

# Marta Gomes da Cunha Couto

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Prosocial Dynamics Lab, Socially Intelligent Artificial Systems group  
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## Positions

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- 04.2024 – present **Postdoctoral researcher**  
Prosocial Dynamics Lab, Socially Intelligent Artificial Systems group  
Informatics Institute, University of Amsterdam (The Netherlands)
- 05.2019 – 11.2019 **Junior Researcher**  
INESC-ID, Instituto Superior Técnico, University of Lisbon (Portugal)  
Fellowship by Foundation for Science and Technology Portugal

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## Education

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- 09.2020 – 03.2024 **PhD candidate in Mathematics**  
Max Planck Institute for Evolutionary Biology (Plön, Germany)  
University of Lübeck (Lübeck, Germany)  
Doctoral project: “Mathematical models of cooperation among heterogeneous individuals”  
Distinction: *Magna cum laude*
- 09.2016 – 11.2018 **MSc in Engineering Physics**  
Instituto Superior Técnico, Department of Physics (Lisbon, Portugal)  
Overall classification: 17/20  
Dissertation: “Evolution of Cooperation through Graduated Punishment”  
Distinction: Academic Excellence Diploma by Instituto Superior Técnico 2017/2018
- 09.2012 – 03.2016 **BSc in Physics**  
Faculty of Sciences of the University of Porto,  
Department of Physics and Astronomy (Porto, Portugal)  
Classification: 15/20, class C in ECTS

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## Scientific interests

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**Topics:** social behaviour, social dilemmas, evolution of cooperation, inequality, learning in games, evolution of institutions, strategic classification

**Tools:** game theory, evolutionary game theory, evolutionary dynamics, dynamical systems, adaptive dynamics, stochastic processes, individual-based simulations

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## Publications

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- 2023 **M. C. Couto**<sup>1</sup> and S. Pal<sup>1</sup>. *Introspection dynamics in asymmetric multiplayer games*. Dynamic Games and Applications, <https://doi.org/10.1007/s13235-023-00525-8>, 2023.  
Topical collection “Evolutionary Games and Applications” edited by Christian Hilbe, Maria Kleshnina and Katerina Stanková. <sup>1</sup>Joint first authors
- 2023 X. Wang<sup>1</sup>, **M. C. Couto**<sup>1</sup>, N. Wang, X. An, B. Chen, Y. Dong, C. Hilbe, and B. Zhang. *Cooperation and coordination in heterogeneous populations*. Philosophical Transactions of the Royal Society B: Biological Sciences, 378(1876), 1–30, 2023.  
Theme issue “Half a century of evolutionary games: a synthesis of theory, application and future directions” compiled and edited by Xiang-Yi Li Richter and Jussi Lehtonen. <sup>1</sup>Joint first authors
- 2022 **M. C. Couto**, S. Giaimo, and C. Hilbe. *Introspection dynamics: A simple model of counterfactual learning in asymmetric games*. New Journal of Physics, 10.1088/1367-2630/ac6f76, 2022.
- 2020 **M. C. Couto**, J. M. Pacheco, and F. C. Santos. *Governance of risky public goods under graduated punishment*. Journal of Theoretical Biology, 505:110423, 2020.

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## Research stays

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09.2023 (1 month) **Socially Intelligent Artificial Systems group**  
Informatics Institute of the University of Amsterdam

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## Conferences, workshops & talks

