

Carlos Andres Alvarez

Electronics Engineer + Machine Learning

Contact Info

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Summary

Electronics Engineering student (tenth semester). Trilingual. Focus on Telecommunications and Process automation. Very interested in development of new technologies, hardware, and signal and video processing. Passionate for technology, science, and acquiring constantly new knowledge. Good at mathematics and physics, good programmer, disciplined, with skills to work under pressure and in team.

Ingeniero electrónico trilingüe, con énfasis en Telecomunicaciones y Automatización de Procesos. Interesado en las áreas de desarrollo de nuevas tecnologías, hardware, internet de las cosas e inteligencia artificial. Apasionado por la ciencia, la técnica y la adquisición constante de nuevos conocimientos. Buen programador y matemático, disciplinado, con habilidades para trabajar bajo presión y en equipo.

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](#), [MMA-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](#)

- [Snapchat filters in Python with OpenCv and Dlib](#)
- [Docker image for python openCV with 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 winter semester 2011.

Academic things I love

- [Playing Atari with 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 BDGuidance. Cel: 314 862 7978, email: cgarcia.e88@gmail.com
- Dr. Luis Eduardo Tobon - 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