

Andrés Herrera Poyatos

Curriculum Vitae

Personal information

Fist name: Andrés

Last name: Herrera Poyatos

Date of birth: 9 August 1995

Place of birth: La Zubia, Granada, Spain

Education

2013-Present **Double Bachelor's Degree in Mathematics and Computer Science,**
University of Granada, Granada, Spain.

Degree	Number of completed courses	Average grade (out of 10)	Number of courses with highest honours
Computer Science	24	9.506	15
Mathematics	24	9.825	21

◦ Bachelor thesis (in preparation): *Numerical semigroups and cyclotomic polynomials*.
Advisor: [Prof. Pedro A. García-Sánchez](#).

2009-2013 **Estalmat**, SAEM Thales, University of Granada, Granada, Spain.

- A project to detect and stimulate the precocious mathematical talent.
- Web: thales.cica.es/estalmat.

2011-2013 **High School**, IES Trevenque, La Zubia, Granada, Spain.

- High school grade: with highest honours (top 5 best students of the year).
- Access to university grade: 13.63 out of 14.

Experience in research

◦ Initiation to research fellowship

July 2017 – July 2018, University of Granada, Spain. Advisor: [Prof. Pedro A. García-Sánchez](#).

- Research in numerical semigroups presentations and their connections with cyclotomic polynomials.
- Contributions to the GAP package NumericalSgps, gap-packages.github.io/numericalsgps.

◦ Young researcher at 5th Heidelberg Laureate Forum

23 September – 30 September 2017, Heidelberg, Germany. Web: heidelberg-laureate-forum.org.

◦ Visiting researcher at Max Planck Institute for Mathematics

19 September – 23 September 2017, Bonn, Germany.

- Collaboration with [Dr. Pieter Moree](#) in cyclotomic polynomials.

◦ Reviewer for Journal of Algebra and Its Applications, March 2017.

◦ Internship at Max Planck Institute for Mathematics

20 August – 20 September 2016, Bonn, Germany. Advisor: [Dr. Pieter Moree](#).

- Research in evaluating cyclotomic polynomials and its derivatives at roots of unity.
- Applications to cyclotomic numerical semigroups.

◦ Research training contract on metaheuristics and software development

October 2015 – July 2016, Fundación General Universidad de Granada - Empresa, University of Granada, Spain.
Advisor: [Prof. Francisco Herrera](#).

- Design of algorithms and heuristics to solve timetabling and vehicle scheduling problems.
- Implementation of those algorithms and heuristics in C++.

Publications

Contact me in order to get a copy of any of the following publications.

Journal papers

- **Cyclotomic polynomials at roots of unity.** Bartłomiej Bzdęga, Andrés Herrera-Poyatos and Pieter Moree. Submitted to Acta Arithmetica, accepted subject to minor revision, [arXiv:1611.06783](https://arxiv.org/abs/1611.06783).
- **A snapshot of image pre-processing for convolutional neural networks: case study of MNIST.** Siham Tabik, Daniel Peralta, Andrés Herrera-Poyatos and Francisco Herrera. International Journal of Computational Intelligence Systems, 2017, vol. 10, no. 1, pp. 555 – 568, [doi:10.2991/ijcis.2017.10.1.38](https://doi.org/10.2991/ijcis.2017.10.1.38).

In preparation for journal submission

- **Genetic and Memetic Algorithm with Diversity Equilibrium based on Greedy Diversification.**
Andrés Herrera-Poyatos and Francisco Herrera. A second version is in preparation, [arXiv:1702.03594](https://arxiv.org/abs/1702.03594).
- **Higher order derivatives of cyclotomic polynomials: old and new.** Andrés Herrera-Poyatos and Pieter Moree.
- **Isolated factorizations and applications: Betti sorted and Betti divisible numerical semigroups.**
Pedro A. García-Sánchez and Andrés Herrera-Poyatos.
- **Exponent sequences of cyclotomic numerical semigroups.**
Alexandru Ciolan, Pedro A. García-Sánchez, Andrés Herrera-Poyatos and Pieter Moree.

