

researcher cv

andr s r. masegosa

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## personal details

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address: Almer a (Spain)

age: 40 years old

email: andresmasegosa@ual.es

phone number: +34 653 414 732

web: <https://andresmasegosa.github.io>

github: <https://github.com/andresmasegosa>

twitter: [@andresmasegosa](https://twitter.com/andresmasegosa)

## research interests

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Artificial Intelligence – Machine Learning – Probability Theory –  
Uncertainty Modelling – Bayesian Statistics – Probabilistic  
Programming – Variational Inference – PAC-Bayes theory

## education

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**2004-2009 - PhD in Computer Science.** University of Granada, 2009. Score: A+. Dissertation on Supervised Classification Models. Applications to Genomics and Information Retrieval.

**2007-2008 - Master in Soft Computing and Intelligent Systems.** University of Granada, 2008. Score: A+. Dissertation on Modelling Contextual Relevance to measure the impact of Context.

**2006-2007 - Diploma of Advance Studies in Probabilistic Graphical Models for Artificial Intelligence and Data Mining.** University of Granada, 2007. Score: A+. Dissertation on a Semi-naive Bayes classifier with grouping of cases.

**2004-2005 - Diploma of Advance Studies in Soft Computing and Intelligent Systems.** University of Granada. Dissertation on Gene Data Classification. Score: A.

**1998-2003 - Computer Engineering Bachelor Degree.** University of Granada.

## professional experience

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**2018 - Today - Assistant Professor** at the Department of Mathematics of University of Almería (Spain).

**2016-2018 - Senior researcher** at the Department of Mathematics of University of Almería (Spain).

**2014-2016 - Post-doc researcher** at the Department of Computer Science of NUTNU (Norway).

**2009-2013 - Post-doc researcher** at the Department of Computer Science of University of Granada (Spain).

**2004-2009 - PhD Student** at the Department of Computer Science of University of Granada (Spain).

## scholarships & grants

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**2020-2022 – National Research Grant.** Explainable Machine Learning: A Probabilistic Approach. Competitive National Call by the Spanish Ministry of Science. Co-PI. Funded with 62,000€.

**2019-2020 – José Castillejo Scholarship.** Competitive National Call by the Spanish Ministry of Science. Funded with 15,000€ for a research visit at University of Copenhagen.

**2017-2018 – Early-stage Researcher Grant.** Probabilistic Programming Languages for the Development of Intelligent Applications on Large Volumes of Data. Competitive National Call by the Spanish Ministry of Science. PI. Funded with 172,000€.

**2013-2013 - Young Researcher Scholarship.** Local Call (University of Granada). Discretization of Expression Quantitative Trait Loci for Learning with Machine Learning Models. Funded with 3,000€.

**2005-2009 – PhD Scholarship.** Competitive National Call by the Spanish Ministry of Science. Funded with 96,000€.

## research internships/visits

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**August 2019 – January 2020 -** Department of Computer Science. University of Copenhagen (DK). Host: Dr. Yevgeny Seldin  
Achievements: 2 conference papers accepted at NeurIPS 2020.

**July-August 2017 and 2018 -** Department of Computer Science. Technical University of Berlin (DE). Host: Dr. Shinichi Nakayima.  
Achievements: 1 conference paper accepted at ICCVW'17.  
1 conference paper rejected at AISTATS'19.

March 2014 - August 2016 - Department of Computer Science. Aalborg University (Denmark). Host: Dr. Thomas Nielsen. Achievements: 2 conference papers accepted at ICML'17 and ECAI'16. 2 journal papers at IJAR and IEEE-CIM.

July-August 2012 - Department of Computer Science. University of Utrecht. Host: Professor Linda C. van der Gaag. Achievements: 1 conference paper rejected at UAI'13. 1 journal paper at IJAR.

July-December 2006 - Department of Computer Science. University of Glasgow (UK). Host: Professor Joemon Jose. Achievements: 2 papers at top international conferences on Information Retrieval: ECIR'07 and SIGIR'07.

## invited talks, tutorials & seminars

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February 2021 – **Learning under model misspecification.** Talk at the Computer Science Department in the University of Cambridge (UK).

November 2020 – **Learning under model misspecification.** Talk at the Alan Turing Institute (London).

