Tomás S. R. Silva

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Introduction

I am a PhD student at the University of Campinas's Institute of Mathematics, Statistics and Scientific Computing. My research is on how Machine Learning and Artificial Intelligence techniques can be applied to solve problems in Complex Differential and Algebraic Geometry.

Education

PhD – Mathematics   Aug 2022 – (ongoing)

University of Campinas (Unicamp)   Campinas, São Paulo, Brazil

BS – Computer Engineering   Mar 2017 – Dec 2021

University of Campinas (Unicamp)   Campinas, São Paulo, Brazil

GPA: 3.5 (on 4.0 point scale)

Experience

Researching

Laboratory of Gauge Theory and Algebraic Geometry   Aug 2022 – (ongoing)

PhD student at the Gauge Theory and Algebraic Geometry Laboratory (GTAG) of the Unicamp's Institute of Mathematics, Statistics and Scientific Computing.

Security and Cryptography Laboratory   May 2018 – Dec 2021

Junior researcher at the Security and Cryptography Laboratory (LASCA) of the Unicamp's Computing Institute.

Teaching

Teacher Assistant

• TA – Analytic Geometry (Unicamp)   Aug 2023 – Dec 2023
• TA – Analytic Geometry (Unicamp)   Aug 2022 – Dec 2022

Volunteering

• Volunteer work as math tutor at   Jan 2020 – Jan 2021
Zilda Arns Popular Prep School

Research projects	**Geometry, Topology and Data Science**	Sep 2022 – (ongoing)

Supported by São Paulo Research Foundation – FAPESP

Advisor: Professor Henrique N. Sá Earp (Unicamp)

	Post-Quantum Cryptography	Nov 2020 – Nov 2021

Supported by Samsung R&D Institute Brazil (research grant)

Advisors: Professor Ricardo Dahab and Professor Julio Lopez (Unicamp)

	Characterizing Lattices and Codes for Cryptography	Nov 2019 – Oct 2020

Supported by São Paulo Research Foundation – FAPESP

Advisor: Professor Ricardo Dahab (Unicamp)

	Characterizing Lattices for Cryptography	Aug 2019 – Nov 2019

Supported by National Council for Scientific and Technological Development - CNPq

Advisor: Professor Ricardo Dahab (Unicamp)

	Characterizing Lattices for Cryptography	May 2018 – Apr 2019

Supported by São Paulo Research Foundation – FAPESP

Advisor: Professor Ricardo Dahab (Unicamp)

Preprints	**Machine-learning Sasakian and G2 topology on contact Calabi-Yau 7-manifolds**	2023

D. Aggarwal, Y-H. He, E. Heyes, E. Hirst, H.N. Sá Earp, T. Silva

arXiv:2310.03064

Honours & Awards	**Academic Distinction**	2022

Granted by Unicamp's Computing Institute to the graduate who obtained academic distinction during major.

	Best Undergraduate Research Project	2021

Granted by Unicamp's Computing Institute for the work *"Characterizing Lattices for Cryptography"*, which resulted in a substantial contribution to scientific and technological research in Computing that year.

	2nd best video talk at XV Theses, Dissertations and Scientific Initiation Workshop (WTD)	2020

Granted by WTD committee and Unicamp's Computing Institute for the talk *"A Study on Lattices and its parameters"*.

	Best poster presentation at XIV Theses, Dissertations and Scientific Initiation Workshop (WTD)	2019

Granted by WTD committee and Unicamp's Computing Institute for the poster *"Characterizing lattices for cryptography"*.

Further skills	**Languages**: Portuguese (native), English (advanced), Spanish (advanced), Hebrew (intermediary), French (beginner).	
	Programming: C, C++, Python, MATLAB, Sage, Julia, SQL, Haskell, Linux/Bash, ARM Assembly.	
	Document Creation: LaTeX, Microsoft Office Suite, Markdown.	

Events	**MATH-AmSud School on Geometry Group actions, symmetries, moduli and beyond**	2023
	EnCoRi - Encounter on Codes, Lattices and Information Theory	2023
	15th ALGA – Commutative Algebra and Algebraic Geometry	2023
	XVI Thesis, Dissertation and Scientific Initiation Workshop	2021
	XV Thesis, Dissertation and Scientific Initiation Workshop	2020
	I Journey of Scientific Initiation in Codes, Cryptography and Information Theory	2019
	Metric and Combinatorial Problems Related to Error Correcting Codes	2019
	XIV Thesis, Dissertation and Scientific Initiation Workshop	2019
	XXVII Congress of Scientific Initiation of Unicamp	2019
	I Latin American Week on Coding and Information	2018