Conference contributions

- **A study on Data Preprocessing for Deep Neuronal Networks and its application to Handwriting Digit Recognition** ([Un Estudio sobre el Preprocesamiento para Redes Neuronales Profundas y Aplicación sobre Reconocimiento de Dígitos Manuscritos](#)). Daniel Peralta, Andrés Herrera-Poyatos and Francisco Herrera. 17th Spanish Conference on Artificial Intelligence: 8th Workshop on Data Mining and Applications (*TAMIDA 2016*), pp. 867–876.
- **Memetic Algorithm with Diversity Equilibrium based on Greedy Diversification** ([Algoritmo Memético Equilibrado con Diversificación Voraz](#)). Andrés Herrera-Poyatos and Francisco Herrera. 16th Spanish Conference on Artificial Intelligence: 2nd Workshop on Metaheuristics and Evolutionary Algorithms (*JAEM 2015*), pp. 219–229.
- **Genetic Algorithm with Greedy Diversification and Equilibrium between Exploration and Exploitation** ([Algoritmo Genético con Diversificación Voraz y Equilibrio entre Exploración y Explotación](#)). Andrés Herrera-Poyatos and Francisco Herrera. 10th Spanish Conference on Metaheuristics, Evolutionary and Bio-inspired Algorithms (*MAEB 2015*), pp. 9–18.

Courses

- **LaTeX Workshop**, [Orientamat](#), University of Granada, March 2017. Teacher asistant.
- **R Programming**, Johns Hopkins University, Coursera, 2015.
Grade – 100.0 %. [Verified Statement with Distinction](#).
- **Practical data science and big data: Knime, R, Hadoop and Mahout tools**, International University of Andalucía (UNIA), Baeza, Jaén, Spain, 2014. Grade – 10 out of 10.

Awards

- 2013 Top 10, Access to University Grade, Granada province.
- 2013 Honourable Mention to the Best High School Academic Record in La Zubia, Granada.
- 2013 Qualified for the XLIX Spanish Mathematics Olympiad, National Phase.
- 2013 1st place, XLIX Spanish Mathematics Olympiad, Local Phase in Granada province.
- 2013 4th place, XXIV Spanish Physics Olympiad, Local Phase in Granada province.
- 2012 1st place, II Short Story Competition, "Al borde de lo inconcedible", Villa de la Zubia, Granada.
- 2011 2nd place, I Short Story Competition, "Al borde de lo inconcedible", Villa de la Zubia, Granada.
- 2009 Selected for Estalmat - Andalucía ([description in the education section](#)).
- 2009 Top 5, XXV Thales Mathematics Olympiad for students under 13, Granada province.
Qualified for the regional phase in Andalucía.

Languages

Spanish **Mother-tongue**

English **Cambridge English: Advanced (CAE)**

Obtained on July, 2013.

Interests and activities

- **Research in mathematics and computer science.** Links to [Scholar Google](#) and [Research Gate](#).
- **Seminars and collaboration with other students.** Member and lecturer of LibreIM (libreim.github.io), a students group dedicated to mathematics and computer science. Seminars: libreim.github.io/t/seminarios.
- **Mathematics and computer science dissemination.** Writer for LibreIM's blog, libreim.github.io. Posts:
 - Segment trees and Range minimum query.
 - Teorema de Dini (Dini's theorem).
 - Problemas – Fibonacci GCD (Problems – Fibonacci GCD). Written in collaboration with Mario Román.
 - Algoritmos Genéticos (Genetic Algorithms).
- **Open source projects**, github.com/andreshp, which range from latex templates and class notes to bash commands and several algorithms implementations.
- **Algorithms competitions.** Participant in Hackerrank's competitions. Profile: hackerrank.com/andreshp.
- **Sports: table tennis.** Highest achievement: winner of the 2nd Spanish Under-10 Team Championship, 2005.