

VASCONCELOS, Vítor Vasco Lourenço de

Curriculum Vitae

18/ Oct/ 1989 Portuguese

M28, Guyot Hall, Princeton University, Princeton 08540, NJ, USA

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Google Scholar: <https://goo.gl/UiLjkQ>

Currently, I am an Assistant Professor at the University of Amsterdam (UvA) cross appointed between the Institute of Informatics and the Institute for Advanced Studies and a Visiting Research Scholar at Princeton University, appointed at the Andlinger Center for Energy & the Environment.

RESEARCH EXPERIENCE

- 09/2019**
(Tenure Track) **Assistant Professor of Data Driven Systems Dynamics**
Institute of Informatics & Institute of Advanced Studies, University of Amsterdam (UvA)
- 09/2019**
(6 months) **Visiting Research Scholar**
Andlinger Center for Energy & the Environment, Princeton University
- 05/2018**
(1.5 year) **Postdoctoral Research Associate & Lecturer**
Andlinger Center for Energy & the Environment, Princeton University
Princeton Institute for International & Regional Studies Rapid Switch Research Community
- 04/2017**
(2 years) **Postdoctoral Research Associate (*renegotiated to current position*)**
Department of Ecology and Evolutionary Biology, Princeton University
- 02/2013**
(4 years) **Researcher – Portuguese National Science Foundation (FCT) Fellow**
GAIIPS, Group of Artificial Intelligence for People and Society @INESC-ID
Centro de Matemática e Aplicações Fundamentais da Universidade de Lisboa (CMAF-UL),
Centro de Física da Universidade do Minho
- 03/2014**
(6 months) **Visiting Student Research Collaborator**
Princeton Environmental Institute and Department of Ecology and Evolutionary Biology, Princeton University
- 01/2013**
(6 months) **Short-term Scholar**
Kavli Institute for Theoretical Physics (KITP), University of California, Santa Barbara
Department of Logic and Philosophy of Science, University of California, Irvine
- 01/2011**
(1 year) **Researcher – BI Research Fellowship (FCT)**
Center for Mathematics and Fundamental Applications, Universidade de Lisboa (CMAF-UL)
- 01/2010**
(1 year) **Research Assistant – BII, Introduction to research fellowship (FCT)**
Center for Theoretical and Computational Physics, Universidade de Lisboa (CFTC-UL)
- 12/2008**
(1 year) **Research Assistant – BII, Introduction to research fellowship (FCT)**
Center for Nuclear Physics, Universidade de Lisboa (CFNUL)

ACADEMIC AND PROFESSIONAL DEVELOPMENT

DEGREES

- 02/2017 **Ph.D. in Sciences (specialty in Physics)**, School of Sciences of the University of Minho
Supervision: Jorge M. Pacheco & Francisco C. Santos Classification: *Muito bom* (highest)
- 09/2012 **M.Sc. in Non-linear & Statistical Physics**, Faculty of Sciences of the University of Lisbon
Supervision: Francisco C. Santos Classification: **18.50/20**
- 09/2010 **Graduation in Physics**, FCUL - Faculty of Sciences of the University of Lisbon
Supervision: Pedro G. Lind Classification: **18.47/20**
- 09/2007 Secondary education – **Scientific-humanistic course in Sciences and Technology**,
E. Sec. de Leal da Câmara Classification: **18.75/20**

OTHER COURSES & INTERNSHIPS

- 09/2013 **Financial Accounting**, *ISCTE Business School, Economics Grad., ISCTE-IUL, Portugal*, 6
(1 semester) ECTS
- 09/2013 **Introduction to Management**, *ISCTE Business School, Economics Grad., ISCTE-IUL, Portugal*,
(1 semester) 6 ECTS
- 01/2013 **Program: Cooperation and the Evolution of Multicellularity**, *Kavli Institute for Theoretical
(2,5 months) Physics (KITP), University of California Santa Barbara, USA*
- 12/2012 **Project of a Microenterprise (UFCD 5509)**, *PluriFactor, Portugal*
(1 month)
- 09/2012 **Social Structure Summer School 2012**, *CRC Evolution of Social Behavior, University of
(1 week) Göttingen, Germany*, 3 ECTS
- 08/2006 **VB.NET, Graphical Programing (GDI+) Internship**, *INETI - Instituto Nacional de
(2 weeks) Engenharia, Tecnologia e Inovação – Ciência Viva*
- 08/2005 **Muon's life and Einstein relativity Internship**, *LIP - Laboratório de Instrumentação e
(2 weeks) Partículas, Lisbon and CFNUL - Centro de Física Nuclear da Universidade de Lisboa – Ciência Viva*

SCIENTIFIC MERIT

SCIENTIFIC PRODUCTIVITY AND POTENTIAL

SUMMARY STATISTICS

Articles published: **16** (+3 conference proceedings).

Invited comments to articles: **1**.

Proceeding of conferences: **3**.

