

Manuel Pérez Carrasco

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EDUCATION

University of Concepción

MSc. Computer Science. GPA 6.1/7.0

Concepción, Chile

Mar. 2017 – Oct. 2019

B.S. Industrial Engineering GPA 5.9/7.0*

Mar. 2013 – Sep. 2018

- Graduated Magna Cum Laude in MSc. degree and Summa Cum Laude 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 scholarship for MSc. degree.

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

RESEARCH AND PROFESSIONAL EXPERIENCE

Research Assistant

Institute for Applied Computational Sciences (IACS) at Harvard University

Cambridge, MA, USA

Sep. 2020 – Present

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

Machine Learning Research Engineer

Data Science Unit at University of Concepción

Concepción, Chile

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 predicting algorithm to count, detect, and segment trees using georeferenced satellite images through cloud-based infrastructure.

Research Assistant

Biomedical Laboratory at University of Concepción

Concepción, Chile

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

Institute for Applied Computational Sciences (IACS) at Harvard University

Cambridge, MA, USA

Jan. 2019 – Jun. 2019

- Member of the *Harvard-Chile Data Science School*.
- Development of master’s thesis. Research focused on semi-supervised domain adaptation algorithms for image classification.
- Work under Professor Pavlos Protopapas.
- Recipient of IACS financial aid for research development (stipend and flight tickets).

Internship

Coca-Cola Embonor S.A

Concepción, Chile

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 Data Science Master Program and Computer Science PhD Secondary Field in Data Science at Harvard University.
 - * In charge of grading, office-hours, and guiding students in their applied machine learning projects.
 - * Worked under professor Pavlos Protopapas.

University of Concepción

Concepción, 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 the Engineering Program. Taught along with professor Rodrigo de la Fuente.
 - * Co-designed curriculum, lectures, assessments, laboratories, and homework for an audience of 28 students.
 - * Co-graded assessments, homework 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 the Engineering Program. Taught along with professor Rodrigo de la Fuente.
 - * Co-designed curriculum, lectures, assessments, laboratories, and homework for an audience of 21 students.
 - * Co-graded assessments, homework 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).
 - * In charge of recitation and laboratories for System Modeling 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 Catalán.

PUBLICATIONS AND PREPRINTS

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 progress.

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*”. In press.

M. Pérez-Carrasco, G. Cabrera-Vives, P. Protopapas, N. Astorga, and M. Belhaj. “*Matching Embeddings for Domain Adaptation*”. ArXiv 1909.11651, 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*”, Publications of the Astronomical Society of the Pacific (PASP), 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 Concepción, Concepción, Chile.

TECHNICAL SKILLS

Languages: Spanish (Native speaker), English (Advanced).

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.