

# JOSE M. ALVAREZ

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## EDUCATION

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### Ph.D. in Data Science

Nov 2020 - (Ex.) May 2024

*Scuola Normale Superiore*, Pisa, Italy

Supervisor: Salvatore Ruggieri (University of Pisa)

Topics: causal inference, algorithmic fairness, machine learning applications

### M.Sc. in Econometrics and Empirical Economics, *mention bien*

Sep 2015 - May 2017

*Toulouse School of Economics*, Toulouse, France

### B.A. in Economics, History, *summa cum laude*

Sep 2011 - May 2015

*University of Florida*, Florida, USA

## EXPERIENCE

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### Marie Skłodowska-Curie Early-Stage Researcher

Nov 2020 - Present

*Department of Computer Science, KDD Lab, University of Pisa*

*Pisa, IT*

- Early-stage researcher (ESR) with the *NoBIAS: Artificial Intelligence without Bias* Innovative Training Network, an interdisciplinary project funded by the European Union's Horizon 2020
- Collaborated continuously with the other 13 ESRs on a range of deliverables for the European Commission, such as a set of advisory reports and white papers, a book, and a testbed/code repository
- Co-organized the first NoBIAS Summer School in Pisa (40 participants) as well as co-led a project on policy advice and best practices for practitioners (paper under submission)

### Visiting Research Scientist

Jul - Aug 2023

*SCHUFA Holding AG*

*Wiesbaden, DE*

- Collaborated with Dr. Klaus Broelemann, lead of Innovation & Research, on methods for measuring fairness in credit scores using counterfactual reasoning

### Visiting Research Fellow

Sep - Nov 2022

*Department of Computer Science, DTAI Group, KU Leuven*

*Leuven, BE*

- Academic visit to work with Prof. Dr. Bettina Berendt, which resulted in a FAccT 2023 paper

### Visiting Research Scientist

Sep - Dec 2021

*Generali*

*Milan, IT*

- Collaborated with Human Resources and Advanced Analytics in formalizing the current human-driven hiring process using fair ranking models, which resulted in a working paper

### Senior Consultant – Operational & Financial Risk Modeler

Aug 2017 - Oct 2020

*Deloitte Risk Advisory*

*Brussels, BE*

- Designed, developed, and deployed statistical learning models for clients in the energy & utilities and financial sectors
- Built an end-to-end time series forecasting tool (Clairvoyance) at the *Deloitte aiStudio* in Frankfurt, Germany, as the chosen Belgium representative
- Conducted internal and external trainings in R programming, Git, Advanced Loss Given Default modeling (Basel II), and Survival Analysis modeling

## Data Analytics Trainee

*Deloitte Risk Advisory*

May - Aug 2017

*Gent, BE*

- M.Sc. end-of-year project about using recurrent survival analysis to model leaks in a water pipe network, supervised by Dr. Nikos Skantzios and Dr. Gert De Geyter

## Summer Economist

*Cabinet Office, UK Government*

Jun - Aug 2016

*London, UK*

- Provided insights via statistical analysis to policy makers on a range of topics, such as studying the volunteering determinants in the UK and the variation in electoral costs across local authorities

## AWARDS

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<b>Borsa di Ricerca</b> (research scholarship), University of Pisa	2023
<b>Marie Skłodowska-Curie Fellowship</b> , University of Pisa	2020
<b>Phi Beta Kappa</b> , University of Florida	2015
<b>Honors Program</b> , University of Florida	2015
<b>Davis United World College Scholar</b> , University of Florida	2011
Awarded a full scholarship by the Davis UWC Scholars	

## PUBLICATIONS

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(\* shared first author)

**Jose M. Alvarez**, Salvatore Ruggieri. “Counterfactual Situation Testing: Uncovering Discrimination under Fairness given the Difference.” *ACM Conference on Equity and Access in Algorithms, Mechanisms, and Optimization (EAAMO)*, pages 1-11, 2023. [paper] [code]