Citations: **476**. H-index: **10**. See my google scholar profile for details and updates: <https://goo.gl/UiLjkQ>.

Software for clients: **4**.

Talks: **26** (**11** invited).

Articles in review: **2**.

Articles in preparation: **12** (leading **6**).

Student thesis: **2** finished.

WORK SUBMITTED

15. Vítor V. Vasconcelos, Astrid Dannenberg, Simon A. Levin, The emergence of punishment institutions to promote cooperation through voting and learning, European Association of Environmental and Resource Economists (EAERE 2020). **Submitted**.

14. Vítor V. Vasconcelos, Phillip M. Hannam, Simon A. Levin, Jorge M. Pacheco. Coalition-structured governance improves cooperation on climate change (2019). **Submitted. Leading** author.

13. Wolfram Barfuss, Jonathan F. Donges, Vítor V. Vasconcelos, Jürgen Kurths, and Simon A. Levin. Caring for the future can turn tragedy into comedy for long-term collective action under risk of collapse (2019). **In review at Proceedings of the National Academy of Science. Contributing** author.

WORK IN PROGRESS

12. Vítor V. Vasconcelos and Simon A. Levin. Critical reduction of long-term trait variability under increased selection intensity (2020). In preparation for Journal of Theoretical Biology. **Leading** author.

11. Nicolas Choquette-Levy, Alice Lin, Oliver Whang, Mayank Misra, Udari Madhushani, Daniel Cooney, Simon Levin, Vítor V. Vasconcelos. Internal dynamics for international decision making (2020). **Mentoring** preparation as an article, following the development of a class project (see draft [here](#))

10. Vítor V. Vasconcelos, Andrew R. Tilman. Evolutionary games with forecasting (2020). In preparation. **Leading** author.

9. Andrew R. Tilman, Vítor V. Vasconcelos, Erol Akçay, Joshua Plotkin. The evolution of forecasting (2020). In preparation. **Co-leading** author.

8. Vítor V. Vasconcelos, Flávio L. Pinheiro. Selection of behaviors with underlying random processes for any graph structure (2019). In preparation for Nature. Presented at Ecology Lab Tea at Princeton University. **Leading** author.

7. Vítor V. Vasconcelos, Simon A. Levin, Rutwik Kharkar, Jobst Heitzig, Marc Wiedermann, Jonhathan Donges, Sara Constatino, Elke U. Weber. Social Norms as a Complex Adaptive System (2019). In preparation. **Leading** the collaboration with a team from the Potsdam Institute for Climate Research Impact (PIK) and Elke U. Weber's group from the Andlinger Center for Energy and the Environment at Princeton University.

6. Lisa C. McManus, Vítor V. Vasconcelos, Simon A. Levin, Fernando P. Santos, DM Thompson, JÁ Kleypas, FS Castruccio, EN Curchitser, James R Watson. Larval dispersal facilitates coral adaptive

response on a spatially realistic network. In preparation for PLOS Computational Biology. The work was already presented at the Ecological Society of America 2018 meeting: <https://eco.confex.com/eco/2018/meetingapp.cgi/Paper/70784>. **Contributing** author.

5. Vítor V. Vasconcelos, Astrid Dannenberg, Simon A. Levin. The endogenous origin of institutions to sustain cooperation (2019). In review at PNAS (abstract submitted to Ecological Society of America 2019 meeting). **Leading** author in a project for the ERC grant managed by Astrid Dannenberg.

4. Wenying Liao, Vítor V. Vasconcelos, Lars O. Hedin, Simon A. Levin. Central food bank: reducing global nitrogen pollution while sustaining food security under climatic risk (2019). In preparation (see abstract at Ecological Society of America 2018 meeting at <https://eco.confex.com/eco/2018/meetingapp.cgi/Paper/74031>). **Contributing** author.

3. Wenying Liao, Vítor V. Vasconcelos, Michael Oppenheimer. Global governance of nitrogen pollution: Pathway to food security and pollution reduction (2019). In preparation. **Contributing** author.

2. Olivia Chu, Vítor V. Vasconcelos and Corina E. Tarnita. Evolutionary Dynamics in a Group Population Structure with Barriers to Group Entry (2019). In preparation (see abstract and press release at phys.org <https://phys.org/news/2019-03-approach-cooperate.html> and abstract at APS March Meeting 2019 <http://meetings.aps.org/Meeting/MAR19/Session/B63.8>). **Contributing** author.

1. Alexandra M. Correia, Luís F. Lopes, Vítor V. Vasconcelos, Simon A. Levin. Revisiting the Biodiversity-Ecosystem Functioning Paradigm: Warranting Complex Adaptive Ecosystems (2020) In preparation. **Contributing** author.

PUBLISHED

ARTICLES

16. W Barfuss, JF Donges, VV Vasconcelos, J Kurths, SA Levin. Coalition-structured governance improves cooperation to provide public goods. *Proceedings of the National Academy of Sciences* 117 (23), 12915-12922.

