present)

- Road traffic management system for the Queensland road operator (Transurban) in **Brisbane (Australia)** to support the decision making- processes.
- Infrastructure includes 3 tolled tunnels and 2 tolled motorways
- Prediction for the road traffic conditions with different time horizons (15, 30 and 120 min ahead)
- Simulation model to predict the impacts on the road of a traffic management plan (lane closures, change speed limit)
- Anomaly detection in IoT devices deployed in tunnels and road

Connective -Shift2Rail (Oct. 2019 - present)

- Business analytics applied to the data generated by the multimodal digital transport ecosystem (airports, metro, car-sharing, buses and rail)
- Use case: EMT Madrid- Interurbanos-renfe cercanías, metro Madrid, Aeropuerto Madrid-Bajaras Adolfo Suarez.
- Data modelling Ontology within an analytical graph data base deployed in cloud

- Development of descriptive models for the traveller's behaviour (use of the infrastructure / purchase characterization)
- Prediction of route delays and bus occupation, origin-destination patterns, pollution impact and hourly tickets sales.
- Optimization of bus route planning

Transforming Transport (TT) (Aug. 2019 - Dec. 2019)

- Athens Airport passenger arrivals ([Smart Airports](#))
- Development of predictive model to predict the arrival time of travellers to the security check points
- Optimal planning for the day ahead of the security check points schedule

Tools and technology:

Advanced level: [Python](#) (Tensorflow, PySpark, Scikit-learn, Plotly, numpy, pandas, statmodels, pyomo pycaret) Spark-MLlib, MADlib) GAMS; **Medium Level:** SQL, R, Relational DB (PostgreSQL, Greenplum, SQLServer) NRDB (Cassandra, MongoDB), [Data Visualization](#) (Plotly/Shiny, Superset, Grafana, Kepler and PowerBI); **Basic Level:** Hadoop ecosystem, workflows (H2O, KNIME), Data ingestion (Sqoop, Nifi and Talend), IoT (Druid, Kafka), DevOps/Deployment (Azure cloud, Docker, Kubernetes)

Sector: Research, Data Science, Deep learning, Big data, Business Analytics, transport, mobility and optimization

March 2017 - Sept. 2019

Ph.D. Candidate/ Lab Teacher

Universidad Carlos III de Madrid (Madrid, Spain)

Researcher in Low Voltage Smart Grids (April 2017 - Aug. 2019)

- Optimization in Python (Pyomo) and GAMS
- Smart meters data manipulation in Python (*pandas*) and R (*Dplyr, tidyr, readr*)
 - *Load demand modelling (electrical and thermal energy demand)*
 - *Customers profiles segmentation (Clustering)*
- Data visualization in python environment (*Matplotlib and Plotly*) and R (*Ggplot2*)
- Time series analysis and statistical analysis of smart grids and distributed energy resources (photovoltaic panels, energy storage, electric vehicles) and forecasting in Python (*statmodels*) and R (*Mlr*).
 - *Energy Fraud Detection (Anomaly Detection)*
 - *Electric Vehicle statistical characterization*
 - *Energy Storage Modelling*
- Predictive modelling (*scikit-learn and Tensorflow*)
 - *Power losses (technical and non-technical) and load demand prediction*
 - *Photovoltaic power generation forecasting*
- Graph-theory based modelling of smart grids (*NetworkX, Graph-tool*)

Lab Teacher & Ph. D. Candidate (Sept. 2018 - Aug. 2019)

- Power systems modelling, in Bachelor's in electrical engineering (2018-19)
- Power systems control and analysis, in Master's in Industrial Engineering (2018-19)

Tools and technology:

- Python, R, Matlab, GAMS and PSSE

Sector: Research, Education, Smart Grids, Distributed Energy Resources (Renewable Energies), optimization

Oct. 2015 – March 2017

Data Scientist/Assistant Research

Universidad Carlos III de Madrid (Madrid, Spain)

National research project OSIRIS in collaboration with Gas Natural Fenosa (Oct. 2015 - March 2017)

European research project IDE4AL (Oct. 2015 - April 2016)

- Development of predictive models and algorithms to estimate technical and non-technical power losses in Smart Grids.
- Smart meters exploratory data analysis, descriptive and prescriptive modelling
- Smart Low Voltage distribution networks modelling and simulation