Carlos Mougán, **Jose M. Alvarez**, Salvatore Ruggieri, Steffen Staab. “Fairness implications of encoding protected categorical attributes.” *ACM Conference on Artificial Intelligence, Ethics, and Society (AIES)*, pages 454–465, 2023. [paper] [code]

**Jose M. Alvarez\***, Kristen M. Scott\*, Salvatore Ruggieri, Bettina Berendt. “Domain Adaptive Decision Trees: Implications for Accuracy and Fairness.” *ACM Conference on Fairness, Accountability, and Transparency (FAccT)*, pages 423–433, 2023. [paper] [code]

Salvatore Ruggieri, **Jose M. Alvarez**, Andrea Pugnanna, Laura State, Franco Turini. “Can We Trust Fair-AI?” *AAAI Conference on Artificial Intelligence*, pages 15421–15430, 2023. [paper]

Matilde Lazzari, **Jose M. Alvarez**, Salvatore Ruggieri. “Predicting and explaining employee turnover intention.” *International Journal of Data Science and Analytics*, 14(3):279–292, 2022. [paper]

## WORKING PAPERS

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“The Initial Screening Order Problem” with Salvatore Ruggieri, 17 pages. [arXiv]

“What’s the Problem, Linda? The Conjunction Fallacy as a Fairness Problem”, 21 pages. [arXiv]

## INVITED TALKS

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“Counterfactual Situation Testing”

*ML Group @ Saarland University* (Host: Isabel Valera), Saarbrücken, DE, August 2023

“Counterfactual Situation Testing”

*Innovation & Research @ SCHUFA* (Host: Klaus Broelemann), Wiesbaden, DE, July 2023

“Domain Adaptive Decision Trees”

*KDD Lab Seminar @ University of Pisa*, Pisa, IT, May 2023

“Counterfactual Situation Testing”

*Comète First Workshop on Ethical AI*, Inria Polytechnique, Paris, FR, September 2022

“The Initial Screening Order Problem”

*Advanced Analytics Team @ Generali* (Host: Antonio Bencini), Virtual, January 2022

“Meaningful Causal Fairness”

*NoBIAS Monthly Colloquium* (Host: Gourab Prato), Virtual, October 2021

## PARTICIPATION

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2023 EAAMO, Boston, *poster and doctoral colloquium*

ECML Workshop on Bias and Fairness in AI, Turin, *poster and presentation*

FACCT, Chicago, *presentation*

2022 IMS International Conference on Statistics and Data Science, Florence, *poster*

NeurIPS Workshop on Algorithmic Fairness through the Lens of Causality, New Orleans, *poster*

FACCT, Seoul, *doctoral colloquium*

1st European Workshop on Algorithmic Fairness, Zurich, *presentation*

## COMMUNITY SERVICE

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**Co-organizer** for the *2nd European Workshop on Algorithmic Fairness*, Winterthur, Switzerland, with over a 100 participants from multiple fields, JRC ECAT, and AlgorithmWatch.

**Co-founder** of the *European Association for Algorithmic Fairness*, which organizes the European Workshop on Algorithmic Fairness (EWAFF).

**Member** of MD4SG.

**Reviewing** services:

2023 ICLR, NeurIPS, FACCT, NeurIPS AFT Workshop (Reviewer)

AISTAT, ECML, UAI (Sub-reviewer)

2022 NeurIPS AFCCP Workshop (Reviewer)

AISTAT, ECML, TheWebConf, UAI, Data Min Knowl Discov. Journal (Sub-reviewer)

2021 AISTAT, ECML, UAI, AI\*IA, IJCAI (Sub-reviewer)

## SKILLS

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**Programming** Python, R, Scala

**Other** Git, L<sup>A</sup>T<sub>E</sub>X, Stata, SQL, PySpark, Docker

**Languages** Spanish (Native), English (Bilingual), Italian (Fluent), French (Intermediate)

## PERSONAL

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**Interests** Football (Amatori AICS B1), Hiking, Music (Drums), Reading

**Nationalities** Venezuelan, Italian