15. Vítor V. Vasconcelos, PM Hannam, Simon A. Levin, Jorge M. Pacheco. Caring for the future can turn tragedy into comedy for long-term collective action under risk of collapse. *Scientific Reports* 10 (1), 1-10.

14. Lisa C. McManus, Vítor V. Vasconcelos, Simon A. Levin, DM Thompson, JÁ Kleypas, FS Castruccio, EN Curchitser, James R Watson. Extreme temperature events will drive coral decline in the Coral Triangle (2019). *Global Change Biology* [1st Quartile, Impact Factor 8.88].

13. Vítor V. Vasconcelos, Flávio L. Pinheiro, Simon A. Levin. Consensus and polarization in competing complex contagion processes (2019) *Journal of the Royal Society Interface* [1st Quartile, Impact Factor 3.36], 16 (155) 20190196.

12. Lei Zhou; Bin Wu, Vítor V. Vasconcelos, Long Wang, Simple property of heterogeneous aspiration dynamics: Beyond weak selection (2018) *Physical Review E* [1st Quartile, Impact Factor 2.4], 98, 062124.

11. Lisa McManus, James R. Watson, Vítor V. Vasconcelos, Simon A. Levin, Stability and Recovery of Coral-algae Systems: the Importance of Recruitment Seasonality and Grazing Influence (2018) *Theoretical Ecology* [1st Quartile, Impact Factor 2.0], p1-12.

10. Vítor V. Vasconcelos, Fernando P. Santos, Francisco C. Santos, Jorge M. Pacheco, Stochastic dynamics through hierarchical Markov chains (2017) *Physical Review Letters* [1st Quartile, Impact Factor 8.5], 118 (5), 058301.

9. Vítor V. Vasconcelos, Francisco C. Santos, Jorge M. Pacheco, Cooperation dynamics of polycentric climate governance, (2015) *Mathematical Models and Methods in Applied Sciences* [1st Quartile, Impact Factor 3.1], 25 (13), 2503-2517.
8. Phillip M. Hannam, Vítor V. Vasconcelos, Simon. A. Levin, Jorge M. Pacheco, Incomplete cooperation and co-benefits, (2015) *Climatic Change* [1st Quartile, Impact Factor 4.1], 1-15, Springer.
7. Jorge M. Pacheco, Vítor V. Vasconcelos, Francisco C. Santos and Brian Skyrms, Co-evolutionary Dynamics of Collective Action with Signaling for a Quorum, (2015) *PLOS Computational Biology* [1st Quartile, Impact Factor 4.6], 11(2): e1004101.
6. Flávio L. Pinheiro, Vítor V. Vasconcelos, Francisco C. Santos and Jorge M. Pacheco, Evolution of all-or-non strategies in repeated public goods dilemmas, (2014) *PLOS Computational Biology* [1st Quartile, Impact Factor 4.6], 10(11): e1003945.
5. Jorge M. Pacheco, Vítor V. Vasconcelos, Francisco C. Santos, Climate Change Governance, Cooperation and Self-organization, (2014) *Physics of Life Review* [1st Quartile, Impact Factor 7.5], vol. 11 (4) p. 573-586.
4. Vítor V. Vasconcelos, Francisco C. Santos, Jorge M. Pacheco and Simon A. Levin, Climate Policies under Wealth Inequality, (2014) *Proceedings of the National Academy of Sciences (PNAS)* [1st Quartile, Impact Factor 9.7], 111 (6) p2212-2216
3. Vítor V. Vasconcelos, Francisco C. Santos and Jorge M. Pacheco, A bottom-up institutional approach to cooperative governance of risky commons, (2013) *Nature Climate Change* [1st Quartile, Impact Factor 19.3], 3 (9) pp. 797-801
2. Francisco C. Santos, Vítor V. Vasconcelos, Marta D. Santos, Pedro Neves, Jorge M. Pacheco, Evolutionary dynamics of climate change under collective-risk dilemmas, (2012), *Mathematical Models and Methods in Applied Sciences* [1st Quartile, Impact Factor 3.1] Vol. 22, Suppl. 1140004
1. Vítor V. Vasconcelos, F. Raischel, M. Haase, J. Peinke, M. Wächter, P. G. Lind, and D. Kleinhans, Principal axes for stochastic dynamics, (2011), *Physical Review E* [1st Quartile, Impact Factor 2.4] 84 (3), 031103

