

Me – I am a PhD Student at ELLIS Alicante supervised by Nuria Oliver (ELLIS) and Manuel Gomez Rodriguez (MPI-SWS). My thesis focus is algorithmic fairness and trustworthy ML. My work addresses technical development of algorithms to detect and avoid bias in decision-making and recommender-systems (using data valuation, graph theory and uncertainty), design robust and trustworthy technical systems for human-AI-collaboration and analyzing the intersection of the technical aspects of ML-based decision making with the AI regulation and standardization frameworks.

EDUCATION

PhD Student / Fairness in ML Dec 2021 — Present
ELLIS Alicante – ELLIS Alicante – Visiting Fellow at Max Planck Institute-SWS

- Supervised by **Dr. Nuria Oliver** (ELLIS) and **Dr. Manuel Gómez Rodríguez** (MPI-SWS, Germany).
- Fairness in ML decision making leveraging Graph Theory and it's intersection with the regulation.
- 6-months exchange at Max Plank Institute for Software Systems (MPI-SWS), Germany, Feb-Aug, 2024.
- Funded by Intel Labs (RESUMAS), ELIAS (European Project [101120237-HORIZON-CL4-2022-HUMAN-02]), Bank Sabadell and GVA.

MSc in AI & Data Science Jan 2020 — Jan 2021
Universitat Oberta de Catalunya GPA:9.7/10

- Evaluated both Masters and MSc Thesis with Honors.
- **MSc Thesis** supervised by **Dr. Baris Kanber** from University College of London: *Deep CAE for denoising T1 brain MRI*.

BSc in Computer Engineering Sep 2015 — Jun 2019
University of Burgos GPA:8.9/10

- Evaluated both Bachelors and BSc Thesis with Honors. Extraordinary award: best student in the promotion.
- **BSc Thesis** at ADMIRABLE research lab: *Voice-biomarkers Parkinson's detection with ML* [1, 2, 3, 4, 5, 6, 7, 8].

PROFESSIONAL EXPERIENCE

Doctoral Researcher Nov 2021 — Present
ELLIS Alicante Alicante, Spain

- Trustworthy AI (Fairness, Graph Neural Networks and Legal Implications).
- Collaborating on the effective implementation of the Spanish Charter of Digital Rights (Area 4: Work & Labor Environment), under the *Collaboration Agreement C039/23OT* lead by the Ministry of Digital Transformation & Red.es.

Lecturer on Graph Neural Networks 2024
DelveEducation Online

- Teaching online lessons on Graph Neural Networks (GNNs).

Research Fellow Feb 2024 — Aug 2024
Max Plank Institute for Software Systems (MPI-SWS) Kaiserslautern, Germany

- PhD Exchange on Human-Centric Machine Learning, advised by **Dr. Manuel Gómez Rodríguez**.

Research Staff Feb 2020 — Aug 2021
ADMIRABLE and DATAHES research labs University of Burgos, Spain

- European project [2019-1-ES01-KA204-065615] Self-Regulated Learning: SmartArt.
- Behavioural VR data analysis and Platform UBUMLaas
- Academic production shown in *Publications* section (Topic: Network Science and Web mining)

AI Consultant Sep 2019 — Jan 2020
Ernst & Young Madrid, Spain

- Building ML models for RPA integration: Intelligent Automation

Research Intern Dec 2018 — Jun 2019
ADMIRABLE research lab University of Burgos, Spain

- Research intern with collaboration scholarship. Research in the project *Use of biomarkers extracted from the voice for the detection of Parkinson* (BSc Thesis).

