

Manuel Pérez Carrasco

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EDUCATION

University of Concepcion

MSc. Computer Science. GPA 6.1/7.0

Concepcion, Chile

Mar. 2017 – Oct 2019

B.S Industrial Engineering. GPA 5.9/7.0

Mar. 2013 – Sep. 2018

- Graduated with distinction in MSc. degree and graduated with maximum distinction in B.S. degree.
- Author of thesis called “*Semi-supervised adversarial variational domain adaptation for image classification*”. Supervised by professor Guillermo Cabrera. Grade 7.0/7.0
- Author of undergraduate honor research thesis called “*Attributes transfer in deep neural networks and their application to astronomical images*”. Supervised by professor Guillermo Cabrera. Grade 7.0/7.0
- Honors and Awards:
 - * Best student paper award, Astroinformatics 2019 conference, Caltech.
 - * Undergraduate honor research thesis published in Publications of the Astronomical Society of the Pacific.
 - * Recipient of fully-funded scholarship for MSc. degree (Mar. 2017).

RESEARCH AND PROFESIONAL EXPERIENCE

Research Assistant

Institute for Applied Computational Sciences (IACS) at Harvard University

Cambridge, MA, USA

Sep. 2020 – Present

- Research focused on learning of disentangled representations for semi-supervised domain adaptation.
- Working remotely under professor Pavlos Protopapas, Scientific Program Director at IACS.

Machine Learning Engineer

Unidad de Data Science at University of Concepcion

Concepcion, Chile

Jul. 2019 – Present

- **Automatic Learning for the Rapid Classification of Events (ALeRCE):** In charged of design and implementation of a novelty detection algorithm for astronomical light curves coming from the Zwicky Transient Facility (ZTF) data stream. Project funded by the Millennium Institute of Astrophysics.
- **Arauco Company:** In charged of design and implementation of labeling, training and prediction algorithm to count, detect, and segment trees using georeferenced RGB images via cloud-based infrastructure.

Research Assistant

Biomedical Laboratory at University of Concepcion

Concepcion, Chile

Jan 2020 – Sep. 2020

- In charged of design and implementation of a real-time drowsiness detection algorithm using EEG signals. This project was funded by the Chilean government *Fund for the Promotion of Scientific and Technological Development*.

Research Scholar

Institute for Applied Computational Sciences (IACS) at Harvard University

Cambridge, MA, USA

Jan 2019 – Jun. 2019

- Member of the *Harvard-Chile Data Science School*.
- Developed my master's thesis. Research focused on semi-supervised domain adaptation algorithms for image classification.
- Worked under professor Pavlos Protopapas.
- Recipient of IACS financial aid to develop my research (stipend and flight tickets).

Internship

Coca-Cola Embonor S.A

Concepcion, Chile

Jan. 2018 – Feb. 2018

- Designed and implemented a forecasting software for sales and demand estimation.

TEACHING EXPERIENCE

University of Concepcion

Concepcion, Chile

Lecturer of Advanced Topics in Machine Learning at the Industrial Engineering Department. Apr. 2019 – Sept. 2020

- Co-taught Advanced Topics in Machine Learning, an elective course for graduate and undergraduate students of Engineering. Taught with professor Rodrigo de la Fuente.
 - * Co-Designed curriculum, lectures, assessments, laboratories, and homeworks for an audience of 28 students.
 - * Co-graded assessments, homeworks and projects.

Lecturer of Introduction to Machine Learning at the Industrial Engineering Department. Jul. 2019 – Dec. 2019

- Co-taught Introduction to Machine Learning, an elective course for undergraduate students of Engineering. Taught with professor Rodrigo de la Fuente.
 - * Co-Designed curriculum, lectures, assessments, laboratories, and homeworks for an audience of 21 students.
 - * Co-graded assessments, homeworks and projects.

Teaching Assistant at the Industrial Engineering Department. Mar. 2018 – Dec. 2018

- Teaching assistant of Systems Modeling and Machine Learning for Business Intelligence at the Industrial Engineering Department.
 - * In charged of recitation and laboratories for both courses.
 - * Worked under professors Rodrigo de la Fuente and Pablo Catalan.

Harvard University

Cambridge, MA, USA

Teaching Fellow of CS109b: Advanced Topics in Data Science at IACS. Feb. 2019 – May 2019

- Served as teaching fellow for Advanced Topics in Data Science, a mandatory course for the master in Data Science and Computer Science PhD Secondary Field in Data Science at Harvard University
- In charged of grading, office-hours, and guiding students in their applied machine learning projects.
- Worked under professor Pavlos Protopapas.

PUBLICATIONS

M. Pérez-Carrasco, G. Cabrera-Vives, P. Protopapas, N. Astorga, and M. Belhaj. “*Semi-supervised Domain Adaptation for Image Classification Through Generative Models*”. In preparation.

B. Karelovic, R. Molina, **M. Pérez-Carrasco**, G. Cabrera-Vives, R. Saavedra-Passache, P. Cerulo. “*Detection and Segmentation of Tree Plantations in High Spatial Resolution RGB Imagery Obtained from Unmanned Aerial Vehicle*”. In preparation.

F. Förster, G. Cabrera-Vives, E. Castillo-Navarrete, P. A. Estevéz, P. Sánchez-Sáez, et al. “*The Automatic Learning for the Rapid Classification of Events (ALeRCE) Alert Broker*”. Manuscript submitted to American Astronomical Society Journals, 2020.

M. Pérez-Carrasco, G. Cabrera-Vives, M. Martinez-Marín, P. Cerulo, R. Demarco, P. Protopapas, J. Godoy, and M. Huertas-Company. “*Multiband galaxy morphologies for CLASH: a convolutional neural network transferred from CANDELS*”, Manuscript published in Publications of the Astronomical Society of the Pacific, 2019.

CONFERENCES AND WORKSHOPS

Jornadas Chilenas de la Computacion 2019. University of Concepcion, Concepcion, Chile.

Astroinformatics 2019. **Expositor. Best student paper award.** Caltech, Pasadena, CA, USA.

6th CMM Pucon Symposium 2019. Data Science for Frontier Astronomy, Biology, and Medicine. Puerto Varas, Chile.

ComputeFest 2019. **Trainer.** Harvard University, Cambridge, MA, USA.

Big Data Astronomy Workshop 2018. **Expositor.** University of Concepcion, Concepcion, Chile.

5th CMM Pucon Symposium 2017. Data Science for Frontier Astronomy, Biology, and Medicine. Puerto Varas, Chile.

TECHNICAL SKILLS

Languages: Spanish (native speaker), English.

O.S: GNU/Linux, macOS.

Tools: Git, Google Cloud Platform, VS Code, Amazon Web Services, L^AT_EX

Libraries: Pytorch, Keras, Tensorflow, scikit-learn, NumPy, Matplotlib, pandas.