CONFERENCE PROCEEDINGS, EXTENDED ABSTRACTS, AND COMMENTS TO ARTICLES

10. Flávio Pinheiro, Vítor V. Vasconcelos and Simon A. Levin, From Consensus to Polarization of Opinions in Complex Contagion, International Conference on Computational Social Science (IC2S2 2019). **Extended abstract.**
9. Lisa C. McManus, James R. Watson, Vítor V. Vasconcelos, Simon A. Levin, Spatial marine metacommunity connectivity and the response of the Coral Triangle to climate change, Ecological Society of America Annual Meeting, (2018) 70784. **Extended abstract.**
8. Wenying Liao, Vítor V. Vasconcelos, Simon A. Levin, Lars O. Hedin. Central food bank: a possible path to ensure food security and reduce global nitrogen pollution under future climatic risk, Ecological Society of America Annual Meeting, (2018) 74031. **Extended abstract.**
7. Lei Zhou, Bin Wu, Vítor V. Vasconcelos, Long Wang, Evolutionary Game Dynamics Driven by Heterogeneous Self-learning Rules, 2018 IEEE 7th Data Driven Control and Learning Systems Conference (DDCLS). **Proceedings.**
6. Vítor V. Vasconcelos, and Flávio L. Pinheiro, From Consensus to Polarization of Opinions in Complex Contagion, International Conference of Complex Systems 2018. **Extended Abstract.**
5. Jorge M. Pacheco, Vítor V. Vasconcelos, and Francisco C. Santos, Climate governance as a complex adaptive system, *Physics of Life Reviews*, 11 (2014), pp. 595-59. Citations: 1. **Comment published on journal.**
4. Phillip M. Hannam, Jorge M. Pacheco, Vítor V. Vasconcelos, Theory of “club” agreements: Potential for small agreements to unlock global cooperation (2014), Workshop in Climate Negotiations (Columbia University). **Working paper.**

3. Vítor V. Vasconcelos, Flávio L. Pinheiro, Francisco C. Santos and Jorge M. Pacheco, Bootstrapping back the climate with self-organization, (2013), *Advances in Artificial Life, ECAL 2013: Proceedings of the 12th European Conference on the Synthesis and Simulation of Living Systems*, MIT Press, 12, p182-183. **Proceedings.**
2. Flávio L. Pinheiro, Vítor V. Vasconcelos, Francisco C. Santos and Jorge M. Pacheco, Self-organized game dynamics in complex networks, (2013), *Advances in Artificial Life, ECAL 2013: Proceedings of the 12th European Conference on the Synthesis and Simulation of Living Systems*, MIT Press, 12, p61-62. Citations: 1. **Proceedings.**
1. João Carvalho, Maria Haase, David Kleinhans, Pedro G. Lind, Joachim Peinke, Frank Raischel, Vítor V. Vasconcelos and Matthias Wächter, Reconstruction and predictability of stochastic processes, (2010), Instituto Nacional de Pesquisas Espaciais (INPE) - Dynamics Days South America 2010: International Conference on Chaos and Nonlinear Dynamics. **Extended Abstract.**

STUDENT THESES

2. Andreea Magalie, Out-sourcing opinions by signaling of group affiliation, (2018), Thesis for Graduation by Princeton's Applied and Computational Mathematics Department. Advisors: Vítor V. Vasconcelos and Simon A. Levin.
1. Kashyap Rajagopal, Homophily in Climate Change Negotiations: A Probabilistic SIR Model, (2014), Project for Minor in the Princeton Program in Applied and Computational Mathematics, in Princeton's Applied and Computational Mathematics Department. Advisors: Vítor V. Vasconcelos and Simon A. Levin. Made available online by Kashyap at slideshare.net/KashRajagopal/climatechangenegotiations

THESES

3. Vítor V. Vasconcelos, Emergence and Self-organization of Cooperation, (2017), PhD Thesis, Universidade do Minho
2. Vítor V. Vasconcelos, The Role of Sanctioning in the Evolutionary Dynamics of Collective Action, (2012), MSc Thesis, Department of Physics of the Faculty of Sciences of the University of Lisbon
1. Vítor V. Vasconcelos, (PT) Predictabilidade de Sistemas Estocásticos, (2010), Graduation Project Report, Department of Physics of the Faculty of Sciences of the University of Lisbon

SOFTWARE

4. Vítor V. Vasconcelos, Fernando P. Santos, **Extended Small Mutation Limit Package for Mathematica** (2019). A package to compute stationary distributions of large Markov Chains based on the method developed in publication [10]. Git repository pending development of tutorial to be made public under GPLv2 (GNU General Public License version 2.0).
3. Vítor V. Vasconcelos, **Fractal Cartography (2015)**. Consulting project for developing software for fractal analysis of constructed areas, based on DOI: 10.1038/srep00527. Contractor: *Faculdade de Ciências Sociais e Humanas* (CICS.NOVA). Amount: 2000 EUR.
2. Vítor V. Vasconcelos, André F. Pinto, **(Re)Equacionando a Natureza ((Re)Equating Nature) (2008)**. A software for graphical representations of high school problems of the Physics curriculum: projectiles, collisions, slopes and levers, and buoyance. The software was implemented with graphics in VB.net GDI+ and contains basic implementation of ODEs solvers (see awards)

