

Curriculum Vitae

Pablo Amil Marletti

Updated: 31/03/2026

Personal Data

Identity

Name: Pablo Amil

Nationalities: Uruguayan & Spanish

Birth date: 28 /12/1990

Contact information

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Webpage: pabloamil.duckdns.org

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Profile

Senior Software Engineer with a strong background in artificial intelligence and complex systems, combining academic research experience (PhD in Computational Physics, UPC) with industry expertise in scalable software development.

Proven track record in designing data-intensive systems, including data warehousing, anonymization platforms, and distributed communication systems. Co-inventor of two patents and author of multiple scientific publications in machine learning and data analysis.

Experienced in bridging research and production environments, with deep expertise in Smalltalk, SQL, and system architecture, and a solid foundation in machine learning, signal processing, and high-dimensional data analysis.

Professional experience

Institution: Lifeware

03/2020 - present, Senior Software Engineer

- Design, implement, and maintain complex software solutions for life insurance systems, translating business and regulatory requirements into robust, scalable architectures.
- Led and contributed to key projects including:
 - Data Warehouse (DWH) reporting systems for business intelligence and analytics.
 - Data anonymization platform (GUI and reporting) to support compliance and secure data handling.
 - Automated communication system with external entities (ZfA) using message queues (MQ).
- Developed and maintained APIs to enable integration with external systems and support scalable, service-oriented architectures.
- Specialized in Smalltalk-based systems (primary stack), with strong use of SQL for data modeling, querying, and optimization.
- Played a key role in legacy data migration, importing and normalizing data from heterogeneous databases for multiple clients.
- Contributed to the design and implementation of new insurance products, supporting the full lifecycle from concept to production.
- Provided production support and continuous system improvements, ensuring compliance with evolving regulations and enhancing user experience.
- Gained strong domain expertise in insurance systems, AML compliance, and actuarial-driven logic.

Institution: UPC - Universitat Politècnica de Catalunya

09/2016 – 02/2020, AI Researcher

- Conducted applied AI research in medical image analysis, using classical machine learning, unsupervised learning, clustering, and embedding techniques.
- Developed custom data processing and analysis pipelines for complex datasets, primarily using MATLAB, with performance-critical components implemented in C++ (MEX).
- Worked with laser-based and optical data within the Nonlinear Dynamics, Nonlinear Optics, and Lasers research group, applying signal processing and data-driven methods.
- Co-inventor of two patents related to AI-driven medical image analysis and data processing methodologies.
- Published research papers in the field (see publications section).
- Collaborated in interdisciplinary research projects combining physics, optics, and machine learning.
- Teaching assistant for undergraduate engineering courses:
 - Physics Laboratory I
 - Physics Laboratory III
 - Physics III

Institution: Universidad de la República, Facultad de Ciencias - UDeLaR, Uruguay

09/2013 – 07/2016, Assistant professor / Researcher

- I worked as a teacher and researcher at the physics institute in the experimental physics department. I researched in nonlinear phenomena, designing experiments, making simulation, and analyzing the data they produced. I also researched in the topics of digital audio synthesis for musical purposes, and musical acoustics.
- **Research groups:**
 - Statistical Mechanics and nonlinear physics
 - Ultrasound acoustics Laboratory
- **Courses:**
 - Quantum mechanics (For physics students)
 - Physics 101 (For physics and math students)
 - Physics 102 (For physics and math students)
 - Physics 102 (For Biosciences and Geosciences students)
 - Laboratory 201 (For physics students)
 - Laboratory 202 (For Biosciences and Geosciences students)

08/2011 - 08/2013, Laboratory assistant

- I worked in the maintenance and repair of laboratory equipment, repairing and redesigning analog and digital electronic circuits as well as mechanical devices.

