

## PERSONAL INFORMATION

Jose Angel Velasco Rodríguez



📍 Galipos 10, 45730 Villafranca de los Caballeros (Toledo, Spain)

☎ (+34) 618 443 816

✉ joseangel.velasco@yahoo.es

 LinkedIn

 Github

 ResearchGate

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

## WORK EXPERIENCE

**April. 2021- present**

### Senior Data Scientist /Team Leader

#### Capgemini Engineering – Hybrid Intelligence (Madrid, Spain)

Working as Senior Data Scientist at the Spanish division of the Hybrid Intelligence centre for Analytics, delivering data analytics and artificial intelligence-based services in transport, logistic, manufacturing and energy markets:

Customer: **Repsol Data & Analytics Hub**

- Supporting the decision-making process in different portfolios of the company through prescriptive analytics (optimization) with mathematical programming, constraint programming and meta-heuristics.
- Building large-scale optimization models with mathematical programming to provide data-driven optimal decisions in different digital cases of the company: Minimising 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, ORTools, Gurobi, Cplex, LocalSolver, Tensorflow, Azure DevOps and Databricks.

Also, working as Team leader managing a team of data scientists in the development of optimization projects in manufacturing, logistics and power supply markets for Capgemini Engineering.

**Sept. 2019-April.2021**

### Data Scientist

#### Indra – Digital Labs (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 visualisation and data storytelling
- 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 & synchronisation / 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-Bajas.
- 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 Naturgy (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

##### Arquinur, Arquitectura, Ingeniería y Urbanismo (Toledo, Spain)

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

**Sector:** Engineering, Building

## EDUCATION

- 2017 - 2022** **Ph.D. in Electrical Engineering, Electronics and Automation**  
**Universidad Carlos III de Madrid (Madrid, Spain)**  
Research Stay at **UCD Energy Institute** (Dublin, Ireland) 2018.  
Thesis: "Power losses estimation in low voltage smart grids under uncertainty" (Cum Laude).
- 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", *53<sup>rd</sup> 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", *25<sup>th</sup> 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](#).

## 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	B2

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