1. Vítor V. Vasconcelos, Rafael M. Galupa, **Microscópio Virtual (*Virtual Microscope*) (2007)**. A software for visualization of samples taken from the optical microscope in VB.net with GDI+ (see awards)

PRESENTATIONS & POSTERS

28. Feb/2020, **Invited seminar**. Joint seminar in the Informatics Institute & Institute of Physics at the University of Amsterdam, Netherlands.
27. Jan/2020, **Invited talk**. Mercator Research Center on Global Commons and Climate Change and the Potsdam institute for Climate Impact Research, Germany.
26. Nov/2019, **Invited talk**. Department of Environmental Studies, Dartmouth College.
25. Oct/2019, **Invited talk**. Social Decisions Workshop 2019 (sdw19.uh.edu), University of Houston.
24. Aug/2019, **Contributed talk**. United States Society for Ecological Economics Meeting, Louisville.
23. Aug/2019, **Contributed talk**. 5th International Conference on Computational Social Science, Amsterdam.
22. Sep/2018, **Contributed talk**. Ecology Lab Tea at Princeton University.
21. Aug/2018, **Invited talk**. Presented by Lisa C. McManus, ESA Annual Meeting, New Orleans.
20. Aug/2018, **Contributed talk**. Presented by Wenying Liao, ESA Annual Meeting, New Orleans.
19. July/2018, **Contributed talk**. ICCS 2018.
18. July/2018, **Invited talk**. Workgroup meeting for coevolutionary pathways in the world-earth system, Potsdam Institute for Climate Research Impact (PIK).
17. Feb/2018, **Invited talk**. Graduate Student Seminar for the Program of Applied & Computational Mathematics at Princeton University.
16. Nov/2017, **Invited talk**. Ecology Lab Tea at Princeton University.
15. Jun/2016, **Contributed talk**. Summer Solstice 2016 at Universidade de Aveiro.
14. Apr/2016, **Invited talk**. GeoLectures at FCSH of the Universidade Nova de Lisboa
13. Oct/2015, **Invited talk**. LSE–London School of Economics (workshop organized by Alessandro Tavoni)
12. Jul/2015, **Contributed talk**. GAIPS seminar cycles (IST Taguspark)
11. Mar/2015&May/2016, **Invited talk**. *Escola Secundária de Leal da Câmara*
10. Oct/2014, **Contributed talk**. ATP-Autumn Workshop (University of Lisbon)
9. Apr/2014, **Contributed talk**. Presented by Phillip Hannam, Workshop in Climate Negotiations (Columbia University)
8. Apr/2014, **Invited talk**. Simon Levin's Lab (Princeton University)
7. Sep/2013, **Contributed talk**. European Conference on Complex Systems (ECCS 2013)
6. Sep/2013, **Contributed talk**. European Conference on Artificial Life (ECAL 2013)
5. Oct/2012, **Contributed talk**. Third Workshop Dynamical Systems Applied to Biology and Natural Sciences
4. 07/2010, **Contributed talk**. Presented by João Carvalho in Instituto Nacional de Pesquisas Espaciais (INPE) - Dynamics Days South America 2010: International Conference on Chaos and Nonlinear Dynamics.
3. Sep/2010, **Poster**. 2nd International Conference on Data Analysis and Modeling in Earth Sciences DAMES'2010, Eigendirections of Stochasticity, University of Lisbon
2. Sep/2008, **Software demonstration**. (Re)Equating Nature – Simulations for Physics in the 12th school year, XXVI Encontro Juvenil de Ciência, AJC, University of Aveiro

1. May/2008, **Software demonstration.** (Re)Equating Nature – Simulations for Physics in the 12th school year & Virtual Microscope, *16º Concurso “Jovens Cientistas e Investigadores”*, *Fundação da Juventude, Ciência Viva*

ORGANIZATION AND LEADERSHIP, PROJECT WRITING AND INVOLVEMENT

CONFERENCE PANELS AND ORGANIZATION

7. **Member of Program Committee** at the session “Computing for Sustainability (CfS)” at INForum 2020.
6. **Member of Program Committee** at the Adaptive and Learning Agents (ALA) 2020 at AAMAS 2020.
5. **Member of Buell Award Judging Panel** at the 2019 Ecological Society of America Annual Meeting joint with the 2019 meeting of the United States Society for Ecological Economics, Louisville.
4. **Member of the Scientific Committee** of the International Conference On Mathematical Applications 2019, Azores, Portugal.
3. **Member of the Program Committee** for the workshop on Computing for Sustainability (CfS) of INForum 2019 (*Simpósio Nacional em Informática*), Coimbra, Portugal.
2. **Main organizer** of the ATP-group Autumn Workshop (2014) at *Complexo Interdisciplinar, Universidade de Lisboa*, in the topics of the governance of the commons.
1. **Co-organizer** of ATP-lectures minicourses (2010-2016). Organized mini-courses certified by the institute and offered by the speaker (www.facebook.com/ATP-Lectures-104296416309676/)

FUNDED PROJECTS

This list of projects corresponds to funds directly attributed to me.

