Carlos Andrés Álvarez

Electronics Engineer + Machine Learning

Contact Info

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Summary

Trilingual Electronics Engineer with emphasis on Telecommunications and Process automation. Very interested in development of new technologies, hardware, internet of things, image processing and artificial intelligence. Passionate for technology, science, and acquiring constantly new knowledge. Good at mathematics and physics, good programmer, disciplined, with skills to work under pressure and within a team.

Education

- Pontificia Universidad Javeriana Cali - Electronics Engineer diploma (2010-2016): Honorable mention with Thesis *On Orthogonal Functions for the Detection and Characterization of Defects in Infrared Nondestructive Testing of Composite Materials*
- Karlsruhe Institute of Technology (2015): Exchange semester in KIT Germany
- Deutsche Schule Cali Colombia (1997-2010) - Colombian and international baccalaureate (IBO): State exam (ICFES) 6/1000 (1 is the best)

Experience

- BD Guidance - IoT Development Engineer (current): Investigated technologies such as TensorFlow and OpenCV to run ML algorithms in embedded devices. Programmed devices like Raspberry Pi and NodeMCU for closed environments and rooms applications. Designed the curriculum of various IoT courses and recorded one course. Evaluated various IoT/Cloud platforms. Evaluated IoT and Machine Learning services of various Cloud platforms. Presented webinars and talks about IoT and ML several times. Designed the curriculum of various IoT courses and recorded one course.
- Tesat Spacecom - Research intern (2015): Participated in a development project which was the design of Ka band (20GHz) filters that were adjustable in their center frequency on the satellite in-orbit.

Research

- Characterization of defects of pulsed thermography inspections by orthogonal polynomial decomposition in Elsevier NDT & E International

Open Source

- node-red-contrib-sensor-ds18b20: Node-RED contrib node to get temperature in centigrades from DS18B20 sensors.
- Contributor to dataget: download, extract and process popular machine learning datasets with a single line of bash or python.

Areas of Interest

Electronics Engineering

Embedded Systems, Internet of Things, Signal Processing, Hardware Development

Data Science

Deep Learning/Neural Networks, Artificial Intelligence, Machine Learning

Languages

- Spanish: native
- English: C1

- German: C1

Programming Languages

Python: 5+ years, Matlab+Simulink: 5+ years, C: 2+ years, C++: 2+ years, Mathematica: 1+ years, JavaScript: 1+ years, Java: 1+ years

Hardware and Systems

VHDL, SDL MSC, UML

Mini-projects

C, Java, Coq

Tools/Frameworks

Simulation

- Circuits: Multisim, PSpice.
- Electromagnetics: ADS, HFSS, CST, MMana-Gal, QuickField.
- Hardware: Quartus suite, Xilinx suite

Hardware

Xilinx and Altera FPGAs, Arduino (Mini, Nano, Uno), Raspberry Pi (2,3), ESP8266 (NodeMCU, Wemos), RF Modules (nRF24L01)

Data Science

Tensorflow (python), Scikit Learn (python), Pandas, Numpy

Development

Flask (python), Git

DevOps

Docker, Ngrok

Community

Organizations/Groups

- Co-founder of SmartCities & IoT Meetup Medellin
- Co-founder of Machine Learning Meetup Medellin
- Administrator in Machine Learning Colombia
- Contributor to colomb-ia

Talks/Conferences

- IoT con NodeRed & Watson at SmartCities & IoT Meetup Medellin
- Introduction to Machine Learning at BDG Institute Colombia Tour

Webinars

- Introducción al Internet de las cosas (IoT) con Raspberry Pi, Node-Red y Watson with BD Guidance on Youtube.

Projects

- Running Convnets on RaspberryPi
- IoT Demo with Raspberry, Node-Red and Watson
- Sentiment Analysis using Images with Google
- Snapchat filters in Python with OpenCv and Dlib

- Docker image for python openCV w ith contrib modules

e-Learning

- Object Oriented Programming in Java by University of California on Coursera
- Quantum Mechanics for Scientists and Engineers by David Miller on Stanford Online
- Machine Learning by Andrew Ng on Coursera
- Audio Signal Processing for Music Applications by Xavier Serra (Universitat Pompeu Fabra of Barcelona) on Coursera

Other Information

Scholarships

- "Beca Saber Pro" (2016), 2.500.000 pesos for postgraduate studies in PUJ Cali. Second best result of state exams in the university's engineering faculty.
- "DAAD Jóvenes Ingenieros Colombia " (2014/15) All inclusive exchange program in Germany.
- "Beca Magis" (2010/16) 75% tuition fees all semesters for graduate studies.
- PAD all inclusive scholarship (2009) student exchange in Germany for one month.

Awards

- Highest GPA of electrical department. Winter semester 2013
- Three times highest GPA. Winter semester 2010, summer and w inter semester 2011.

Academic things I love

- Playing Atari w ith Deep Reinforcement Learning Mnih et al 2013 (Deep Mind)
- You only look once (YOLO) Joseph Redmon, Ali Farhadi 2016
- YOLO in action on YouTube

Hobbies

- Music: trombone and drums
- Traveling

Personal references

- Cristian García - Data Scientist at BD Guidance. Cel: 314 862 7978, email: cgarcia.e88@gmail.com
- Dr. Luis Eduardo Tobón - Director of Postgraduates programs at Javeriana University. Cel: 311 335 7844, email: letobon@javerianacali.edu.co
- Dr. Tobias Kaesser - Passive Products at Tesat-Spacecom. Email: Tobias.Kaesser@tesat.de