PABLO LOZANO

Central European University ◇ Quellenstraße 51, Vienna (Austria)
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EDUCATION

Universidad Carlos III de Madrid, **Ph.D. in Applied Mathematics** *Sept. 2018 - Apr. 2022*
Awards: Full scholarship.
Research interests: Complex Systems, Evolutionary Game Theory, Behavioral Economics, Computational Social Systems, Agent-Based Modelling, Reinforcement Learning.
Advisors: Angel Sánchez, Alberto Antonioni.

Universidad Carlos III de Madrid, **M.S. in Mathematical Engineering** *Sept. 2016 - Aug. 2018*
Awards: Full scholarship.
Dissertation: Formation models of hierarchical societies.
Modules included: Numerical Methods, Game Theory, Multivariate Statistics, Stochastic Differential Equations, Simulation, Dynamical Systems, Mathematical Biology.

Universidad Carlos III de Madrid, **BSc in Industrial Engineering** *Sept. 2012 - Jun. 2016*
Minor in Electronics and Robotics.
Dissertation: Models for cooperation in dynamical networks with unreliable reputation.
Modules included: Control Theory, Algorithms, Software Engineering, Object-Oriented Programming, Computer Systems Modelling, Robotics, Power and Analog Electronics.

WORK EXPERIENCE

Junior visiting researcher *Sept. 2021 - Present*
Networks and Data Science Department, Central European University

Research on explainable artificial intelligence (xAI), machine learning, and network science.
Part of Social eXplainable Artificial Intelligence European project (`https://www.sai-project.eu/`).
Teaching assistant for graduate level: Introduction to Computational Social Science, and Statistical Methods in Network Science.

PhD candidate *Sept. 2018 - Apr. 2022*
Mathematics Department, Universidad Carlos III de Madrid

Including teaching assistant duties at different levels. *Undergraduate level*: Linear Algebra to Biomedical Engineering, Industrial Engineering, Telecommunications Engineering, and Data Science and Computation Engineering degrees. *Other*: Introduction to programming with Python and MATLAB.

Member *Sept. 2016 - Present*
GISC & UMICCS

Member of the Interdisciplinary Group in Complex Systems (GISC in Spanish) and of the Mixed Unit for Complexity and Social Sciences (UMMICS in Spanish).
GISC's twitter account community manager (@gisc_group) since Jan. 2020.
Bi-weekly seminar organizer for GISC group at Universidad Carlos III de Madrid (2019-2021).

Lead teacher *2020 - Present*
Ironhack bootcamp

Teaching course on Machine Learning, Data Science and Analytics using Python and related frameworks.

Visiting scholar *Jan. 2019 - Jun. 2019*
EEB Department, University of Tennessee Knoxville

Research stay at Dr. Sergey Gavrilets' lab in the Ecology and Evolutionary Biology (EEB) department at UTK. Development of a model involving social norms within hierarchical societies.

Teaching assistant *Sept. 2016 - Aug. 2018*
Mathematics Department, Universidad Carlos III de Madrid

Undergraduate level: Calculus I and II, for Energy Systems Engineering and Electrical Engineering.

Laboratory technician *Sept. 2015 - Dec. 2015*
Electronics Department, UC3M

Intern as Laboratory Technician, in charge of manufacturing *ad-hoc* systems, and repairing circuits and PCBs, using professional (OrCAD) and free software (EAGLE).

Industrial Systems Engineering *Jun. 2015 - Sept. 2015*
Profit Innova

Designing, manufacturing and calibration of a metal-cloth characterization system. Industrial systems tasks, maintaining internal network, CRM and sales programs.

PUBLICATIONS

Reinforcement learning to understand cooperation and unreliable reputation evolution in dynamic networks. *Expected Late 2022*
Pablo Lozano, & Angel Sánchez.
Work in progress.

Climate change forces uncertain cooperation: an experiment *Expected Late 2022*
Pablo Lozano, Alberto Antonioni & Angel Sánchez.
Work in progress.

Empirical evidence of verbal priming increasing cooperation *Expected Late 2022*
Pablo Lozano, Alberto Antonioni, Francesca Giardini, Rafael Wittek & Siegwart Lindenberg.
Work in progress.

Hierarchies and social norms: an experimental approach *Expected Mid 2022*
Pablo Lozano, Alberto Antonioni & Angel Sánchez.
Under review.

Cooperation, social norms, and hierarchical societies *Sep. 2020*
Pablo Lozano, Sergey Gavrilets & Angel Sánchez.
Scientific Reports 10, Article number: 15359.

