The “adas” (generations of women who have followed Ada Byron in her need of breaking the mold, of creating and programming) prefer the structure “switch...case” over the structure “if...else” given its infinite possibilities. Programming the world for the “adas” implies creating the conditions for everyone to be whatever one wants to be, even when this corresponds to something not referenced yet with a word in the world, or when it can not be imagined clearly; it implies creating the conditions that even allow us to change our mind.


N. Ye, M. Pérez-Ortiz and R. K. Mantiuk: Trained perceptual transform for quality assessment of high dynamic range images and video, IEEE Int. Conf. on Image Processing, 2018.


Qualifications, awards and achievements

2018 Grant to attend the Dagstuhl Seminar on Automating Data Science, Leibniz-Zentrum für Informatik (Germany).

2018 Jury at the awards "Premio Rey Jaime I" in the area of new technologies (together with 18 Nobel laureates), Valencia (Spain).

2018 Research associateship, Hughes Hall College, University of Cambridge (UK).

2018 Grant attend the 6th Heidelberg Laureate Forum (Fields, Abel & Turing laureates), Heidelberg (Germany).

2017 Young Cordoba Awards: University and Innovation, Regional Government of Andalusia.

2017 Young researchers in Computer Science Award, 5000€, BBVA and Spanish Scientific Society for Computer Science.

2017 Research annual award, University Loyola Andalucía.

2016 First honorary award - Phd Program of Engineering and Tech., University of Córdoba.

2015 Award - Women in artificial intelligence, Spanish Association for AI.

2013 Third award and award of the public - “Your thesis in three minutes”, 1500€, Spanish Network for the Advance and Transfer of Applied Comp. Intelligence.

Organisation and management of scientific events


2016 Organizer of special session, “Ordinal regression and ranking”, World Conference on Computational Intelligence, Vancouver, Canada.


Invited talks

2018 Perception of colour and artificial intelligence, Virtual and Augmented Reality observatory, Malaga (Spain).

2018 Understanding visual perception to improve computer displays, Hughes Hall College research showcase, University of Cambridge.

2018 Learning from humans and the law of comparative judgment, Women at the Computer Laboratory Talklet, University of Cambridge.

2017 Learning from humans: A broad overview of approaches to model preferences, skills and perception, Computer Laboratory, University of Cambridge.

2014 Ordinal classification and time series segmentation: Potential applications, Centro Singular de Investigación en Tecnoloxías da Información, University of Santiago de Compostela.
2012 **Ensemble methodologies for ordinal regression**, *University of Granada (Spain).*

### Teaching experience

I have mainly contributed to courses related to machine learning, statistics and programming. I have also collaborated in some teaching innovation projects and tutored three degree final projects.

- **2018** *Introduction to Artificial Intelligence*, *Summer School at St Catharine’s College*, University of Cambridge, Lectures.
- **2018** *Artificial Intelligence I*, *B.Sc in Computer Science*, University of Cambridge, Supervisions.
- **2017-2018** *Probabilistic Machine Learning*, *M.Sc in Computer Science*, University of Cambridge, Grading.
- **2016-2017** *Business Statistics I*, *B.Sc in Business and Administration*, University Loyola Andalucía, Lectures.
- **2015-2017** *Different seminars on programming and machine learning*, *Phd Program in Data Science*, University Loyola Andalucía, Lectures.
- **2012-2014** *Collaboration in Introduction to Machine Learning as honorary student*, *B.Sc in Computer Science*, University of Córdoba.

### Research interests

- **The future of machine learning and its impact on our society**
  Machine learning and AI have been successfully applied to very different domains and are changing the society we live in at an abrupt pace. It is imperative that we study and anticipate how these changes impact our society and the world economy and analyse the ethical issues that this new technological area might raise.

- **Automatisation of data science**
  With the advent of the big data era and the increased popularity of machine learning, the question of whether it is possible to automate data science has raised. This would undoubtedly leverage the whole process of knowledge extraction and impulse data science to the next level, simplifying data preprocessing and hyperparameter tuning, and progressing towards the “automated statistician”.

