

## CURRICULUM VITAE – ROI NAVEIRO

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PERSONAL INFORMATION	<p>Roi Naveiro Institute of Mathematical Sciences - Spanish National Research Council (ICMAT-CSIC) Campus Cantoblanco UAM. C/ Nicolás Cabrera, 13-15, 28049, Madrid, SPAIN cell phone: +34 679630996 GitHub: roinaveiro Website: <a href="https://roinaveiro.github.io/">https://roinaveiro.github.io/</a> E-Mail: <a href="mailto:roi.naveiro@icmat.es">roi.naveiro@icmat.es</a> ORCID: <a href="https://orcid.org/0000-0001-9032-2465">https://orcid.org/0000-0001-9032-2465</a></p>
RESEARCH INTERESTS	<p>Bayesian statistics, probabilistic Machine Learning, Adversarial Machine Learning and applications in different fields such as molecular design, materials discovery, security, cybersecurity, finance ...</p>
EDUCATION	<p><b>PhD, <i>Cum Laude</i> and <i>International distinctions</i></b> (2016-2020). Advisors: David Ríos Insua (ICMAT - Institute of Mathematical Sciences from the Spanish Research Council, CSIC) and David Gómez-Ullate Oteiza (University of Cádiz &amp; Complutense University of Madrid). PhD program: <i>Mathematical Engineering, Statistics and Operational Research</i>, Complutense University of Madrid. Thesis title: <i>Contributions to the Security of Machine Learning</i>.</p> <p><b>Masters degree in theoretical physics from the Complutense University of Madrid</b> (2016-2017). Thesis advisor: David Gómez-Ullate Oteiza (ICMAT-CSIC &amp; Complutense University of Madrid). Thesis title: <i>Fraud Detection in Electronic Payments</i>.</p> <p><b>Bachelor degree in physics from the University of Salamanca</b> (2011-2015). Thesis advisor: David Rodríguez Entem (University of Salamanca). Thesis title: <i>Resolution of the Nucleon-Nucleon scattering problem using the <math>N/D</math> method</i>.</p>
JOB EXPERIENCES	<p><b>2021 January → 2022 August</b> Posdoctoral position at the Institute of Mathematical Sciences from the Spanish Research Council (ICMAT-CSIC) located in Madrid, Spain.</p> <p><b>2021 January → present</b> <i>Data-driven researcher</i> at Aitenea Biotech (spin-off from the Spanish National Research Council). <a href="https://aitenea.com/">https://aitenea.com/</a>.</p> <p><b>2016 October → 2020 October</b> PhD student in the Statistics, Probability and Operations Research group at the Institute of Mathematical Sciences (ICMAT-CSIC) located in Madrid, Spain.</p> <p><b>2019 September → 2020 May</b> Co-founder of Komorebi AI Technologies, an AI start-up. <a href="https://komorebi.ai/">https://komorebi.ai/</a>.</p> <p><b>2015 June → September 2015</b> Research assistant at the Astrophysical Institute of the Canary Islands (IAC) located in Tenerife, Canary Islands, Spain. Working for the project <i>Searching for star clusters in the dwarf irregular galaxy IC1613</i>.</p>

**2014 September → 2015 June** Research assistant at the Institute of Fundamental Physics and Mathematics (IUFFyM) located in Salamanca, Spain. Working for the project *Resolution of Nucleon-Nucleon scattering with the  $N/D$  method*.

#### RESEARCH STAYS IN NATIONAL AND INTERNATIONAL CENTERS

**2019 July → 2019 December** Research stay at the Statistical and Applied Mathematical Sciences Institute (SAMSI) and the department of Statistical Science of Duke University, Durham (North Carolina).

**2019 January** Research stay at University of Cádiz, Cádiz (Spain).

**2018 August → 2018 December** Research stay at the department of Statistical Science of Duke University, Durham (North Carolina), working with Professor David L. Banks.

#### SCHOLARSHIP AWARDS

**2018 September** Short term research scholarship awarded by the Spanish Ministry of Education for a research stay at Duke University, Durham (North Carolina).