Institution: PEDECIBA (Basic Sciences development program, Uruguay)

03/2013 - 12/2013, Jr. Researcher

- I worked in the experimental study of chaotic delayed systems, in the design of analog computers, and in data analysis.
- **Research group:** Statistical Mechanics and nonlinear physic

Technical skills

Programming languages / Computer skills

Smalltalk	●●●●●	LaTeX	●●●○○	Python	●●●○○
MATLAB	●●●●●	Arduino	●●●○○	SQL	●●●○○
C	●●●●●	Git	●●●○○	Linux	●●●○○
C++	●●●●○	R	●●○○○		

Areas of expertise

Machine learning	●●●●●	Audio processing	●●●●○	Complex systems	●●●●●
Unsupervised learning	●●●●○	Image processing	●●●●○	Network science	●●●●○
Artificial intelligence	●●●●○	Object Oriented P	●●●●●	Simulations	●●●●●
Data analysis	●●●●●	Physical modeling	●●●●○	Statistics	●●●●○
Signal processing	●●●●●	Acoustics	●●●●○	Information theory	●●●●○

Other skills

Teaching	●●●●○	Team work	●●●●●
Public speaking	●●●●○	Research experience	●●●●○

Courses

Specialization course

2019

"Quality for Big Data in Life Sciences"

Universitat Autònoma de Barcelona, Spain

Final work: "Automated Decision Support System for Diagnosis of Plus – Non-Plus disease in Retinopathy of Prematurity Using Convolutional Deep Neural Networks and a Model of Quality by Design"

Key words: Big data; Data science; Quality; Life sciences

Training course

2019

"PATC: Big Data Analytics"

Barcelona supercomputing center, Spain

Training workshop

2018

"Hands-on training workshop: all about eyes"

Institut de microcirugia ocular, Barcelona, Spain

Online course

2016

"Learning From Data (Machine Learning)"

California Institute of Technology, USA

<https://courses.edx.org/certificates/100b5353c990457b912d53a7ca6f6174>

Languages

Spanish – Mother tongue

English – Proficiency level (CPE from Cambridge University)

Portuguese – Intermediate level

Catalan – Basic level

German – Basic level

Academic background

PhD

2016 - 2020

Computational and applied physics

Universitat Politècnica de Catalunya - UPC, Spain

Thesis: "Machine learning methods for the characterization and classification of complex data"

http://beoptical.eu/Public/SharedDocs/ESR_thesis/PhD_Pablo_Amil.pdf

<http://hdl.handle.net/10803/668842>

Supervisor: Cristina Masoller

Funding: Marie Skłodowska-Curie actions

Master

2013 - 2016

Master in Engineering (Engineering physics)

Facultad de Ingeniería - UDeLaR, Universidad de la República, Uruguay

Thesis: "Síntesis de audio por modelado físico de instrumentos musicales: tambores del candombe uruguayo"

"Audio synthesis by physical modeling of musical instruments: Uruguayan candombe drums"

<https://doi.org/10.13140/RG.2.2.10686.33603>

Supervisors: Paulo A. A. Esquef and Carlos A. Negreira

Funding: Agencia Nacional de Investigación e Innovación, Uruguay

Key words: Synthesis; Audio; Membranophones

Bachelor's degree

2009 - 2013

Physics

Facultad de Ciencias - UDeLaR, Universidad de la República, Uruguay

Final work: "Oscilaciones conjuntas y sincronización en osciladores con ciclo de histéresis acoplados"

"Joint oscillations and synchronization in coupled oscillators with hysteresis cycle"

Supervisor: Cecilia Cabeza

Key words: synchronization; Nonlinear; Networks; hysteresis

Engineering

(unfinished – 72%
complete)

2009 - 2012

Electronic Engineering

Facultad de Ingeniería - UDeLaR, Universidad de la República, Uruguay

Technical Production

Patent: A computer implemented method, a system and computer programs for anomaly detection using network analysis

Number: EPC – 19382388.7 – 1218 *Date:* 2019-05-17 *Country:* Spain

Inventors: Amil Marletti, Pablo; Almeira, Nahuel; Masoller Alonso, Cristina

<https://futur.upc.edu/27635586>

Patent: Image processing method for glaucoma detection and computer program products thereof

Number: PCT/IB2017/057792 *Date:* 2017-12-11 *Country:* Spain

Inventors: Amil Marletti, Pablo; Masoller Alonso, Cristina; Arrondo Murillo, Elena; Parlitz, Ulrich; Salinas Almela, Cecilia

<https://futur.upc.edu/21984485#.XK8jXWrZPX0>

Concetta Barcellona; Donatus Halpaap; Pablo Amil; Arturo Buscarino; Luigi Fortuna; Jordi Tiana-Alsina; Cristina Masoller

Remote recovery of audio signals from videos of optical speckle patterns: a comparative study of signal recovery algorithms.