October 2019 - **Probabilistic Programming with Deep Neural Networks.** Tutorial at the Autumn school on Machine Learning 2019 in Tbilisi (Georgia).

September 2019 - **A Bayesian approach for modelling of non-stationary data streams.** Talk at Department of Computer Science in the University of Copenhagen (Denmark).

June 2019 - **Variational Inference in Probabilistic Programming.** Tutorial at the Probabilistic AI Summer Schools 2019 in Trondheim (Norway).

August 2018 - **Bayesian Modelling of Concept Drift.** Talk at the Machine Learning Group in the Technical University of Berlin.

June 2018 - **Probabilistic Machine Learning with the AMIDST Toolbox**. Tutorial at the Geilo Winter School 2018 (Norway).

November 2016 - **AMIDST Toolbox - Scalable Probabilistic Machine Learning**. Talk at the Apache Big Data Europe 2016 in Seville (Spain).

July 2012 - **Interactive Learning of Bayesian Networks**. Talk at the Department of Information and Computing Sciences in the University of Utrecht (Netherlands).

## research publications

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### Bibliometrics (Google Scholar).

- 26 papers in JCR indexed journals. 13 of them in Q1 journals.
- 38 papers in international conferences. 5 of them in Core A\* conferences (SIGIR, UAI, ICML and NeurIPS). 3 of them in Core A conferences (ECIR, ECAI, IDA). 9 of them in Core C conferences (ECSQARU, IPMU, INEX).
- Number of citations: 700. H-index: 15. i10-index: 20.

### List of the 10 most relevant publications.

**Masegosa, A. R.** (2020). Learning under model misspecification: Applications to variational and ensemble methods. Advances in Neural Information Processing Systems, **NeurIPS**, 33. [Core A\* conference]

**Masegosa, A. R.**, Lorenzen, S., Igel, C., & Seldin, Y. (2020). Second order PAC-Bayesian bounds for the weighted majority vote. Advances in Neural Information Processing Systems, **NeurIPS**, 33. Oral Presentation [3% acceptance rate] [Core A\* conference]

Cózar, J., Cabañas, R., Salmerón, A., & **Masegosa, A. R.** (2020). InferPy: Probabilistic modeling with deep neural networks made easy. **Neurocomputing**, 415, 408-410. [JCR Position 28/137 – Computer Science, AI]

**Masegosa, A. R.**, Ramos-López, D., Salmerón, A., Langseth, H., & Nielsen, T. D. (2020). Variational Inference over Nonstationary Data Streams for Exponential Family Models. **Mathematics**, 8(11), 1942. [JCR Position 28/328 - Mathematics]

**Masegosa, A. R.**, Nielsen, T. D., Langseth, H., Ramos-López, D., Salmerón, A., & Madsen, A. L. (2017). Bayesian models of data streams with hierarchical power priors. In Proceedings of the 34th International Conference on Machine Learning, **ICML**, 70. [Core A\* conference]

**Masegosa, A. R.**, Martinez, A. M., & Borchani, H. (2016). Probabilistic graphical models on multi-core CPUs using Java 8. **IEEE Computational Intelligence Magazine**, 11(2), 41-54. [JCR Position 6/133 – Computer Science, AI]

**Masegosa, A. R.** (2014). Stochastic discriminative EM. In Proceedings of the Thirtieth Conference on Uncertainty in Artificial Intelligence. **UAI**. (pp. 573-582). [Core A\* conference]

Abellán, J., & **Masegosa, A. R.** (2012). Bagging schemes on the presence of class noise in classification. **Expert Systems with Applications**, 39(8), 6827-6837. [JCR Position 13/79 – Operation Research and Management]

Cano, A., **Masegosa, A. R.**, & Moral, S. (2011). A method for integrating expert knowledge when learning Bayesian networks from data. **IEEE Transactions on Systems, Man, and Cybernetics, Part B (Cybernetics)** 41(5), 1382-1394. [JCR Position 10/111 - Computer Science]

Abellan, J., & **Masegosa, A. R.** (2010). An ensemble method using credal decision trees. **European journal of operational research**, 205(1), 218-226. [JCR Position 6/75 – Operation Research and Management]

## research projects

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06/2020 – 05/2023 - **Explainable Machine Learning: A probabilistic Approach**. Funder: Spanish Ministry of Science. Co-PI.