**2016 June** FPU scholarship awarded by the Spanish Ministry of Education for PhD studies.

**2015 May** Research scholarship awarded by the Astrophysical Institute of the Canary Island (IAC) located in Tenerife, Spain.

**2014 October** Research scholarship at the Institute of Fundamental Physics and Mathematics (IUFFyM) located in Salamanca, Spain. Awarded by the Spanish Ministry of Education.

#### PUBLISHED PAPERS AND BOOK CHAPTERS

Evaluación de la salud sexual femenina en la consulta de Ginecología (2022). Fuentes, M. N., Villena, R. B., **Naveiro, R.**, Sánchez, M. H., Roca, L. C., & Parra, J. F. *Clínica e Investigación en Ginecología y Obstetricia*, 49(3), 100768.

Artificial Intelligence in Tribology: Design of new dispersants using artificial intelligence tools (2022). Campillo, N., Talavante, P., Ponzoni, I., Soto, A., Martínez, M. J., **Naveiro, R.**, et. al. *In 23rd International Colloquium Tribology: Industrial and Automotive Lubrication (p. 423). expert verlag*.

Managing Driving Modes in Automated Driving Systems (2022). Ríos Insua, D., Caballero, W., & **Naveiro, R.** *Transportation Science*.

Modeling Ethical and Operational Preferences in Automated Driving Systems (2022). Caballero, W., & **Naveiro, R.** & Ríos Insua, D. *Decision Analysis*. <https://doi.org/10.1287/deca.2021.0441>

Adversarial attacks against Bayesian forecasting dynamic models (2021). **Naveiro, R.** *Proceedings of the 22nd European Young Statisticians Meetings (EYSM 2021)*. <https://www.eysm2021.panteion.gr/publications.html>

AI in drug development: a multidisciplinary perspective (2021). Gallego, V., **Naveiro, R.**, Roca, C. et al. *Molecular Diversity*. <https://doi.org/10.1007/s11030-021-10266-8>

- Perspectives on Adversarial Classification (2020). Ríos Insua, D., **Naveiro, R.**, & Gallego, V. *Mathematics*, 8(11):1957. <https://doi.org/10.3390/math8111957>
- Adversarial Risk Analysis (Overview) (2020). Banks, D., Gallego, V., **Naveiro, R.**, & Ríos Insua, D. *WIREs Comput Stat*, e1530. <https://doi.org/10.1002/wics.1530>
- Hydroxicloroquine for pre-exposure prophylaxis for SARS-CoV-2 (2020). Lopez de la Iglesia, J., Cubelos, N., **Naveiro, R.**, et. al. *Current Trends in Medicine*. <https://doi.org/10.47726/ctm.1003>
- Adversarial Classification: An adversarial Risk Analysis approach (2019). **Naveiro, R.**, Redondo, A., Insua, D. R., & Ruggeri, F. *International Journal of Approximate Reasoning*, 113: 133–148. <https://doi.org/10.1016/j.ijar.2019.07.003>
- Large Scale Automated Forecasting for Monitoring Network Safety and Security (2019). **Naveiro, R.**, Rodriguez, S., & Ríos Insua, D. *Applied Stochastic Models in Business and Industry*, 35: 431–447. <https://doi.org/10.1002/asmb.2436>
- Gradient Methods for Solving Stackelberg Games (2019). **Naveiro, R.**, & Ríos Insua, D. In: Pekeč S., Venable K.B. (eds) Algorithmic Decision Theory. ADT 2019. *Lecture Notes in Computer Science*, 11834: 126–140. Springer, Cham. [https://link.springer.com/chapter/10.1007/978-3-030-31489-7\\_9](https://link.springer.com/chapter/10.1007/978-3-030-31489-7_9)
- Reinforcement Learning under Threats. (2019). Gallego, V., **Naveiro, R.**, & Ríos Insua, D. *Proceedings of the AAAI Conference on Artificial Intelligence*, 33(01): 9939–9940. <https://doi.org/10.1609/aaai.v33i01.33019939>

#### BOOKS AND MONOGRAPHS

- ¿Qué sabemos de Análisis de Riesgos? (2022). Ríos Insua D. & **Naveiro R.**. *CSIC-La Catarata*. ISBN: 978-84-1352-458-0 .

