

# Martín Soto

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## EDUCATION

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<b>M.Sc in Pure and Applied Logic</b> (90 ECTS) Average mark: 9.6. 1st out of c. 20 in year (on-going) Thesis title: <i>Formalizing complexity in bounded arithmetics</i> , supervised by Albert Atserias <i>Department of Mathematics and Computer Science, University of Barcelona</i>	2022-2024 (Expected)
<b>B.Sc in Mathematics</b> (258 ECTS) Average mark: 8.8. Graduated 1 year earlier than usual Thesis title: <i>The real numbers in inner models of set theory</i> , supervised by Joan Bagaria <i>Department of Mathematics and Computer Science, University of Barcelona</i>	2017-2022
<b>B.Sc in Physics</b> (234 ECTS) Average mark: 8.2. Graduated 1 year earlier than usual Thesis title: <i>Network-Iterated Prisoner's Dilemma</i> , supervised by Marián Boguñá <i>Department of Condensed Matter Physics, University of Barcelona</i>	2017-2022
<b>Professional Degree in Piano Interpretation</b> Average mark: 9. Graduated With Honors <i>Municipal Conservatory of Barcelona</i>	2017-2022

## WORK EXPERIENCE

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<b>Research Fellow</b>   <i>Center on Long-term Risk</i> Developing mathematical models for multi-agentic AI real-world deployment. Researching macro-strategic considerations for the prevention of costly AI-enabled conflict.	October 2023-Present
<b>Research Fellow</b>   <i>PIBBSS</i> Researched Decision Theory with Abram Demski ( <i>Machine Intelligence Research Institute</i> ). Developed new algorithms for Logically Updateless Decision-Making.	Summer 2023
<b>Machine Learning Theory Scholar</b>   <i>MATS</i> Mathematically analyzed safety guarantees on Large Language Model training. Researched the methodology of the AI Safety field through philosophy of science.	Winter 2022-Spring 2023

## RESEARCH

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### Publications

*Type-2 Feedback Computability*. Juan Aguilera, **Martín Soto**. *Computability*, Submitted for publication.

*Logically Updateless Decision-Making*. **Martín Soto**, Abram Demski, Alex Appel.  
*Technical report, PIBBSS Symposium 2023. Paper coming soon.*

*The real numbers in inner models of set theory*. **Martín Soto**.  
*Bachelor's Thesis, arXiv preprint (arXiv:2206.10754), and BSCM, Submitted for publication.*

*Network-Iterated Prisoner's Dilemma*. **Martín Soto**.  
*Bachelor's Thesis, arXiv preprint (arXiv:2211.16329).*

### Working papers

*The marginal impact of cooperation-inducing interventions*. **Martín Soto**, Tristan Cook.

$V_2^1$  proves  $IP=PSPACE$ . Albert Atserias, **Martín Soto**.

### Oral presentations

*Logic & Music*, in *Music and engineering 2022*, at the *Polytechnic University of Barcelona*.

*Open-source game theory*, in the *Barcelona Logic Seminar 2023*.

## AWARDS AND HONORS

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**Twice guest speaker for mathematical communication**, at the *Polytechnic University of Barcelona*

**Grant for independent AI safety research**

by the non-profits *AI Safety Support* and *Long-Term Future Fund*

**Grant for undergraduate studies** by the *Spanish Education Ministry* (2017-2022)

**Distinction in the University Entrance Exams** by the *Catalan Government*

for ranking amongst the top 20 students in Catalonia, with a grade of 95%

**Award to my baccalaureate's thesis on botanics** by the *Catalan Education Department*

## VOLUNTEERING

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**Co-founder of ESLA UB (Students for Animal Liberation)**

an officially recognized and budgeted student organization at the *University of Barcelona*

**Co-founder of the Molins de Rei Housing Initiative**

a municipal organization working towards the right to affordable housing

**Individual and group private tutoring**

on college Mathematics, Physics, Music Theory and Piano Interpretation

## SKILLS

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**Coding:** C, C++, Python,  $\text{\LaTeX}$ , Excel.

**Languages:** English (Cambridge C2 Proficiency), Catalan, Spanish (native).