

Manuel Pérez Carrasco

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EDUCATION

University of Concepcion

Concepcion, Chile

MSc. Computer Science. GPA 6.1/7.0

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:
 - * Master’s thesis received best student paper award at Astroinformatics 2019 conference, Caltech.
 - * Undergraduate honor research thesis published in Publications of the Astronomical Society of the Pacific.
 - * Recipient of fully-funded Articulation scholarship for MSc. degree.

* Notice that B.S degrees in Chile are usually 11 semesters long.

RESEARCH AND PROFESIONAL EXPERIENCE

Research Assistant

Cambridge, MA, USA

Institute for Applied Computational Sciences (IACS) at Harvard University

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 Research Engineer

Concepcion, Chile

Data Science Unit at University of Concepcion

Jul. 2019 – Present

- **Automatic Learning for the Rapid Classification of Events (ALeRCE)**: Designing and implementing 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**: Designed and implemented a labeling, training, and prediction algorithm to count, detect, and segment trees using georeferenced RGB images through cloud-based infrastructure.

Research Assistant

Concepcion, Chile

Biomedical Laboratory at University of Concepcion

Jan 2020 – Sep. 2020

- Developed a real-time drowsiness detection algorithm using EEG signals, and a real-time segmentation algorithm for gait phases using accelerometer signals. Projects funded by the Chilean government *Fund for the Promotion of Scientific and Technological Development*.

Research Scholar

Cambridge, MA, USA

Institute for Applied Computational Sciences (IACS) at Harvard University

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 for the development of my research (stipend and flight tickets).

Internship

Concepcion, Chile

Coca-Cola Embonor S.A

Jan. 2018 – Feb. 2018

- Developed a forecasting software to estimate sales and demand for ~ 1500 sku.

TEACHING EXPERIENCE

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.
 - * Responsible of grading, office-hours, and guiding students in their applied machine learning projects.
 - * Worked under professor Pavlos Protopapas.

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 along 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 along 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 School of Engineering.

Aug. 2017 – Present

- Teaching assistant of Systems Modeling (2017-2), Machine Learning for Business Intelligence (2018-1), Data Science I (2020-1), and Data Science II (2020-2).
 - * Responsible of recitation and laboratories for System Modelling and Machine Learning for Business Intelligence.
 - * Guided undergraduate/graduate students in their applied data science projects for Data Science I and Data Science II.
 - * Worked under professors Guillermo Cabrera, Rodrigo de la Fuente, and Pablo Catalan.

PUBLICATIONS

B. Karelavic, 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*”. Under review.

M. Pérez-Carrasco, G. Cabrera-Vives, P. Protopapas, N. Astorga, and M. Belhaj. “*Matching Embeddings for Domain Adaptation*”. ArXiv 2008.03303, 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

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

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

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

TECHNICAL SKILLS

Languages: Spanish (native speaker), English.

O.S: GNU/Linux, macOS.

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

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