

JUAN BORREGO CARAZO

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EDUCATION

Autonomous University of Barcelona

2018-Present

Ph.D. Student. Electronic Engineering Faculty. Microelectronic Systems Department.

Thesis Title: Neural Network Applications for Gesture Recognition in Embedded Automotive Hardware

University of Barcelona

2017-2018

Master in Science (MSc) in Foundations of Data Science

Master Thesis: Fully Convolutional Networks for Human Body Part Segmentation

Overall Mark: 8.9/10

Autonomous University of Barcelona

2016-2017

Master in Mathematics for Financial Instruments

Master Thesis: Classical Portfolio Optimization by Sharpe Ratio Maximization

Overall Mark: 9/10

Autonomous University of Barcelona

2011-2016

B.S. in Physics

Final Degree Project: Aggregation Kinetics of Superparamagnetic Colloids

Overall Mark: 7.78/10

EXPERIENCE

KOSTAL Elctrica, S.A.

November 2018 - Present

Ph.D. Student. Gesture Recognition for Embedded Automotive Hardware

Barcelona

- Development of an in house C library for CNNs and RNNs with quantization API
- Development of a 2-D gesture recognition application for the steering wheel.
- Implementation of SpArSe: Sparse Architecture Search for CNNs on Resource-Constrained Microcontrollers. Automatic and embedded hardware suited CNN and RNN architectures.

Caixabank, S.A.

June 2017 - January 2018

Performance Attribution

Barcelona

- Performance Attribution reporting for fixed income, variable income and mixed funds (VBasic and SQL).
- Liquidity risk assessment for mixed funds.
- Security checks and portfolio surveillance.

Banc Sabadell, S.A.

January 2017 - June 2017

Market Risk Intern

Sant Cugat, Barcelona

- Market risk statistics reporting: VaR and Expected Shortfall.
- Improvement of the computational pipeline in Visual Basic for the market risk statistics.

Trebol Energia

June 2016 - January 2017

Intern Consultant

Sant Joan Desp, Barcelona

- Spanish Electric Market (OMIE) knowledge.
- Data management for the client electric energy consumption.
- Buying and selling operations in the spot and intra spot electric market for clients.
- Spot and intra spot electric market price prediction with ARIMA series.

TECHNICAL STRENGTHS

Programming, Query and Markup Languages	Python, C++, R, C, SQL, HTML
Deep and Machine Learning Libraries	Pytorch, Tensorflow , Scikit-Learn
Bayesian Optimization Libraries	Ax, GPyTorch, BoTorch, HyperOpt
Scraping and Crawling Libraries	Requests, BeautifulSoup
Databases	PostgreSQL
Tools	Git, SVN

COMPETITIONS AND CHALLENGES

InnovateFPGA: Artificial Intelligence at the Edge Grand Final Contestant *December 2019*
 Mushroom recognition application. Detection + classification pipeline by transfer learning with Pytorch. Deployment on FPGA with OpenVINO. [Link](#)

Climate Change Challenge Winner Team *November 2019*
 Development of a strategy for the positioning of new temperature sensors in the city of Barcelona.

HiPEAC Student Challenge VII Final Contestant *October 2019*
 Proof of concept for a health food application consisting in ingredients and composition extraction by deep learning based OCR.

SEAT Disrupt Winner Team *April 2019*
 Proof of concept for an automotive virtual assistant for children ([Link](#))

PUBLICATIONS

Borrego-Carazo, J., Castells-Rufas, D., Biempica, E., & Carrabina, J. (2020). *Resource-Constrained Machine Learning for ADAS: a Systematic Review*. IEEE Access. [Link](#)

COLLABORATIONS, PROJECTS AND OTHERS

Arc Kernel for GPyTorch *Februar 2020*
 Implementation of Arc Kernel for GPytorch library. Accepted and to be merged pull request.

TALKS

Advanced Factories 2020 *March 2020*
 Neural Network tools for embedded applications. Focus on industrial applications.