David **Jimenez**

MACHINE LEARNING EXPERT · DATA SCIENTIST

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Education

KU LEUVEN (Katholieke Universiteit Leuven)

Leuven, Belgium

M.S. IN ARTIFICIAL INTELLIGENCE, ENGINEERING AND COMPUTER SCIENCE OPTION

Sep. 2015 - Sep. 2016

- **Focus:** Machine Learning, Intelligence Algorithms, Intelligent Systems Design.
- **Thesis:** *"Hierarchical Holonic Architecture for Autonomous Reasoning Agents in Traffic Intersection Coordination".* Achieved a holonic architecture system which creates an efficient distribution of concerns, permits scalable complexity in the number of vehicles, and stimulates the use of more natural primitives.
- Times Higher Education Top 40th University of 2016.

UNIANDES (Universidad de Los Andes)

Bogota, Colombia

B.S., PHYSICS

Aug. 2009 - Mar. 2014

- **Focus:** Quantum Optics, Qubit Photon Polarization Encoding.
- **Thesis:** *"Quantum State Tomography of Polarization States: An Exploration of Quantum Logic Gates".* Implemented algorithms for encoding and statistical reconstruction of Qubits based in quantum logic gates.

Skills

Computer Science	**MACHINE LEARNING** · ARTIFICIAL NEURAL NETWORKS · SUPPORT VECTOR MACHINES · COMPUTER VISION · DATA-MINING · ROBOTICS · UNCERTAINTY MODELS · EVOLUTIONARY COMPUTING · MULTI-AGENT SYSTEMS
Programming	PYTHON(TENSORFLOW, OPENCV, SCIKIT, PANDAS, KERAS, NUMPY, SCIPY) · JAVA · PROLOG · MatLab · SAS · SQL · LaTeX · HTML · CSS

Experience

ConfiDr.

Bogota, Colombia

CO-FOUNDER, AND DEVELOPER

Feb. 2017 - Present

- Co-founded the Health-Tech oriented startup ConfiDr.
- Direct the company and collaborate in decision making.
- In charge of Back-end and Artificial Intelligence implementations of the portal and collaboration in areas like design and front-end.

GMS Management Solutions

Sao Paulo, Brazil & Bogota, Colombia

CONSULTANT

May. 2014 - May. 2015

- Gas Natural Fenosa:
  - (SAS, SQL, EXCEL) Uncovered new costumer potential by developing a K-Means cluster to analyze trends in formed customer groups with the Latin-America customer data-base.
  - Secured future projects with Gas Natural Fenosa for the excellent results achieved while being the only employee assigned to this project.
- Santander Bank:
  - (SAS, SQL, EXCEL) Conducted a data quality analysis to strengthen the grade of the data bases.
  - Proposed using covariance matrix analysis of data to identify hidden error relationships between variables.

AutoMte

Bogota, Colombia

Founder, Director, and Developer

Jan. 2014 - May. 2014

- Founded and chaired the startup AutoMte for providing automation and wireless solutions to industry and regular consumers.
- (Arduino, MatLab) Created and produced a novel wireless humidity and temperature sensor for a Air Conditioning design company.
- (Arduino, JAVA) Designed and launched a home illumination wireless and remote control system project.

Dow Chemical Co.

Bogota, Colombia

Summer Intern

Jun. 2013 - Aug. 2013

- Consolidated the overall Colombia agro-chemical imports in a single data-base.

Projects

Automatic X-Ray Teeth Selection

python(OpenCV, NumPy, SciPy)

Computer Vision

- Developed a project for automatic localization and of the incisor teeth in X-Rays using Active Shape Models and Template Matching.
- Achieved a 90% accuracy.

Time-Series Classification

python(TensorFlow, Keras, Pandas, NumPy, SciPy)

Deep Neural Networks

- Engineered a Convolutional Neural Networks project for classification of accelerometer data. The application was able to classify new data into what activity a horse was doing.
- Delivered a 93% classification accuracy.

Parkinson's Disease Diagnosis Contest

Matlab

Support Vector Machines/Computer Vision

- Trained a Support Vector Machines model for classification of brain tomographies of patients with Parkinson's disease. SVMs was chosen due to the small training set, in which they -due to SVM's Dual-Space nature- outperform other methods.
- Obtained 3rd place within entire master's class.

Santafe Laser Time Series Modeling

Matlab

Support Vector Machines

- Applied Support Vector Machines for Non-Linear Auto Regressive Modeling of time series.

Multi-Agent Systems for Parcel Pickup and Delivery

JAVA/RinSim Logistics Sim.

Multi-Agent Systems of Robots

- Designed a Multi-Agent System for Parcel Pickup and Delivery with a novel "auction" protocol for efficient task allocation, that takes into account the start position and time of a parcel, and an "expected" end position and time, which improved efficiency in a Dynamic Contract-net Protocol.
- My approach improved efficiency in a Dynamic Contract-net Protocol by 10%.

Breast Cancer and Diabetes Classification

MatLab

Support Vector Machines

- Applied Support Vector Machines on a Diabetes and Breast Cancer dataset with 9 and 10 features each with the use of Coupled Simulated Annealing (CSA) and Nelder–Mead method (NMM) for hyper-parameter tuning.
- Achieved a 80% and 98% diagnosis accuracy on the Diabetes dataset using CSA on the Breast Cancer dataset using NMM respectively.

Teaching Experience

Universidad de Los Andes

Bogota, Colombia

Invited Lecturer<Quantum State Tomography: An Exploration of Quantum Logic Gates>

Nov. 2013

- Discussed the experimental procedures for storing and reconstructing Qubits in photon polarization.

Universidad de Los Andes — *Bogota, Colombia*

Exercise Session Teacher — *Aug. 2013 - Dec. 2013*

- Instructed students in classical mechanics and assisted them in solving exercises.

Universidad de Los Andes — *Bogota, Colombia*

Teacher Assistant — *Aug. 2011 - Dic. 2013*

- Revised documents and presentations. Provided assistance to students as well as graded tests.

Publications

Experimental Reconstruction for Polarization and Path Degrees of Freedom: A Step Towards Encoding Two Qubits in a Single Photon — *Bogota, Colombia*

Momento: Physics Magazine of the National University of Colombia — *Jun. 2014*

- We elevate the amount of information stored on a photon by extending the dimensionality of the Hilbert space to store 2 qubits: into path and polarization degrees of freedom.
- Momento, No. 48, June 24th Edition, Pg. 92-105.

Leadership Experience

2015-16 **Student Representative**, Master of Artificial Intelligence — *Leuven, Belgium*

2011-12 **Student Representative**, Physics Bachelor — *Bogota, Colombia*

Languages

English · Fluent, **Toefl/iBT:** 111/120

Spanish · Native

Portuguese · Business Level

French · Basic (simple words and phrases)

Japanese · Beginer (simple words and phrases)