

SERGIO DANIEL HERNANDEZ CHARPAK

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French ◦ Colombian

Education

École Polytechnique Fédérale de Lausanne

Computational Science and Engineering, Master Student

Lausanne, Switzerland

September 2017-Present

Universidad de los Andes

Physics, Bachelor of Science

Computing Engineering, Bachelor of Engineering

Japanese Language and Culture, Minor

Bogotá, Colombia

January 2010 - March 2017 - GPA **4.23**/5.00

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Tokyo University of Marine Science and Technology

Visiting Student

Control and Robotics Laboratory

Tokyo, Japan

May 2014-June 2014

Kyoto Institute of Culture and Language

Intermediate Japanese Student

Kyoto, Japan

October 2013-March 2014

Lycée Français Louis Pasteur

Student

Bogotá, Colombia

Graduated, July 2009

Scientific Bachalauréat, Mention Bien

Work Experience

Nagra Kudelski Group

Cloud

Cheseaux, Switzerland

February 2019 - Present

Internship – Cloud Infra Team

Enabled the usage of real-time deep learning in production for anomaly detection in data streams as a service. Developed neural networks models in Keras and Pytorch for unsupervised anomaly detection on time series. Transferred the trained models in a different environment using Scala, Spark and Deeplearning4J. Pipelined data using Kafka and deployed the models for alert generation to an Elasticsearch dashboard, under the supervision of engineer Arnaud Gaillard.

Research Experience

École Polytechnique Fédérale de Lausanne (EPFL)

G-Lab

Geneva, Switzerland

August 2018 - Present

Master Semester Project - Prof. Courtine's Laboratory

Artificially represented the brain input to the spinal sensorimotor circuits through the implementation of unsupervised and supervised learning strategies to drive a biomechanical model of the lower limbs of a human. Integrated a deep learning framework into biological realistic representations of the spinal cord combined with biomechanical modeling under the direction of PhD student Andreas Rowald.

École Polytechnique Fédérale de Lausanne (EPFL)

MIP Lab

Geneva, Switzerland

February - July 2018

Master Semester Project - Medical Image Processing Laboratory

Processed high resolution 7-Tesla 1-TR fMRI data using the Total Activation method, and found the innovation-driven Co-Activation Patterns (iCAPs) and their time behaviors on three different paradigms. Worked under the direction of PhD student Anjali Tarun and the supervision of prof. Dimitri Van De Ville.

Universidad de los Andes

Department of Computing Engineering

Bogotá, Colombia

August - December 2016

Undergraduate Thesis

Implemented part of an Image Analysis tool for the Segmentation of the aorta artery for applications such as the quantification of the elasticity of the aorta artery and quantification of the aorta artery calcifications under the direction of prof. Marcela Hernandez and prof. Leonardo Florez.

Laboratoire CPPM*LSST Project*

Marseille, France

June 2016

Universidad de los Andes*Department of Physics*

Bogotá, Colombia

January - May 2016

Universidad de los Andes*School of Engineering*

Bogotá, Colombia

August 2015 - December 2016

Fermi National Laboratory*Neutrino Division*

Batavia, U.S.A.

June - July - August 2015

**Tokyo University of Marine
Science and Technology**

Tokyo, Japan

May - June 2014

Internship - LSST Project

Studied and implemented different image processing and statistic techniques for the detection of transients in astrophysical images. Under the supervision of scientist Dominique Fouchez.

Undergraduate Thesis

Titled Laniakea in a Cosmological Context. Detected galaxies superclusters in simulated cosmological structures based on galaxies velocities properties under the direction of prof. Jaime E. Forero.

Undergraduate Research Assistant

Developed Python tools for testing prototypes in the project Astronomical Image processing from large all-sky photometric surveys for the detection and measurements of transients under the mentorship of prof. Marcela Hernandez.

IPM Intern – Muon G-2 Experiment

Part of the team for the Test Beam of a Straw Detector Prototype in charge of the High Voltage and assisted with the analysis of the data taken under the mentorship of scientist Brendan C Casey.

Visiting Student - Control and Robotics Laboratory

Assisted with the integration and control of a helicopter with Arduino under the supervision of professors Sho and Ito.

Teaching Experience

Universidad de los Andes

Bogotá, Colombia

2011, 2012, 2013, 2014, 2015

Undergraduate Teaching Assistant

Teaching Assistant for Object Oriented Programming, Data Structures, Modeling, Simulation and Optimization, and Computational Methods courses.

Publications and Conferences

**XV LARIM (Latin American
Regional IAU Meeting)**

Cartagena, Colombia

October 2016

Oral Talk - Laniakea in a Cosmological Context

Detected galaxies superclusters in simulated cosmological structures based on galaxies velocities properties under the direction of prof. Jaime E. Forero.

Additional Work Experience

Mariño Math

Bogotá, Colombia

Sept 2011-Present

Tutor

High School Physics, Chemistry, Math and Biology Tutoring in both French and Spanish.

Skills

Software and programmingProficient

Python, MATLAB, C, C++, Java, Git, LaTeX,
Bash, Pytorch, Deeplearning4J, Spark, Scala
OS: Linux, Windows and Mac OS.

Github: <https://github.com/sercharpak>Experienced

FLUENT, Javascript, HTML5, CSS, Firebase, Processing, Arduino,
Assembler, UML, PHP, MPI, Neuron, Webots, Quantum Espresso

Online certified courses

Udemy (2017) - Machine Learning A-Z:
Hands-On Python and R in Data Science

Udemy (2017) - Deep Learning A-Z: Hands-On Artificial Neural
Networks

Languages

French (fluent)

Spanish (fluent)

English (fluent)

Japanese (Intermediate, JLPT level 3-2)