- **Weakly supervised learners**
  The recently coined term weak supervision refers to those classification problems where labelling information is not as accessible as in fully-supervised problems. There is a wide range of applications nowadays that match this definition and I believe machine learning should move towards this paradigm in order not to use more data, but to use it in a smarter way.

- **Inter-disciplinary applications of machine learning and the inclusion of expert knowledge**
  The use of specific knowledge and a deep understanding of the problem at hand are necessary prerequisites for applying data science successfully. It is of special interest how to infuse classifiers with such expert knowledge (e.g. using learning with privileged information, transfer, incremental or active learning).

- **Interpretable machine learning**
  There are many questions that arise within this topic, starting from the pure notion of interpretability, how interpretable the decision process of human beings actually is or how the induced knowledge can be interpreted in a transparent manner. I find this topic fascinating and I believe that its study will makes us closer to the new era of AI.

- **Reinforcement learning and adaptive machine learning**
  We already have the necessary hardware to create a machine with the computational capabilities of a human brain. However, we still do not know how to truly make it learn. Our limited knowledge of neuroscience and learning mechanisms impose a slow moving barrier. I believe, however, that further research in the topics of reinforcement learning and adaptive ML will change the whole subject at an abrupt pace, as algorithms will resemble the learning to which we are exposed to during our whole life.
Research projects and scientific networks

This section includes research projects and scientific networks in which I have collaborated as co-investigator.

2017-2020 A spatio-chromatic colour appearance model for retargeting high-dynamic-range image appearance across viewing conditions.
Apple and UK Engineering and Physical Sciences Research Council

2016-2017 Advanced diversification of learning machines.
Spanish Ministry of Economy and Competitiveness

2015–2017Ordinal classification algorithms and renewable energy prediction.
Spanish Ministry of Economy and Competitiveness

CSIC-MINECO-FEDER (technological funds)

European Space Agency

Spanish Ministry of Research, Development and Innovation

Spanish Ministry of Research, Development and Innovation

Spanish Ministry of Education and Science

Other qualifications

2015 Proficiency Certificate in English (C2 level), University of Cambridge.


Freely available developed code

- Ordinal regression framework (Matlab and Octave)
- Toolbox for pairwise comparison experiments (Matlab)
- Projection-based ensemble learning (Matlab)
- Over-sampling in the feature space (Matlab)
- Kernelised Proportional Odds Model (Matlab)
- Graph-based over-sampling in ordinal regression (Matlab)
- Synthetic data generator (Matlab)

Media coverage

- El pais (press, English and Spanish): Can we build truly intelligent machines?
- The Objective (press, in Spanish): Young researchers in the technological revolution.
Personal statement

I have felt attracted to artificial intelligence for as long as I can remember. During my undergrad studies I started experimenting with an AI model for a three player chess and simple AI models for videogames. I joined a research group when I was 20 years old and there I realized the impact that AI could have on the world. The first challenge I was presented with was a problem of finding the most compatible recipient for a donor in liver transplantation, so as to maximise expected survival. Seven years after starting the project, now the model is in virtual validation in several Spanish hospitals, as the last step before being implanted as a decision system for organ allocation. Since then, I have been enthusiastic about applying machine learning to different real-world domains. Some examples are a model using drones and image analysis to construct a weed coverage map and minimise the amount of herbicide applied to crops, an early warning system for abrupt climate change in collaboration with the European Spatial Agency or a non-invasive model for early detection of cancer skin. At the moment, I’m involved in a project in collaboration with Apple to understand human visual perception at high luminance levels, with applications in virtual and augmented reality, cinema and image compression. I believe in the concept of positive computing and I want to be part of it with my research.

Personal information and non-academic interests

- I am social event organiser of the society “Women at the Computer Laboratory” (University of Cambridge) and I collaborate with different associations in the UK and Spain to motivate young women to start a career in science/technology.
- Dancing has been in my life since I was three years old. I have completed the first part of the Dance conservatoire in Spain, focusing on ballet and flamenco. At the moment I’m interested in the use of dancing as a way of meditation and mindfulness.
- I’m also interested in nutrition. Since 2016, I’m a certified health coach by the Institute for Integrative Nutrition in the US.
- I love reading and writing. I am currently working on a book on AI for children.