#### SUBMITTED PAPERS

- Adversarial Machine Learning: Perspectives from Adversarial Risk Analysis (2021). Ríos Insua, D., **Naveiro, R.**, Gallego, V., & Poulos, J. *arXiv preprint arXiv:2003.03546* .
- Protecting Classifiers from Attacks. A Bayesian Approach (2021). Gallego, V., **Naveiro, R.**, Redondo, A., Ríos Insua, D., & Ruggeri, F. *arXiv preprint arXiv:2004.08705* .
- Augmented Probability Simulation Methods for Non-cooperative Games (2021). Ekin, T. **Naveiro, R.**, Torres, A., & Ríos Insua, D. *arXiv preprint arXiv:1910.04574*.
- Data Sharing Games (2020). Gallego, V., **Naveiro, R.**, Ríos Insua, D., & Rozas W. *arXiv preprint arXiv:2101.10721* .
- Opponent Aware Reinforcement Learning (2019). Gallego, V., **Naveiro, R.**, & Ríos Insua, D. *arXiv preprint arXiv:1809.01560*.

TEACHING  
EXPERIENCE

- 2021 June → 2021 July** Course on Bayesian Methods in Artificial Intelligence for last year undergraduate students and master students. Institute of Mathematical Sciences, Spain.
- 2021 June → 2021 July** Course on Machine learning: Foundations, Computations and Applications for last year undergraduate students and master students. Institute of Mathematical Sciences, Spain.
- 2020 September → 2021 February** Teaching Assistant of Probability for undergraduate students in the second year of the degree in Mathematics. Complutense University of Madrid, Spain.
- 2020 February → 2020 June** Lecturer of Applications of Stochastic Processes for undergraduate students in the last year of the degree in Mathematics. Complutense University of Madrid, Spain.
- 2019 February → 2019 May** Course on Machine Learning with R targeted to researchers from the Instituto Nacional de Estadística (National Statistics Institute). INE, Spain.
- 2019 February → 2019 May** Lecturer of Applications of Stochastic Processes for undergraduate students in the last year of the degree on Mathematics. Complutense University of Madrid, Spain.
- 2018 June** Teaching assistant in the XII Modelling Week for master students of the *Master in Mathematical Engineering*. Complutense University of Madrid, Spain.
- 2017 November → 2017 December** Courses on Python and Data Science at *Dirección General de Ordenación del Juego (DGOJ)*, Ministry of Finance, Spain.

MASTER'S THESIS  
SUPERVISED

- 2020 September → 2021 July** Latent Dirichlet Allocation Models to characterize users in social networks. Montserrat Muñoz. *MSc on Statistical and Computational Treatment of Information*. Complutense University of Madrid.

TRANSFERENCE AND  
RESEARCH PROJECTS

- 2021 January → present** Discovery of Optimal Dispersants. Partner: Altenea Biotech and Repsol. Role: Principal Investigator.
- 2021 April → present** Adversarial Risk Analysis for dynamic competitive business decisions. Partner: CaixaBank. Role: Principal Investigator.
- 2021 April → present** Trustonomy. Horizon 2020 European Project. Role: Member of work team.
- 2020 May → present** Social Logging Models. Partner: Xeerpa. Role: Member of work team.
- 2018 October → 2019 February** Geoprofiling systems. Partner: A3SEC. Role: Member of work team.
- 2016 October → 2017 July** Monitoring for anomalous behaviour in massive traffic time series using dynamic linear models. Partner: A3SEC. Role: Member of work team.
- 2015 November → 2016 July** Fraud Detection in Electronic Payments. Partner: Evendor Engineering. Role: Member of work team.

