Juan Manuel Acevedo Valle, PhD

Senior Machine Learning Specialist

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Summary

I am an engineer and researcher focused on Machine Learning, with interest in Artificial Intelligence and Robotics. As an engineer, I analyze and solve problems in order to make things work. My researcher nature makes me very curious about finding scientific explanations to observed phenomena. Combining both perspectives, along with technical expertise, helps me to understand new problems and generate knowledge and innovative machine learning solutions.

ML Story Experienced modeling high-dimensional unstructured data (numerical, text, images, categorical, speech) using different learning approaches according to the task at hand. Recently, I have been working on projects involving Deep Learning, where I contribute as researcher, designer and developer to build data and modelling pipelines. I have collaborated to build production-like versions of Autoencoders (Variational, Wasserstein, and Sinkhorn), clustering with deep embedding and incremental Gaussian mixture models. I also have experience implementing collaborative learning and reinforcement learning.

LinkedIn `https://www.linkedin.com/in/jmacevedovalle/`

github `https://github.com/yumilceh/`

Professional Experience

From 2019 **Senior Machine Learning Specialist**, ABN–AMRO Clearing Bank, Amsterdam, Netherlands.

2018–2019 **Researcher and Lecturer**, *Electronic Engineering Program*, Ramon Llull University in collaboration with YASYT Robotics, Barcelona, Spain.

Education

2014–2018 **PhD in Automatic Control, Robotics and Vision**, *Technical University of Catalonia UPC*, Knowledge Engineering Research Group (GREC), Topic: Bioinspired Artificial Intelligent Robots.

Thesis **Sensorimotor Exploration: Constraint Awareness and Social Reinforcement in Early Vocal Development**, *Grade: 10/10 (Cum Laude)*.

2012–2014 **MSc in Automatic Control and Robotics**, *Technical University of Catalonia UPC-ETSEIB*, *8.5/10*, Taught in English.

Thesis **Efficient Predictive FTC for Polytopic Systems. Application to the Four-Tank System**, *Grade: 10/10, With Honors*.

2006–2011 **Mechatronic Engineer**, *National Autonomous University of Mexico (UNAM)*, *9.38/10*.

Thesis **Physical Validation of a Friction-based Wind Generator Model**.

International Academic Experience

2017 **Humboldt University of Berlin**, *Adaptive Systems group*, (Research internship) March to June.

2015–2016 **ETH–Zürich**, *Autonomous and Dexterous Robotics Laboratory*, (Research internship) November to January.

2014 **Rome**, *Robot Competitions Kick Innovation in Cognitive and Robotics Camp*, January.

2011 **Loughborough, UK**, *"International Engineering Design" Course*, Loughborugh University y UNAM, Proyect: Mobile Ecosan Toilet. February to May.

2010 **Technical University of Catalonia UPC-ETSTB**, *(Student Exchange) February to June*.

Teaching Experience

2018–2019 **Linear Algebra and Control Systems**, *Electronic Engineering Program*, LaSalle. Ramon Llull University.

Academic Awards

2019 **Award to the Best Doctoral Thesis on Artificial Inteligence**, *2018-2019*, Granted by the Catalan Association of Artificial Intelligence.

2017 **La Caixa Foundation Mobility Grant**, *03/2017–06/2017*.

2015–2016 **NCCR Robotics PhD fellowship**, *Switzerland*, 10/2015–01/2016.

2011 **Academic Award to the Academic Excellence for belonging to the High Performance Program of the Engineering Faculty**, *UNAM*, 2007–2011.

2010 **Academic Award to the Academic Excellence**, *UNAM*.

Scientific Publications

2018 **Autonomous Discovery of Motor Constraints in an Intrinsically-Motivated Vocal Learner**, *Juan M. Acevedo-Valle, Cecilio Angulo, & Clément Moulin-Frier*, IEEE Transactions on Cognitive and Developmental Systems, 2018, Vol. 10(2), pags.314-325 doi: 10.1109/TCDS.2017.2699578.

2018 **Social Reinforcement in Artificial Prelinguistic Development: A Study Using Intrinsically Motivated Exploration Architectures**, *Juan M. Acevedo-Valle, Verena V. Hafner, & Cecilio Angulo*, IEEE Transactions on Cognitive and Developmental Systems, Accepted.