Shall we turn off the media? Global information can destroy local cooperation in the one-dimensional ring *Jun. 2019*
B. Aydin, M. Biondo, D. Gupta, M. Ivaldi, F. Lipari, Pablo Lozano, F. Parino, E. Bilancini, L. Boncinelli, V. Capraro.
arXiv:1906.09133.

Cooperation on dynamic networks within an uncertain reputation environment *Jun. 2018*
Pablo Lozano, Alberto Antonioni, Marco Tomassini & Angel Sánchez.
Scientific Reports 8, Article number: 9093.

CONTRIBUTIONS

An experimental approach to hierarchies: high ranked individuals exploit low ranked ones but act altruistically *Oct. 2021*
Talk at 2021 Conference on Complex Systems (CCS).

Conference organizer: `AMETHYST: gAME THeorY in complex SysTems` *Oct. 2021*
Satellite at 2021 Conference on Complex Systems, Lyon (France)

SFI Complexity Interactive *Jun.-Jul 2021*
Three-week summer school at Santa Fe Institute, New Mexico (USA).

Reinforcement learning for cooperational dynamics in uncertain reputation networks *Jul. 2021*
Carlos Hernández Hernández bachelor's thesis. Grade: 10.
Co-supervised with Anxo Sánchez.

Experimental evidence suggests that high-ranked individuals exploit low-ranked ones but cooperate more within a competitive hierarchy *Jun. 2021*
Talk at IAREP-SABE conference.

Hierarchies and cooperation: an experiment *May 2021*
Talk at FisEs Joven 2021.

Cooperation, social norm internalization, and hierarchical societies *Dec. 2020*
Talk at 8^{th} Computational Social Science (CSS) Satellite event at the Conference on Complex Systems (CCS).

Hierarchies can arise spontaneously in egalitarian societies *Jul. 2019*
Poster at 5^{th} International Conference in Computational Social Science (IC^2S^2).

Complexity 72 Hours *Jun. 2019*
Part of Ennio Bilancini's group researching on social physics.
Derived from the three-day research event, there's a pre-print in arXiv.

SEEHB meeting *Apr. 2019*
Participant in the second edition of the Southern Eastern Evolutionary and Human Behavior meeting at Georgia State University, Georgia (Atlanta).

European Night of the Researchers *Nov. 2018*
Communication post: "Genre and technology: EU projects about Big Data."

Cine: críticas, ingresos y correlaciones *Dec. 2016*
Communication post at Periódico Expansión.

TEACHING

Second semester, course 20/21
Programming master class in experimental design for behavioral economics with oTree, Django, and Python. Aimed for Master in Economics Analysis students, part of the Economics PhD program.

Course 20/21
Linear Algebra for Telecommunications Engineering, and Industrial Engineering.

Course 19/20
Linear Algebra for Industrial Engineering, Telecommunications Engineering, and Data Science Engineering.

Course 17/18
Calculus in one variable for Energy Systems Engineering, and Electrical Engineering degrees.

LANGUAGES

Spanish: native, **English**: professional/academic, **French**: intermediate/fluent, **German**: basic, **Italian**: basic, **Russian**: basic (self-taught).

EXTRA-CURRICULAR

Webmaster for Mathematics Department website at Universidad Carlos III de Madrid (2019-2021).
Linux sysadmin for Mathematics Department at Universidad Carlos III de Madrid (2019-2021).
Ph.D. student representative at Universidad Carlos III de Madrid (2016-2020).
Multiple hackathon winner: *IBM hackaton* at IE (2017), *Tech-Fest* (2018).

TECHNICAL SKILLS

Programming	Python ($>$ 8 years), C ($>4y$), R ($>4y$), Scala ($\sim 2y$), MATLAB ($\sim 2y$), Typescript & Javascript ($>2y$).
Data analysis **& Machine Learning**	Numpy, Pandas, Plotly, Matplotlib and Seaborn, PostgreSQL, ML modeling with TensorFlow, Scikit, Keras, PyTorch.
Web development	Full-stack: Frontend with HTML, CSS/SASS, Javascript, Angular, and React; with Django, Flask backends.
Frameworks & practices	Experimental design and data analysis using oTree software for behavioral economics experiments. Functional programming and object-oriented programming ($>6y$). Agent-based modeling expertise: Python, MESA, NetLogo ($>6y$). Git, Scrum, Agile.
General software	Linux administration certification (Udemy UC-9ORNNZ0Q). Experienced in BSD, GNU/Linux, OSX, and Windows systems.
Writing & editing	Reviewer for Nature Scientific Reports, PLOS One, and IOP Science scientific journals. Stanford course *Writing in the Sciences* (Coursera W3NFWV7D7M9Y) *Software*: Latex, Scrively and Office suite.
Engineering and desing	Ansys, Catia and SolidEdge ($\sim 2y$).