01/2017 – 12/2019 - **Probabilistic Programming Language for the Development of Intelligent Applications on Large Volumes of Data**. Funder: Spanish Ministry of Science. PI.

- 01/2014 – 12/2016 - **AMIDST: Analysis of massive data streams.** Funder: European Commission. Funder: EU FP7-ICT. Post-Doc.
- 01/2013–12/2015 – **Probabilistic Graphical Models for Scalable Data Analytics,** Funder: Spanish Ministry of Science, Research Team.
- 01/2013–12/2013 - **Discretization of Expression Quantitative Trait Loci for Learning with Machine Learning Models,** Funder: University of Granada, PI.
- 01/2010–12/2012 - **Data Mining with Probabilistic Graphical Models,** Funder: Spanish Ministry of Science, Research Team.
- 01/2008–12/2010 - **Clados: Detection of Structural Anomalies of the Genome Using MGPs,** Funder: Regional Government of Andalucía, Research Team.
- 06/2009–12/2011 - **Multimodal Interaction in Pattern Recognition and Computer Vision,** Funder: Spanish Ministry of Science, Post-Doc.
- 01/2007–12/2009 - **Design of New Algorithms in Probabilistic Graphical Models,** Funder: Spanish Ministry of Science, PhD Student.
- 01/2004–12/2006 - **Adaptive Learning of Probabilistic Graphic Models,** Funder: Spanish Ministry of Science, PhD Student.

## industrial projects

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- 01/2004–12/2006 - **Development of Modules 7 and 8 i-Apus Project: Advanced Police Unification Software.** Company: Granatel S.L., Research Team, 64,112€.
- 01/2006–04/2006 - **Software for commercial sectorization and route planning,** Company: Gobile S.L. Reserch Team, 14,500€.

## software projects

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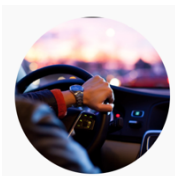
### InferPy: Deep Probabilistic Modelling with Tensorflow Made Easy

Lead Developer and Researcher  
<https://inferpy.readthedocs.io/>



### AMIDST: a Java toolbox for scalable probabilistic machine learning

Lead Developer and Researcher  
<http://www.amidsttoolbox.com>



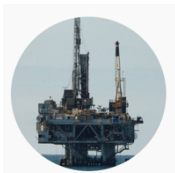
### Early recognition of traffic manoeuvre intentions

Developer and Researcher  
<http://project.amidsttoolbox.com>



### Risk prediction in credit operations

Developer and Researcher  
<http://project.amidsttoolbox.com>



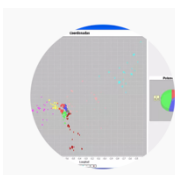
### Real time pattern recognition in drilling logs

Developer and Researcher  
<http://project.amidsttoolbox.com>



### Crime prediction using data mining methods.

Lead Developer and Researcher  
<https://andresmasegosa.github.io/projects/>



### Sales Force Designing using an Artificial Intelligence based approach.

Lead Developer and Researcher  
<https://andresmasegosa.github.io/projects/>





## Elvira, a Java tool to construct probabilistic models-driven based decision support systems.

Developer and researcher  
<http://leo.ugr.es/elvira>

### services to the community

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- PC Member PGM 2012, 2014, 2016, 2018, 2020.
- Reviewer ICML 2016, 2017, 2018, 2019, 2020, 2021.
- Reviewer NeurIPS 2017, 2018, 2019, 2020.
- Reviewer ICLR 2018, 2019, 2021.
- Reviewer ECML 2016, 2017, 2018, 2019, 2021.

I also regularly review for journals like JMLR, Neurocomputing, Applied Soft-Computing, International Journal of Approximate Reasoning, Information Sciences, Expert Systems with Applications, etc.

### phd committees

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- 2016** – Byron W. Oviedo. Probabilistic Graphical Models for student prediction performance. University of Granada (Spain).
- 2019** – Jancito Arias. Learning Bayesian Networks with Large-scale Problems and Computing Paradigms. University of Castilla La Mancha, Albacete, Spain
- 2020** – Luis Redondo. Recommendation systems for the parliament based on machine learning and information retrieval. University of Granada (Spain).