2017 **Social Reinforcement in Intrinsically Motivated Sensorimotor Exploration for Embodied Agents with Constraint Awareness** , *Juan M. Acevedo-Valle, Verena. V.Hafner & Cecilio Angulo*, 7th Joint IEEE International Conference on Development and Learning and on Epigenetic Robotics , Lisbon, Portugal, 2017.

2017 **Multivariate Regression with Incremental Learning of Gaussian Mixture Models**, *Juan M. Acevedo-Valle, Karla Trejo & Cecilio Angulo.*, 20th International Conference of the Catalan Association for Artificial Intelligence (CCIA 2017), Deltebre, Terres de l'Ebre, 2017.

2017 **Deep Neural Networks in Social Reinforced Sensorimotor Exploration**, *Juan M. Acevedo-Valle, Claudi Ruíz, Verena. V.Hafner & Cecilio Angulo*, 7thJoint IEEE International Conference on Development and Learning and on Epigenetic Robotics (2nd Workshop on Language Learning), Lisbon, Portugal, 2017.
(Abstract)

2017 **On Dynamical Systems for Sensorimotor Contingencies. A First Approach from Control Engineering**, *Cecilio Angulo & Juan M. Acevedo-Valle.*, 20th International Conference of the Catalan Association for Artificial Intelligence (CCIA 2017), Deltebre, Terres de l'Ebre, 2017.

2016 **The Role of Somatosensory Models in Vocal Autonomous Exploration**, *Juan M. Acevedo-Valle, Cecilio Angulo, Clément Moulin-Frier & Karla Trejo*, Revista Internacional de Investigación e Innovación Tecnológica (RIIIT).

2015 **Proprioceptive Feedback and Intrinsic Motivations in Early-Vocal Development**, *Juan M. Acevedo-Valle, Cecilio Angulo, Nuria Agell & Clément Moulin-Frier*, 8th International Conference of the Catalan Association for Artificial Intelligence (CCIA 2015).

2015 **Predictive Fault Tolerant Control for LPV systems using model reference**, *Juan M. Acevedo-Valle, Vicenç Puig, Sebastian Tornil-Sin & Marcin Witczak*, 9th IFAC Symposium on Fault Detection, Supervision and Safety of Technical Processes.

2014 **Nonlinear Predictive Control for the Four-Tank Plant Flow Regulation**, *Juan M. Acevedo-Valle, Ramón Costa, J. Luna & N. Rasanas*, XXXV Jornadas de Autómatica del Comité Español de Automática.

2013 **FTC of LPV Systems using a Bank of Virtual Sensors: Application to the Wind Turbines**, *Damiano Rotondo, Vicenç Puig, Juan M. Acevedo-Valle & Fatiha Nejjari*, 2^{nd} International Conference of Tolerant Control Systems, Nice, France.

2012 **Validación Experimental de un Modelo del Par en Aerogeneradores por Velocidad Relativa**, *Juan M. Acevedo-Valle, Luis Álvarez-Icaza & Dr. Juvenal Villanueva*, National Conference of the AMCA, Mexican chapter of the IFAC.

Professional Training

2013–2014 **Associated Master Student**, *Instituto de Robótica e Informática Industrial*, Automatic Control Group, Supervisor: Dr. Vicenç Puig.

2014 **Collaboration with PAL Robotics**, *Development of solutions for th RoCKIn Challenge 2014 using the REEM robot*, February to August.

2011 **Trainee in TV Azteca**, *Technological Development Area*, Collaborating in the project Azteca 3D television, Including the first open 3D TV broadcasting in Mexico.
July to October

2011–2012 **Social Service in the Engineering Institute-UNAM**, *Control Engineering Area*, Working in the project of new friction based models for wind turbines.

Languages

English **Advance, working proficiency.**

Catalan **Basic: Basic Levels 1 and 2, CELE-UNAM, Mexico.**

German **Basic: Level A1.1, Volkshochschule, Berlin**

Software

Machine Learning **TensorFlow, Keras, Pandas**, Scipy, Scikit-learn, Pytorch.

Development **Python**, C, C++, C#, Java.

Engineering Spark, Matlab, ROS.

Others Latex, Office, etc.