CONFERENCES, TALKS  
AND INTERNATIONAL  
SCHOOLS

- 2022 January 22nd** Invited seminar speaker to *Universidad Tecnológica Indoamérica*.  
**Talk:** *Adversarial Machine Learning: Bayesian perspectives*. Universidad Indoamérica, Quito (Ecuador).
- 2021 November 1st** Invited seminar speaker to *IMI-DSC Conference: Decision, Optimization and Data Science*.  
**Talk:** *Adversarial Machine Learning: a probabilistic approach*. Complutense University of Madrid, Madrid (Spain).
- 2021 September 6th → 2021 September 10th** Attendance to the conference: *22nd European Young Statisticians Meeting EYSM 2021*, organized by the Bernoulli Society for Mathematical Statistics and Probability.  
**Talk:** *Protecting classifiers from attacks*.
- 2021 September 1st → 2021 September 3rd** Attendance to the conference: *4th International Congress on Transportation Research ICTR 2021*, organized by the Hellenic Institute of Transportation Engineers.  
**Talk:** *Towards ethical decision support in automated driving systems*.
- 2021 July 11th → 2021 July 16th** Attendance to the conference: *63rd ISI World Statistics Congress*, organized by the International Statistical Institute (ISI).  
**Talk:** *Managing driving modes in Automated Driving Systems*.
- 2021 June 9th → 2021 June 10th** Attendance to the conference: *2021 Workshop of the Spanish Society of Statistics and Operations Research*, organized by the Spanish Society of Statistics and Operations Research (SEIO).  
**Talk:** *Protecting Classifiers From Attacks*. Nominated for the prize *Ramiro Melendreras*.
- 2021 May 28th → 2021 May 29th** Invited speaker to the conference: *Twelfth Workshop on Bayesian Inference in Stochastic Processes*, organized by the National Research Council of Italy and IMATI.  
**Talk:** *Bayesian forecasting dynamic models under attacks*. **Discussant:** Prof. Mike West.
- 2021 May 28th → 2021 May 29th** Invited speaker to the conference: *Twelfth Workshop on Bayesian Inference in Stochastic Processes*, organized by the National Research Council of Italy and IMATI.  
**Talk:** *Bayesian forecasting dynamic models under attacks*. **Discussant:** Prof. Mike West.
- 2019 November 1st** Invited seminar speaker to *The Institute for Integrating Statistics in Decision Sciences. Department of Decision Sciences. The George Washington University*.  
**Talk:** *Security Games in the New Paradigm: Solution Techniques*. The George Washington University, Washington D.C. (USA).
- 2019 October 25th → 2019 October 27th** Attendance to the conference: *Algorithmic Decision Theory*, organized by the Duke Fuqua School of Business.  
**Talk:** *Gradient Methods for Solving Stackelberg Games*. Duke University, Durham, NC (USA).
- 2019 August 5th → 2019 August 9th** Attendance to the conference: *Games, Decisions, Risk and Reliability Opening Workshop*, organized by the

Statistical and Applied Mathematical Sciences Institute.

**Poster:** *Augmented Probability Simulation Methods for Non-cooperative Games*. NC State University, Raleigh, NC (USA).

**2019 July 30th → 2019 August 2nd** Attendance to the conference: *Second Conference on Risk Analysis in the Digital Era*, organized by the Society for Risk Analysis and the University at Buffalo.

**Poster:** *Augmented Probability Simulation Methods for Non-cooperative Games*. Buffalo (USA).

**2019 June 12th → 2019 June 14th** Invited speaker to the conference: *Eleventh Workshop on Bayesian Inference in Stochastic Processes*, organized by the Spanish Royal Academy of Natural Sciences in collaboration with ICMAT-CSIC. Madrid (Spain).

**Talk:** *Reinforcement Learning Under Threats*.

**2018 July 23rd → 2018 July 27th** Attendance to the Summer School: *2nd International Summer School on Deep Learning*, organized by University of Genova and IRDTA - Brussels/London. Genova (Italy).

**2018 May 29th → 2018 June 1st** Attendance to the conference: *XXXVII National Congress of Statistics and Operational Research*, organized by the Spanish Society of Statistics and Operations Research (SEIO).

**Talk:** *Adversarial Classification: An Adversarial Risk Analysis approach*. Nominated for the prize *Ramiro Melendreras*. Oviedo (Spain).