Optics Express, 2020, vol. 28, no. 6, p. 8716-8723.

ISSN: 1094-4087 DOI: 10.1364/OE.386406

<https://www.osapublishing.org/oe/abstract.cfm?uri=oe-28-6-8716>

Pablo Amil; Nahuel Almeida; Cristina Masoller

Outlier mining methods based on graph structure analysis

Frontiers in Physics, 2019, vol. 7, p. 194.

ISSN: 2296-424X DOI: 10.3389/fphy.2019.00194

<https://www.frontiersin.org/articles/10.3389/fphy.2019.00194/abstract>

Pablo Amil; Miguel C. Soriano; Cristina Masoller

Machine learning algorithms for predicting the amplitude of chaotic laser pulses

Chaos: An Interdisciplinary Journal of Nonlinear Science, 2019, vol. 29, no 11, p. 113111

ISSN: 1089-7682 DOI: 10.1063/1.5120755

<https://doi.org/10.1063/1.5120755>

Pablo Amil; Cesar F. Reyes-Manzano; Lev Guzmán-Vargas; Irene Sendiña-Nadal; Cristina Masoller

Network-based features for retinal fundus vessel structure analysis

PLOS ONE, 2019, vol. 14, no 7, p. e0220132

ISSN: 1932-6203 DOI: 10.1371/journal.pone.0220132

<https://doi.org/10.1371/journal.pone.0220132>

Pablo Amil; Laura González; Elena Arrondo; Cecilia Salinas; JL Guell; Cristina Masoller; Ulrich Parlitz

Unsupervised feature extraction of anterior chamber OCT images for ordering and classification

Scientific reports, 2019, vol. 9, no 1, p. 1157

ISSN: 2045-2322 DOI: 10.1038/s41598-018-38136-8

<https://doi.org/10.1038/s41598-018-38136-8>

Alexandre L'Her; Pablo Amil; Nicolás Rubido; Arturo C. Martí; Cecilia Cabeza

Electronically-implemented coupled logistic maps.

The European Physical Journal B, 2016, vol. 89, no 3, p. 81

ISSN: 14346028 DOI: 10.1140/epjb/e2016-60986-8

<http://dx.doi.org/10.1140/epjb/e2016-60986-8>

Pablo Amil; Cecilia Cabeza; Cristina Masoller; Arturo C. Martí

Organization and identification of solutions in the time-delayed Mackey-Glass model.

Chaos: An Interdisciplinary Journal of Nonlinear Science, 2015, vol. 25, no 4, p. 043112

ISSN: 10541500 DOI: 10.1063/1.4918593

<http://dx.doi.org/10.1063/1.4918593>

Pablo Amil; Cecilia Cabeza; Arturo C. Martí

Exact Discrete-time Implementation of the Mackey-Glass Delayed Model.

IEEE Transactions on Circuits and Systems II: Express Briefs, 2015, vol. 62, no 7, p. 681-685

ISSN: 15497747 DOI: 10.1109/TCSII.2015.2415651

<http://dx.doi.org/10.1109/TCSII.2015.2415651>

Activities

Research visits

MPI

03/2017 - 05/2017

Max Planck Institute for Dynamics and Self-Organization (Göttingen, Germany).

Within the European Be-Optical Project to work on machine learning techniques applied to medical images. Under the supervision of Ulrich Parlitz.

LNCC

08/2015 - 12/2015

National Laboratory of scientific computing (Petrópolis, Rio de Janeiro, Brazil).

Financial support by CSIC (Uruguay). To finish the research work for the master thesis under the supervision of Paulo A. A. Esquef.

UFRJ

02/2014 - 06/2014

Federal University of Rio de Janeiro (Rio de Janeiro, Brazil).

Within the Project "musical signals analysis" from the cooperation program CAPES-UdeLaR. Under the supervision of Luiz W. P. Biscainho.