Adrián Arnaiz Rodríguez

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Alicante, Spain
adrian@ellisalicante.org

GitHub: AdrianArnaiz
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WWW & Google Scholar

ELLIS PhD Student in ML

Research Interests I'm a '97 guy currently focused on my thesis with a strong interest in Fairness, Causality and Graph theory. My current thesis addresses the ethical implications of ML decisions, including concepts such as privacy, transparency, accountability, reliability, autonomy and fairness, which urgently need to be taken into account in critical decision-making scenarios.
In my current thesis, we aim to tackle these challenges by leveraging graph theory and causal models to develop individual and group fair machine learning algorithms and metrics that enhance fairness, accountability, and transparency in algorithmic decision-making.

EDUCATION

PhD Student / Fairness in ML   *Dec 2021 — Present*
ELLIS European lab. for Learning and Intelligent Systems – Alicante

- Researching on Fairness in ML decision making leveraging graph theory, game theory and causality
- 6-months exchange at Max Plank Institute for Software Systems, Kaiserslautern, 2023
- Advised by **Dr. Nuria Oliver** (ELLIS), **Dr. Manuel Gómez Rodríguez** (MPI-SWS) and **Dr. Francisco Escolano** (UA)
- More info: [ELLIS] [Research Topic]

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

- Evaluated both Masters and Thesis with Honors
- **Thesis** advised by Dr. Baris Kanber from University Collegue of London: *Deep Convolutional Autoencoder for denoise T1 brain MRI*

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

- Evaluated both Bachelors and Thesis with Honors
- Extraordinary award: best student in the promotion.
- **Thesis** carried out in ADMIRABLE research lab: *Use of biomarkers extracted from the voice for the detection of Parkinson*

PROFESSIONAL EXPERIENCE

Research Staff   *Jan 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

AI Consultant   *Aug 2019 — Jan 2020*
Ernst & Young firm   *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 grant. Research in the project *Use of biomarkers extracted from the voice for the detection of Parkinson* (BSc Thesis).

HONORS & AWARDS

FPU PhD Fellowship (Declined) - FPU20/03687   *Spanish Goverment - Ministry of Universities, Sep 2021*
Grants for pre-doctoral contracts in Spanish Universities

Prototype Award   *OTRI (Information Transfer Office of Burgos University), Feb 2019*
Project awarded: Use of bio-markers extracted from the voice for the detection of Parkinson.

Extraordinary Award of Bachelors in Computer Engineering   *Council of the University of Burgos, Dec 2019*
Best student of the Computer Engineering Degree from the University of Burgos, academic year 18/19

Undergraduated Research Fellowship   *University of Burgos, Dec 2018*
Assistant research Fellowship in the Civil Engineering department of the University of Burgos, research group ADMIRABLE

Courses with honors   *Bachelor's and Master's*
8 out of 10 MSc courses evaluated with honours, included Thesis. 10 BSc courses evaluated with honours, included Thesis.

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CONFERENCE PUBLICATIONS

[1] 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.

[2] José Luis Garrido-Labrador, José Miguel Ramírez-Sanz, Virginia Ahedo, César Arnaiz-Rodríguez Adrián 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 and XXIV Congreso de Ingeniería de Organización*. Universidad Carlos III de Madrid. Burgos, 2020. URL: https://eventos.uc3m.es/_files/_event/_43190/_editorFiles/file/BookOfAbstracts10.pdf.

JOURNAL PUBLICATIONS

[1] Adrián Arnaiz-Rodríguez, Ahmed Begga, Francisco Escolano, and Nuria Oliver. "DiffWire: Inductive Graph Rewiring via the Lovász Bound". In: *arXiv preprint arXiv:2206.07369* (2022).

[2] 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.

[3] Esther Cubo, Adrian Arnaiz-Rodriguez, Álvar 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.

[4] 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.

TALKS

A Fairness perspective in algorithmic decision-making   *University of Burgos (online), Mar 2022*
[ELLIS Talks] Fairness in Machine Learning: From introduction to current approaches   *University of Alicante, Jan 2022*
Data processing in Advance Learning Technology   *Self-Regulated Learning in SmartArt Learning activities conference, Jul 2021*

SCIENTIFIC COMMUNITY SERVICES

Reviewer
[External reviewer] The Web Conference 2022 (WWW'22), ACM, New York.
[External reviewer] IEEE Transactions on Computational Social Systems 2022.
[External reviewer] ICML 2022 - International Conference on Machine Learning
[Program Committee member] ECML-PKDD 2022 - European Conference on Machine Learning and Principles and Practice of Knowledge Discovery in Databases (x4 papers)

Workshop organization
Head of organization of ELLIS Doctoral Symposium 2022   Alicante, September 2022
Moderator of Qualcomm+ELLIS Reading Group Session about GNN+HCML
    Round table: Pim de Haan, Carlos Castillo, Efstatios Gavves and Manuel Gómez Rodríguez   Online, February 2022
Volunteer at NeurIPS Workshop "Human-Centered AI"   Virtual, December 2021

Science communication
Head of ELLIS HCML Reading Group: guest sessions and round tables   bi-weekly sessions

Open Source software
Open source code from both BSc and MSc final projects
Occasional collaborator in Lightly AI PyTorch-based library for Self-Supervised Learing. Main contributor of *Lightly version 1.1.2*
More open source codes in GitHub: applications, experiments and data analysis

ACTIVITIES

Final stage II Premios Semilla Empresarial [Project]   Mar 2017
3rd place in Innovation Contest Spin Up CyL by Junior Achievement Fundation Spain [Project]   *Jan 2017*

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Skills

Languages and libs	Python, R, Tensorflow, PyTorch, PyGeometric
More interests	Mathematical optimization, Mathematical Modeling, GNN, Reinforcement Learning
Communication	Spanish (native), English (Fluent)