CONFERENCE PUBLICATIONS AND TUTORIALS

- [1] **Adrian Arnaiz-Rodriguez**, Georgina Curto, and Nuria Oliver. “Structural Group Unfairness: Measurement and Mitigation by means of the Effective Resistance”. In: *Proceedings of the AAAI International Conference on Web and Social Media (ICWSM)*. Also presented at IC2S2 2024 and TrustLOG@WWW 2024. Apr. 2025. URL: <https://arxiv.org/pdf/2305.03223.pdf>.
- [2] Kajetan Schweighofer, Adrian Arnaiz-Rodriguez, Sepp Hochreiter, and Nuria Oliver. “The Disparate Benefits of Deep Ensembles”. In: *Forty-second International Conference on Machine Learning*. July 2025. URL: <https://arxiv.org/abs/2410.13831>.
- [3] **Adrian Arnaiz-Rodriguez** and Ameya Velingker. “Tutorial on Graph Learning: Principles, Challenges, and Open Directions”. In: *Proceedings of the 41st International Conference on Machine Learning (ICML 2024)*. **Tutorial**. Vienna, Austria, July 2024. URL: <https://icml.cc/virtual/2024/tutorial/35233>.
- [4] **Adrian Arnaiz-Rodriguez** and Nuria Oliver. “Towards Algorithmic Fairness by means of Instance-level Data Re-weighting based on Shapley Values”. In: *ICLR 2024 Workshop on Data-centric Machine Learning Research (DMLR)*. Apr. 2024. URL: <https://openreview.net/forum?id=ivf1QaxEGQ>.
- [5] **Adrian Arnaiz-Rodriguez**, Francisco Escolano, Nuria Oliver, and Edwin Hancock. “Tutorial on Graph Rewiring: From Theory to Applications in Fairness”. In: *Proceedings of the Learning on Graphs Conference (LoG 2022)*. **Tutorial**. Virtual Event, Dec. 2022. URL: <https://ellisalicante.org/tutorials/GraphRewiring>.
- [6] **Adrián Arnaiz-Rodríguez**, Ahmed Begga, Francisco Escolano, and Nuria Oliver. “DiffWire: Inductive Graph Rewiring via the Lovász Bound”. In: *The First Learning on Graphs Conference*. Dec. 2022. URL: <https://openreview.net/forum?id=IXvfIexOmX6f>.
- [7] **Adrián Arnaiz-Rodríguez**, José Miguel Ramírez-Sanz, José Luis Garrido-Labrador, and Alicia Olivares-Gil. “Computer Science doctoral research in Spain. A relational perspective”. In: *Actas de la XIX Conferencia de la Asociación Española para la Inteligencia Artificial*. Universidad de Málaga. Málaga, 2021, pp. 667–672. ISBN: 978-84-09-30514-8. URL: https://caepia20-21.uma.es/inicio_files/caepia20-21-actas.pdf#page702.
- [8] José Luis Garrido-Labrador, José Miguel Ramírez-Sanz, Virginia Ahedo, **Adrián Arnaiz-Rodríguez**, César García-Osorio, José Ignacio Santos, and José Manuel Galán. “Network analysis of co-participation in thesis examination committees in an academic field in Spain”. In: *Abstract book of the 14th International Conference on Industrial Engineering and Industrial Management*. 2020. URL: https://eventos.uc3m.es/_files/_event/_43190/_editorFiles/file/BookOfAbstracts10.pdf.

JOURNAL PUBLICATIONS

- [1] **Adrian Arnaiz-Rodriguez** and Julio Losada. “Studying Causality in Algorithmic Decision Making: the Impact of IA in the Business Domain”. In: *Revista Internacional y Comparada de Relaciones Laborales y Derecho del Empleo* 12.3 (Dec. 2024). *Written in Spanish*. ISSN: 2282-2313. URL: https://ejcls.adapt.it/index.php/rlde_adapt/issue/view/105.
- [2] **Adrian Arnaiz-Rodriguez** and Julio Losada. “The Intersection of Trustworthy AI and Labour Law. A Legal and Technical Study from a Tripartite Taxonomy”. In: *Revista General de Derecho del Trabajo y de la Seguridad Social* 69 (Nov. 2024). *Written in Spanish*. ISSN: 1969-9626. URL: https://www.iustel.com/v2/revistas/detalle_revista.asp?id_noticia=427491.
- [3] José Luis Garrido-Labrador, José Miguel Ramírez-Sanz, Virginia Ahedo, **Adrián Arnaiz-Rodríguez**, César García-Osorio, José Ignacio Santos, and José Manuel Galán. “Análisis de la red de co-participaciones en tribunales de tesis de un área científica en España”. In: *Dirección y Organización* 79 (2023), pp. 59–67. DOI: 10.37610/dyo.v0i79.638.
- [4] Alicia Olivares Gil, **Adrián Arnaiz Rodríguez**, José Miguel Ramírez Sanz, José Luis Garrido Labrador, Virginia Ahedo García, César García Osorio, José Ignacio Santos Martín, José Manuel Galán Ordax, et al. “Mapping the scientific structure of organization and management of enterprises using complex networks”. In: *International Journal of Production Management and Engineering* 10.1 (2022), pp. 65–76. URL: <https://polipapers.upv.es/index.php/IJPME/article/view/16666>.
- [5] **Adrian Arnaiz Rodriguez** and Baris Kanber. “Deep convolutional autoencoders for reconstructing magnetic resonance images of the healthy brain”. In: (2021). MSc. Thesis. URL: <https://openaccess.uoc.edu/handle/10609/127059>.
- [6] Esther Cubo, **Adrian Arnaiz-Rodriguez**, Álar Arnaiz-González, José Francisco Díez-Pastor, Meredith Spindler, Adriana Cardozo, Alvaro Garcia-Bustillo, Zoltan Mari, and Bastiaan R Bloem. “Videoconferencing Software Options for Telemedicine: A Review for Movement Disorder Neurologists”. In: *Frontiers in neurology* (2021), p. 1812. URL: <https://www.frontiersin.org/articles/10.3389/fneur.2021.745917/full>.