**2017 November 13th → 2017 November 15th** Attendance to the conference: *1st Spanish Young Statisticians and Operational Researchers Meeting (SYSORM)*, organized by the Spanish Society of Statistics and Operations Research (SEIO) in collaboration with University of Granada (Spain).

**Talk:** *Adversarial Classification: An Adversarial Risk Analysis approach*. Granada (Spain).

**2017 September 4th → 2017 September 6th** Attendance to Summer School: *Accelerating Data Science with HPC*, organized by the CSCS-ICS-DADSi. Lugano (Switzerland).

**2017 June 13th → 2017 June 15th** Attendance to the conference: *Bayesian Inference in Stochastic Processes (BISP10)*, organized by the Bocconi University in collaboration with the International Society for Bayesian Analysis (ISBA). Milano (Italy).

**Talk:** *Monitoring for anomalous behaviour in massive traffic time series*.

**2017 June 7th → 2017 June 9th** Attendance to the conference: *Games and Decisions in Risk and Reliability (GDRR)*, organized by the Spanish Royal Academy of Natural Sciences in collaboration with ICMAT-CSIC. Madrid (Spain).

**Talk:** *Fraud detection in electronic payments*.

**2017 January 16th → 2017 January 20th** Attendance to Winter School: *Memory School*, organized by the Centre de Recerca Matemàtica as part of the Intensive Research Program on the Mathematics of Memory (MATHMEM). Barcelona (Spain).

**2016 October 27th → 2016 October 28th** Attendance to the workshop: *Mathematical Solutions for Industry: Success Stories and perspectives*, organized by the Institute of Mathematical Sciences (ICMAT) in collaboration with Red

Española de Matemática Industrial (Math-in). Madrid (Spain).

**Poster Presentation:** *Random Forest Algorithm in Fraud Detection.*

**2016 March 9th** Attendance to the conference: *BBVA-spor winter day. Data Science and Statistical Learning*, organized by the Institute of Mathematical Sciences (ICMAT). Madrid (Spain).

#### ORGANIZED CONFERENCES

**2021 November 3rd → 2021 November 5th** PhD Day organizer at the 7th International Conference on Algorithmic Decision Theory. University of Toulouse 1 Capitole. <https://www.irit.fr/ADT2021/>

**2020 December 1st → 2020 December 1rd** 3rd BYMAT Conference: Bringing Young Mathematicians Together at the Universitat de Valencia. *BYMAT Network with Fundación BBVA as exclusive partner.* <https://bymat.webs.upv.es/index/>

**2019 June 12th → 2019 June 14th** 11th Workshop on Bayesian Inference in Stochastic Processes at the Spanish Royal Academy of Sciences.

**2019 May 20th → 2019 May 24th** 2nd BYMAT Conference: Bringing Young Mathematicians Together at the Institute of Mathematical Sciences (ICMAT-CSIC). *BYMAT Network with Fundación BBVA as exclusive partner.* <https://www.icmat.es/congresos/2019/BYMAT/>

**2018 May 7th → 2018 May 9th** 1st BYMAT Conference: Bringing Young Mathematicians Together at the Institute of Mathematical Sciences (ICMAT-CSIC). *BYMAT Network with Fundación BBVA as exclusive partner.* <https://www.icmat.es/congresos/2018/BYMAT/>

**2017 June 7th → 2017 June 9th** 5th symposium on Games and Decisions in Reliability and Risk at the Spanish Royal Academy of Sciences.

#### STUDY GROUPS WITH INDUSTRY

**2017 May 15th → 2017 May 19th** Attendance to European Study Group with Industry: *ESGI 131*, organized by the Basque Centre for Applied Mathematics (BCAM) in collaboration Red Española de Matemática Industrial (Math-in). Bilbao (Spain).

**Challenge:** Big Data in Sports: Predictive Models for Basketball Player's Performance.

#### TECHNICAL SKILLS

**Programming, scripting and markup languages** Python (PyTorch for deep learning), R, R Markdown, Bash, LaTeX.

**Operating systems** Advanced experience with most flavours of Linux.

**Cluster Management System** Sun Grid Engine.

**Databases** MongoDB.