7. **Social norms dynamics as a complex adaptive system.** PI in proposal for Princeton’s new Data-Driven Social Science Initiative (March 2020). Funding: 5.000 USD. Duration: 1 year. Start date: 0/2020
6. **Environmental dilemmas of cooperation in heterogeneous populations.** PI in proposal for PEI Summer Internship Program. Funding: 4 full-time summer interns. Duration: 10 weeks. Start date: 5/26/2020.
5. **Rapid Switch Postdoctoral Fellowship (2019-2021)** Postdoctoral Research Funding: 2500USD/year in traveling funds by Princeton Institute for International and Regional Studies.
4. **Institutions for Socio-ecological resilience (2017-2020)** Postdoctoral fellowship by Simon A. Levin, complementing Postdoctoral Research Associate position. Amount: flexible budget for traveling and materials, contingent on approval.
3. **Fractal Cartography (2015)** Consulting project for developing software for fractal analysis of constructed areas, based on DOI: 10.1038/srep00527. Contractor: Faculdade de Ciências Sociais e Humanas (CICS.NOVA). Amount: 2000 EUR.
2. **Signaling processes in the emergence and self-organization of cooperation (2013-2017)** 2013, PhD Grant, SFRH/BD/86465/2012 ranked 1st in the Physics national call, Fundação para a Ciência e Tecnologia (Portuguese Science Foundation). Amount: 54.000 EUR
1. **“Física de N-corpos e a Sustentabilidade do Planeta” (N-body physics and the planet’s sustainability).** Award “*Stimulus to Research*” – 2012, Calouste Gulbenkian Foundation. Amount: 12500 EUR.

SCIENTIFIC RECOGNITION

HONORS AND AWARDS

10. 2018, **Princeton's institutional nominee to the 2019 Blavatnik Regional Postdoctoral Award** program in the field of Ecology, Princeton University
9. 2013, **PhD Grant**, ranked 1st in the Physics national call, Fundação para a Ciência e Tecnologia (Portuguese Science Foundation)
8. 2012, **Award "Stimulus to Research" – 2012**, Calouste Gulbenkian Foundation
7. 2011, **Merit Scholarship of FCUL**, FCUL - Faculty of Sciences of the University of Lisbon
6. 2010, **Honors – Best graduated student in 2009/2010**, Faculty of Sciences University of Lisbon
5. 2009, **Honors – Best students 1st year 1st time**, Faculty of Sciences University of Lisbon
4. 2009, **Merit Scholarship of FCUL**, FCUL - Faculty of Sciences of the University of Lisbon
3. 2007, **Merit Certificate for high school performance - 19.8/20 – and for the realization of scientific projects with quality**: "Microscópio Virtual" (Virtual Microscope) and "(Re)Equacionando a Natureza – Simulações para Física de 12^o" (Physics simulations for the 12th school year), Escola Secundária de Leal da Câmara, Rio de Mouro
2. 2006, **Merit Certificate for high school performance - 19.0/20**, Escola Secundária de Leal da Câmara, Rio de Mouro
1. 2005, **Merit Certificate for high school performance - 17.8/20**, Escola Secundária de Leal da Câmara, Rio de Mouro

REFEREEING FOR INTERNATIONAL JOURNALS

I reviewed for international journals and conferences, including *Nature Communications*, *Proceedings of the National Academy of Sciences* (PNAS), *PLOS Computational Biology*, *PLOS ONE*, *Physical Review Letters*, *Physical Review*, *EPL (Europhysics Letters)*, and *Frontiers in Robotics and AI* (see publons.com/author/1176432/vitor-vasconcelos#profile for details).

PROJECT INVOLVEMENT

- 2019-2021** Rapid Switch
Fellow Funding Agency: Princeton Institute for International & Regional Studies and Princeton's Andlinger Center for Energy & the Environment.
Budget: \$120.400,00+flexible
- 2017-2020** Institutions for Socio-ecological resilience (fellowship)
Fellow Funding Agency: Dep. EEB, Princeton University and The Levin Lab. Budget: \$159.000,00 + flexible.
Advisor: Simon A. Levin
- 2018 -** Social-Ecological Complexity and Adaptation in Marine Systems (GEO-1211972)
Researcher Funding Agency: National Science Foundation. Budget: \$ 1.498.903,00.
Principal Investigator: Simon Levin (Princeton University) and Iain Couzin (Max Planck Institute).
- 2017 - 2019** The Statistical Mechanics of Crowds: predictive modeling in the social sciences (D17AC00005)
Researcher Funding Agency: Defense Advanced Research Projects Agency (DARPA). Budget: \$2.945.437,00
Principal Investigator: Josh Plotkin (U. Penn.), with five co-investigators.
- 2016 -** Engineering Cooperation in Climate Governance (PTDC/EEI-SII/5081/2014)
Funding Agency: FCT - Portugal. Budget: € 160.980,00.