- [7] María Consuelo Sáiz-Manzanares, Ismael Ramos Pérez, **Adrián Arnaiz-Rodríguez**, Sandra Rodríguez Arribas, Leandro Almeida, and Caroline Françoise Martin. “Analysis of the learning process through eye tracking technology and feature selection techniques”. In: *Applied Sciences* 11.13 (2021), p. 6157. URL: <https://www.mdpi.com/2076-3417/11/13/6157/htm>.

HONORS & AWARDS

- ☆ **Top Reviewer AISTATS 2025** INTERNATIONAL CONFERENCE ON ARTIFICIAL INTELLIGENCE AND STATISTICS, APRIL 2025
Competitive award. Selected among the best reviewers.
- ☆ **London Geometry and Machine Learning Summer School 2024** IMPERIAL COLLEGE LONDON, JULY 2024
Competitive selection. Selected to take part as a contributor in the project: “GNNs for Relational Databases” with Joshua Robinson.
- ☆ **Heidelberg Laureate Forum Young Researcher** HLF FOUNDATION, SEP 2023
Competitive selection. Selected among 200 young researchers to participate in the 10th HLFF, a highly competitive and prestigious event, where the selected students get the opportunity to interact with Turing Award winners, Abel Prize winners, Fields Medalists, and Nobel Prize winners.
- ☆ **Top Reviewer AISTATS 2023** INTERNATIONAL CONFERENCE ON ARTIFICIAL INTELLIGENCE AND STATISTICS, APRIL 2023
Competitive award. Selected in the top 10% best reviewers.
- ☆ **Top Reviewer ICML 2022** INTERNATIONAL CONFERENCE ON MACHINE LEARNING, JULY 2022
Competitive award. Selected in the top 10% best reviewers.
- ☆ **FPU PhD Fellowship (Declined) - FPU20/03687** SPANISH GOVERNMENT - MINISTRY OF UNIVERSITIES, SEP 2021
Competitive PhD Fellowship. Grants for pre-doctoral contracts in Spanish Universities.
- ☆ **Extraordinary Award of Bachelors in Computer Engineering** COUNCIL OF THE UNIVERSITY OF BURGOS, DEC 2019
Competitive award. Top 1 student in the Degree in Computer Engineering at the University of Burgos.
- ☆ **Prototype Award** OTRI (SERVICE FOR TECHNOLOGY TRANSFER, UNIVERSITY OF BURGOS), FEB 2019
Competitive award. Project awarded: Use of bio-markers extracted from the voice for the detection of Parkinson.
- ☆ **Undergraduate Research Fellowship** UNIVERSITY OF BURGOS, DEC 2018
Competitive Research Fellowship from the Ministry of Education of Spain. 6-month internship at the ADMIRABLE research group.
- ☆ **BSc and MSc Courses with honors** BACHELOR’S (UBU) AND MASTER’S (UOC)
8 out of 10 MSc courses evaluated with honors, including Thesis. 10 BSc courses evaluated with honors, including Thesis.

