

JOSE M. ALVAREZ

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RESEARCH STATEMENT

My work focuses on using causality-based modeling frameworks for formalizing, detecting, and mitigating bias in automated decision-making processes. I am particularly interested in finding new methods for enhancing existing causality models to operationalize the social meanings we attribute to protected attributes—such as gender and race—that are often not captured by data alone but are yet essential in framing what we mean by (un)fair decision outcomes within a specific context.

Key words: machine learning, causality, fairness, structural causal models, representation bias

EDUCATION

Scuola Normale Superiore Ph.D. Data Science, jointly offered with the University of Pisa <i>Advisor:</i> Salvatore Ruggieri	Nov 2020 - Present
Toulouse School of Economics M.Sc., Econometrics and Empirical Economics	Sep 2015 - May 2017
University of Florida B.A., Economics and History, <i>summa cum laude</i>	Sep 2011 - May 2015

EXPERIENCE

University of Pisa <i>Early-Stage Researcher with NoBIAS ITN</i>	Nov 2020 - Present <i>Pisa, IT</i>
<ul style="list-style-type: none">• NoBIAS: Artificial Intelligence without Bias is part of the Marie Skłodowska-Curie Innovative Training Network (ITN) and funded by the European Union's Horizon 2020• The Marie Skłodowska-Curie ESR position is through the University of Pisa's Knowledge Discovery and Data Mining Laboratory (KDD Lab)	
Generali <i>Visiting Researcher</i>	Sep 2021 - Present <i>Milan, IT</i>
<ul style="list-style-type: none">• Worked with Human Resources in understanding and operationalizing the current human-driven hiring process using fair ranking modeling techniques	
Deloitte Risk Advisory <i>Senior Consultant - Operational & Financial Risk Modeler</i>	May 2017 - Oct 2020 <i>Brussels, BE</i>
<ul style="list-style-type: none">• Designed, developed, and deployed statistical learning models for clients in the energy & utilities and financial sectors• Developed an end-to-end time series forecasting tool 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	
Cabinet Office <i>Summer Economist</i>	Jun 2016 - Aug 2016 <i>London, UK</i>
<ul style="list-style-type: none">• 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	

PREPRINTS

Matilde Lazzari, **Jose M. Alvarez**, Salvatore Ruggieri. “Predicting and explaining employee turnover intention.” *In submission*.

Carlos Mougan, **Jose M. Alvarez**, Gourab K. Patro, Salvatore Ruggieri, Steffen Staab. “Fairness implications of encoding protected categorical attributes.” *In submission*.

ONGOING WORK

“Counterfactual reasoning for meaningful situation testing” with Salvatore Ruggieri.

“Molecular nodes: On meaningful causal representations of protected attributes.”

“Constrained hiring: Market thickness and fairness” with Antonio Bencini and Salvatore Ruggieri.

PROFESSIONAL SERVICES

Sub-reviewer for AI*IA 2021, *ECML-PKDD 2021*, *IJCAI 2021*, *UAI 2021*, *AISTATS 2021*, *AISTATS 2022*, *WWW 2022*, *Data Mining and Knowledge Discovery Journal*.

HONORS AND AWARDS

Marie Skłodowska-Curie Fellowship	2020 - 2023
Phi Beta Kappa	2015
University of Florida’s Honors Program	2015
Davis United Word College Scholar	2011 - 2015

SKILLS

Programming	Python, R, Scala
Other	Git, L ^A T _E X, Stata, SQL
Languages	Spanish, English, Italian, French