Tools and technology:

- Python, Matlab, GAMS and R

Sector: Data Science, Research, Smart Grids, Distributed Energy Resources (Renewable Energies), optimization

Feb. 2014 – Oct. 2015

Internship Project Engineer

Arquiner, Arquitectura, Ingeniería y Urbanismo (Toledo, Spain)

Engineering and Building projects in different locations of Castilla La-Mancha (Spain)

Sector: Engineering, Building

EDUCATION

- 2017 – 2022 (Expected)** **Ph.D. in Electrical Engineering, Electronics and Automation**
Universidad Carlos III de Madrid (Madrid, Spain)
 Research Stay at **UCD Energy Institute** (Dublin, Ireland) 2018 with Alireza Soroudi
 Thesis: “Power losses estimation and optimization in low voltage smart grids under uncertainty”
- 2014 - 2016** **M.Sc. in Industrial Engineering 7.00 GPA**
Universidad Carlos III de Madrid (Madrid, Spain)
- 2010 - 2014** **B.Sc. in Electrical Engineering 7.40 GPA**
Universidad de Castilla-La Mancha (Ciudad Real, Spain)

PUBLICATIONS

- International Conferences**
- J-A. Velasco, H. Amaris, M. Alonso and M. Miguelez, “Energy Losses Estimation in Low Voltage Smart Grids by using Loss Maps”, *International Conference on Energy, Environment and Economics (ICEEE 2018)*, Edinburgh (Scotland), August 2018. Available in [ResearchGate](#)
 - J-A. Velasco, H. Amaris and M. Alonso, “Stochastic Technical Losses Analysis of Smart Grids under Uncertain Demand”, *53rd International Universities Power Engineering Conference (UPEC 2018)*, Glasgow (Scotland), September 2018. Available in [ResearchGate](#)
 - J-A. Velasco, H. Amaris, M. Alonso and M. Casas “Energy Losses Estimation Tool for Low Voltage Smart Grids”, *25th International Conference on Electricity Distribution (CIRED 2019)*, Madrid (Spain), June 2019. Available in [ResearchGate](#)
 - J-A. Velasco, V. Rigoni, A. Soroudi, A. Keane and H. Amaris, “Optimising Load Flexibility for the day ahead in Distribution Networks with Photovoltaics”, *IEEE PES Powertech*, Milano (Italy), June 2019. Available in [ResearchGate](#)
- International Journals**
- J-A. Velasco, H. Amaris and M. Alonso “Deep Learning Loss Model for Large-Scale Low Voltage Smart Grids”, *International Journal of Electrical Power and Energy Systems*, vol. 121. Available in [ScienceDirect](#).
 - J-A. Velasco, H. Amaris and M. Alonso “Robust Optimization of Distributed Energy Resources in Low Voltage Distributions Systems,” submitted to *IEEE Transactions on Power Systems* ([under review](#))

RESEARCH PROJECTS

- National projects**
- OSIRIS** “Optimización de la Supervisión Inteligente de la Red de dIstribución” (2015-2017)
 Project funded by Spanish Ministry of Economy and Competitiveness through the National Program for Research Aimed at the Challenges of Society (RTC-2014-1556-3)
- International projects**
- IDE4AL** “Ideal Grid for All” (2013-2016) Project funded by the EU Seventh Framework Programme under grant agreement No. 608860
 - Connective – Shift2Rail** “Connecting and Analysing the Digital Transport Ecosystem” (2017-2022)
 Project funded by The European Union’s Horizon 2020 research and innovative programme under grant agreement No. 777522
 - Transforming Transport (TT)** (2017-2019)
 Project funded by the European Union’s Horizon 2020 research and innovative programme under grant agreement No. 73193
 - FCAS** (2020-2021)
 European combat system of systems (Next-Generation Weapon System, NGWS) under development of Airbus, Thales, Indra Sistemas and Dassault Aviation

LANGUAGES

Mother tongue(s)	Spanish				
Other language(s)	UNDERSTANDING		SPEAKING		WRITING
	Listening	Reading	Spoken interaction	Spoken production	
	English	B2	B2	B2	B2

[Common European Framework of Reference for Languages](#)