TALKS

- › **Designing Fair and Trustworthy AI Systems** JOINT RESEARCH CENTER OF THE EUROPEAN COMMISSION, SEVILLA, FEB 2025
Invited talk on AI fairness and trustworthiness in societal applications.
- › **IA for Social Good** FACULTY OF PHILOSOPHY, UNIVERSITY OF SEVILLA, FEB 2025
Discussion on ethical AI applications in society.
- › **IA for Social Good** WORKSHOP FOR TECH FOR INTELLECTUAL DISABILITIES, UNIVERSITY OF ALICANTE, NOV 2024
Exploring AI’s role in assisting individuals with intellectual disabilities.
- › **Graph Neural Networks** LECTURE @ DELVEDEEP LEARNING, ONLINE, SEP 2024
Introduction to GNNs and their real-world applications.
- › **Graph Learning: Principles, Challenges, and Open Directions** **TUTORIAL @ ICML, VIENNA, JUL 2024**
Tutorial (+1000 attendees) w/ A. Velingker (Google Research). *Panelists:* M. Bronstein (Oxford, DeepMind), M. Galkin (Intel), B. Perozzi (Google), C. Morris.
- › **Structural Group Unfairness in Social Networks** TRUSTLoG WORKSHOP @ WWW CONFERENCE, SINGAPORE, MAY 2024
Presentation on measuring and mitigating structural group unfairness in networks.
- › **Polarization in Networks and Social Capital** GUEST LECTURE @ UNIVERSITY OF NOTRE DAME, INDIANA, USA, FEB 2024
Talk on the impact of polarization and social capital in networks.
- › **Algorithmic Discrimination** ALGORITHMIC SOCIETIES ERC @ CCCB, BARCELONA, NOV 2023
Roundtable discussion on algorithmic discrimination in AI systems.
- › **Round Table about Sustainable AI** CHAMBER OF COMMERCE, ALICANTE, JUN 2023
Discussion on sustainable AI development and ethical concerns.
- › **Technical Challenges of Algorithmic Fairness** ELLIS-DMMLAB (CMU) WORKSHOP, ALICANTE, MAR 2023
Panel discussion on current technical challenges in fairness research.
- › **Algorithmic Fairness for EU Parliamentarians** EUROPEAN PARLIAMENT COMMITTEE ON LEGAL AFFAIRS (JURI), ALICANTE, FEB 2023
Talk on the societal challenges of algorithmic fairness for EU policymakers.
- › **Graph Rewiring: From Theory to Applications in Fairness** TUTORIAL @ LoG CONFERENCE, ONLINE, DEC 2022
Tutorial on graph rewiring methods for fairness in networked data.
- › **Fairness in AI: From Classic Approaches to Data Valuation and Social Networks** SPAINAI, BURGOS, DEC 2022
Discussion on fairness in AI and its applications in social networks.
- › **Discrimination in AI and Diversity** PERTE NEW ECONOMY OF LANGUAGE, MINISTRY OF ECONOMY, MADRID, OCT 2022
Panel discussion on AI discrimination and language diversity.

- › **Fairness in Algorithmic Decision-Making** UNIVERSITY OF BURGOS, ONLINE, MAR 2022
Seminar on fairness perspectives in algorithmic decision-making.
- › **ELLIS + Qualcomm AI Research: GNN and HCML** **ELLIS HCML READING GROUP, VIRTUAL, FEB 2022**
Moderator and panelist on workshop on GNNs and HCML. Panelists: Pim de Haan, Carlos Castillo, Efstathios Gavves, Manuel Gómez Rodríguez.
- › **Fairness in Machine Learning: From Introduction to Current Approaches** ELLIS TALKS, UNIVERSITY OF ALICANTE, JAN 2022
Lecture on fairness in ML, covering foundational and current methods.
- › **Data Processing in Advanced Learning Technology** SELF-REGULATED LEARNING IN SMARTART LEARNING CONFERENCE, JUL 2021
Presentation on data processing in advanced learning technologies.

SCIENTIFIC COMMUNITY SERVICES

— Chair member

- [Co-Chair] 4th LoG Conference 2025 *Los Angeles, 2025*
- [Co-Organizer] 3rd LoG Conference 2024 *Virtual, Dec 2024*
- [Associate Chair] ICML 2024 Associate Chair *Vienna, Jul 2024*
- [Co-Organizer] Tutorial on *ICML 2024*: “Graph Learning: Principles, Challenges, and Open Directions” *Vienna, Jul 2022*
- [Co-Organizer] Tutorial on *LoG 2022 Conference*: “Graph Rewiring: From Theory to Applications in Fairness” *Online, Dec 2022*
- [Co-Organizer] ELLIS Doctoral Symposium 2022 *Alicante, Sep 2022*
- [Co-Chair] ELLIS HCML Reading Group: guest sessions and round tables *monthly sessions*
- [Organizer and moderator] Qualcomm+ELLIS workshop about GNN+HCML *Online, Feb 2022*
↔ Round table: Pim de Haan, Carlos Castillo, Efstathios Gavves and Manuel Gómez Rodríguez

— Reviewer (PC member)

- ICML 2022 🏆, 2025 — AISTATS 2023 🏆, 2024, 2025 🏆 — NeurIPS 2021, 2022, 2023, 2024 (main track and workshops) — ICLR 2025 — FAccT 2023
- ECML-PKDD 2022 — WWW 2022 — IC2S2 2024, 2025

— Journal Reviewer

- JMLR — PeerJ — IEEE TNNLS (Graph Special Issue) — Complexity — IEEE TCSS

</> Open Source software

- Open source code from all academic projects, and also both BSc and MSc final projects on [Github](#).
- Main contributor of *Lightly version 1.1.2* in *Lightly AI* PyTorch-based library for Self-Supervised Learning.
- More open source repositories and contributions at [AdrianArnaiz](#).

For pictures, and more information, please refer to [my webpage](#).

Updated May 2025