- Researcher** Principal Investigator: Francisco C. Santos (IST Instituto Superior Técnico)
- 2016 -** Stochastic Dynamics of Collective Action (PTDC/MAT-STA/3358/2014)
- Researcher** Funding Agency: FCT – Portugal. Budget: € 173.430,00
Principal Investigator: Jorge M. Pacheco (Universidade do Minho)
- 2015** Fractal Cartography (CICS.NOVA)
- Consultant** Funding Agency: Faculdade de Ciências Sociais e Humanas. Budget: € 2.000,00
Principal Investigator: Vítor V. Vasconcelos
- 2015 - 2018** Funding of RD Units Strategic Plan: INESC-ID Lisboa (UID/CEC/50021/2013)
- Researcher** Funding Agency: FCT - Portugal. Budget: € 2.825.280,00
Principal Investigator: Leonel Augusto Pires Seabra Sousa (IST Instituto Superior Técnico)
- 2015 - 2018** Funding of RD Units Strategic Plan: Centro de Física Minho e Porto
- Researcher** (UID/FIS/04650/2013)
Funding Agency: FCT - Portugal. Budget: € 800.000,00
Principal Investigator: Mikhail Vasilevskiy (Universidade do Minho).
- 2013 - 2015** Física de N-corpos e a Sustentabilidade do Planeta (*N-body Physics and Planetary Sustainability*)
- Awardee** Funding Agency: Fundação Calouste Gulbenkian. Budget: € 12.500,00
Advisor: Jorge M. Pacheco (Universidade do Minho)
- 2013 - 2014** Multi-Agent Simulation of Global Governance (EXPL/EEI-SII/2556/2013)
- Researcher** Funding Agency: FCT - Portugal. Budget: € 40.000,00
Principal Investigator: Francisco C. Santos (IST Instituto Superior Técnico)
- 2012 - 2016** Processos de sinalização na emergência e auto-organização da cooperação
- Awardee** (SFRH/BD/86465/2012)
Funding Agency: FCT - Portugal. Budget: € 54.000,00
Advisor: Jorge M. Pacheco (Universidade do Minho) and Francisco C. Santos (IST Instituto Superior Técnico)
- 2012 - 2015** Stochastic Co-evolutionary Dynamics of Signaling and Cooperation
- Researcher** (PTDC/MAT/122897/2010)
Funding Agency: FCT - Portugal. Budget: € 50.000,00
Principal Investigator: Jorge M. Pacheco (Universidade do Minho)
- 2010 - 2013** Co-evolution and self-organization of cooperation (PTDC/FIS/101248/2008)
- Researcher** Funding Agency: FCT - Portugal. Budget: € 150.000,00
Principal Investigator: Francisco C. Santos (IST Instituto Superior Técnico)

OTHER RESEARCH NETWORKS

3. **Rapid Switch.** An interdepartmental network within Princeton University, Indian Institute of Technology, Ashoka Trust for Research in Ecology and the Environment, The Energy & Resources Institute, Prayas Energy Group, Tsinghua University (Beijing), The University of Queensland (Australia), Carnegie Mellon University and interface with industry stakeholders. Network is funded by PIIRS at Princeton University, Indian Institute of Technology Bombay, and The University of Queensland.
2. **Cooperation and Collective Cognition Network (CoCCoN).** A Princeton-Humbolt-PIK consortium (<http://coccon.biologie.hu-berlin.de/wiki/doku.php>)
1. **ATP-group.** Hosted by GAIPS / INESC-ID (IST-Taguspark, U. Lisbon), and CBMA (U. Minho, Braga), and it is co-coordinated by Francisco C. Santos (IST, University of Lisbon) and Jorge M. Pacheco (U. Minho) (<http://www.atpgroup.org/>)

PEDAGOGIC MERIT

TEACHING TRACK RECORD

- 2019/2020 Assistant Professor, Dep. Informatics (UvA)**
Modelling System Dynamics: Modelling; non-linear modelling; chaos; sensitivity & calibration.
- (2019 Spring) Lecturer** (*Andlinger Center for Energy & the Environment, Princeton University*
(3h/week) *Princeton Institute for International & Regional Studies Rapid Switch Research Community*)
ENE 372 Rapid Switch: The transition challenge to low-carbon energy
- 2015/16 Teaching Assistant, Dep. Computer Science (IST)**
(3h/week) *Introduction to Algorithms and Data Structures*: C programming; algorithm complexity; sorting algorithms; stacks, queues, priority queues and heaps; searching in trees; dynamic data structures; binary trees, balanced binary trees; hash tables; graphs.
- 2011/12 Teaching Assistant, Dep. Physics** (*Faculty of Sciences of the University of Lisbon*)
(6h/week) Responsible for managing the laboratory classes of Electronics for Computer Scientists: Dimensional analysis; Uncertainty and error propagation; Data acquisition and statistical analysis; Measuring devices: multimeter, oscilloscope; Periodic signals generation and manipulation; resistors, transformers, diodes, transistors and coaxial cables; Kirchhoff laws. Simple circuits: RC, CR, RL, and LR filters. Boolean algebra and logic gates circuits.
- 2011/12 Teaching Assistant, Dep. Physics (x2)** (*Faculty of Sciences of the University of Lisbon*)
2010/11 Responsible for managing the laboratory classes of Experimental Physics for Geology: The experimental method; Oscilloscope; Sonar in Bathymetry; Power laws in crater formation;
(6h/week) Avalanches and earthquakes; Study of electric and magnetic fields due to geological elements.