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- 03.2025 **2nd Joint CCSS-UvA Workshop on Computational Social Science and Intelligent Systems**  
**University of Amsterdam, co-organized with Kobe University**  
Invited talk: "Strategic Classification Dynamics"
- 12.2024 **Data Science Community Conference**  
**ING, Amsterdam**  
Invited poster: "Dynamics of Strategic Classification: How to prevent algorithms from being fooled?"
- 11.2024 **Institute talk**  
**Max Planck Institute for Evolutionary Biology, Plön**  
Invited talk: "The Dynamics of Strategic Classification"
- 10.2024 **AI4Fintech seminar series**  
**University of Amsterdam**  
Invited talk: "The Dynamics of Strategic Classification"
- 07.2024 **Mathematical Models in Ecology and Evolution**  
**University of Vienna, Austria**  
Talk: "The evolution of boundedly rational learning in games"
- 07.2024 **International Conference on Social Dilemmas**  
**Leiden University, The Netherlands**  
Full talk: "The evolution of boundedly rational learning in games"
- 08.2023 **Learning, Evolution and Games (LEG) Conference**  
**Business School of the University of Amsterdam, The Netherlands**  
Talk: "Introspection dynamics: properties, applications, and connections to other learning models."
- 05.2023 **Ecology and Evolution seminars: Half a century of evolutionary games (online)**  
**Royal Society Publishing**  
Talk: "Cooperation and coordination in heterogeneous populations"
- 07.2022 **International Symposium on Dynamic Games and Applications**  
**Faculty of Sciences of the University of Porto, Porto, Portugal**  
Full talk: "Introspection dynamics: A simple model of counterfactual learning in asymmetric games"
- 07.2022 **International Conference on Social Dilemmas**  
**University of Copenhagen, Copenhagen, Denmark**  
Poster: "Introspection dynamics: A simple model of counterfactual learning in asymmetric games"
- 06.2022 **Workshop The Future of Game Theory in Biology**  
**Max Planck Institute for Evolutionary Biology, Plön, Germany**  
Participant
- 05.2022 **Toulouse Summer School in Quantitative Social Sciences**  
**Institute for Advance Study in Toulouse (IAST), Toulouse, France**  
Funded by IAST and the Toulouse School of Economics  
Participant of Part 1: The evolution of human sociality
- 04.2022 **Conference of European Human Behaviour and Evolution Association (EHBEA)**  
**Max Planck Institute for Evolutionary Anthropology, Leipzig, Germany (online)**  
Full talk: "Introspection dynamics: A simple model of counterfactual learning in asymmetric games"
- 06.2021 **Aquavit**  
**Max Planck Institute for Evolutionary Biology, Plön, Germany**  
Yearly internal conference  
Poster: "Introspection dynamics in asymmetric games" (best poster winner)

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## Teaching & Supervision

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- 02.2025 – present **Master's student supervision**  
Christina Konstantinidou  
Master's thesis: "Strategic classification under different manipulation cost functions"  
Master's Information Studies, University of Amsterdam
- 10.2024 **Guest Lecture on Strategic Classification**  
Fundamentals of Data Science course, Master's Information Studies, University of Amsterdam
- 06-07.12.2022 **Lectures on evolutionary game theory**  
MSc Molecular Biology and Evolution, University of Kiel, Germany

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## Community service & Outreach

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- 28-30.06.2023 **Aquavit**  
**Max Planck Institute for Evolutionary Biology, Plön, Germany**  
Yearly internal conference  
Organizer
- 23.02.2023 **Native Scientist outreach activity**  
"Climate games: How do people cooperate when there's a risk of future losses?"  
Workshop aimed at promoting science and language education among high school students  
Hamburg, Germany
- 2020 – present **Peer-reviewing for various journals**  
PLOS ONE, Nature Sustainability, Physical Review E, Adaptive Behavior, New Journal of Physics, PLOS Neglected Tropical Diseases, Chaos, Dynamic Games and Applications, Nature Communications, Physical Review Research, Scientific Reports, Theory in Biosciences, Nature Computational Science

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## Programming languages

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Mathematica, MATLAB, Python

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## Natural languages

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Portuguese (native)  
English (advanced – *Cambridge English: Advanced* certificate level C1 in CEFR)  
Spanish (basic)  
French (basic)  
Dutch (A2 learner)  
German (A1)

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## Undergraduate activities

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- 02.2015 **Winter Kindergarten of Theoretical Physics**  
**Łądek-Zdrój, Poland**  
International students conference on Statistical Physics and Condensed Matter Physics
- 2012 – 2015 **Board of European Students of Technology (BEST)**  
Member of the Porto local group  
Fundraising, communication with companies, teamwork, organization of international engineering competitions, organization of international seasonal courses