COORDINATION OF PEDAGOGIC PROJECTS AND CLASSES

- 2019/20** *ENE 372 Rapid Switch: The transition challenge to low-carbon energy, Princeton University*
Creation of class & Teaching in Energy Transitions for Energy and Environmental Engineering
- 2018/19** *EEB 533 Topics in Ecology: Theoretical Ecology, Princeton University*
Co-creating class in advanced topics in Theoretical Ecology
- 2015/16** *Introduction to Algorithms and Data Structures, Departamento de Engenharia Informática, Instituto Superior Técnico (IST)*
Co-organizing class in Computer Sciences. I contributed to the design of new experiments, exercises, tests, projects, and oral defenses, under the supervision of Prof. Francisco C. Santos.

OTHER TEACHING ACTIVITIES

- 2018/19** Guest lecture at 533 Theoretical Ecology class, Cooperation in climate change mitigation, *Princeton University*.
- 2010/11** Guest lecture in two modules of high school classes in Physics and Chemistry A – 10th, Universe Architecture, *Escola Secundária de Leal da Câmara*.

MENTORSHIP

- 2020/21** Mentoring at the Princeton Environmental Institute Summer Internship:
(10 weeks) Environmental dilemmas of cooperation in heterogeneous populations. 2 to 3 students.
- 2019/20** Mentoring research assistant, Colton Bishop, in the Behavioral Science for Policy Lab
(1 semester) at Princeton University.
- 2019/20** Mentoring graduate student, Wenying Liao. Thesis chapter: “Climate policy and food

- (2 years) security under wealth inequality” in STEP-PEI Fellowship (Program in Science, Technology, and Environmental Policy) at Princeton University.
- 2019/20
(1 semester) Mentoring group in “EEB 504: Fundamental Concepts in Ecology, Evolution, and Behavior” in “Reducing nitrogen fertilizer input in the global food system” at Princeton University.
- 2019/20
(1 year) Co-advising M.Sc. student, Mariana Trigueiros. Thesis: “Polarization in social networks and the spread of fake news” at NOVA IMS, Universidade Nova de Lisboa, Portugal.
- 2018/19
(1 semester) Mentoring group in “EEB 533 Topics in Ecology: Theoretical Ecology”, in “coupling internal politics dynamics to the climate negotiation” at Princeton University.
- 2017/18
(1 year) Co-advising undergraduate student, Andreea Magalie. Thesis: "Out-sourcing opinions by signaling of group affiliation" in the Program for Applied and Computational Mathematics at Princeton University.
- 2013/14
(1 semester) Co-advising undergraduate student, Kashyap Rajagopal. Thesis: "Homophily in Climate Change Negotiations: A Probabilistic SIR Model" in (Minor) Program for Applied and Computational Mathematics at Princeton University.

OTHER RELEVANT ACTIVITIES

OUTREACH (GENERAL PUBLIC)

- “Partilhar futuros” “Partilhar futuros” (sharing futures) project at Escola Secundária de Leal da Câmara. This ongoing program is aimed at high-school students who seek to understand possible paths to their academic and non-academic careers through examples of former students of this high school. I take part of it every year to the extent I am available.
- ATP-lectures Former member of the ATP-lectures organizing committee. With a total of 26 sessions, our talks were open to the general public, in Portugal, for dissemination of important worldwide work (www.facebook.com/ATP-Lectures-104296416309676/).
- School journal Contributions to school journal “100 letras” at Escola Secundária de Leal da Câmara of non-scientific articles.

OUTREACH (ACADEMIC PUBLIC)

- 2018/19 Guest lecture at 533 Theoretical Ecology class, Cooperation in climate change mitigation, *Princeton University*.
- 2016/04 “Modelling a complex world” – outreach talk at Geolectures (see Presentations). I was invited to Universidade Nova de Lisboa (Geography department) to give a talk to students of social sciences on the perspectives of modeling complex systems.
- 2010/11 Guest lecture in two modules of high school classes in Physics and Chemistry A – 10th, Universe Architecture, *Escola Secundária de Leal da Câmara*.