Fábio Campos Castro Meneghetti

Mathematician | PhD Candidate

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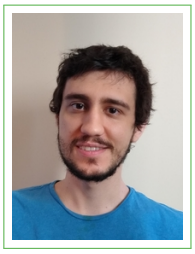

Education

2020–now **PhD in Mathematics**, *Institute of Mathematics, Statistics and Scientific Computing*, University of Campinas
Project: *Geometric methods applied to information sciences*
Supervisor: Sueli I. R. Costa

2018–2020 **MSc in Mathematics**, *Institute of Mathematics, Statistics and Scientific Computing*, University of Campinas
Project: *Lattices: a study of some relevant parameters for applications in cryptography*
Supervisor: Sueli I. R. Costa

2014–2018 **BSc in Mathematics**, *Institute of Mathematics, Statistics and Scientific Computing*, University of Campinas
Project: *A study on super-regular matrices and MDS codes on Poset metrics*
Advisor: Marcelo Firer, Co-advisor: Sara D. Cardell

Master thesis

title *Lattices: a study of some relevant parameters for applications in cryptography*

supervisors Sueli I. R. Costa

description In this work we study lattice parameters which are relevant for applications to the so called post-quantum cryptography, in important systems such as LWE and SIS. We analyze the smoothing parameter, particularly for the densest known lattices in lower dimensions, as well as ideal lattices and q-ary lattices.

Teaching

2022 **Graduate teaching assistant**, *Institute of Mathematics, Statistics and Scientific Computing*, University of Campinas
Course: MA211 – Calculus II

2019 **Graduate teaching assistant**, *Institute of Mathematics, Statistics and Scientific Computing*, University of Campinas
Course: MA141 – Analytic Geometry

2015 **Undergraduate teaching assistant**, *Institute of Mathematics, Statistics and Scientific Computing*, University of Campinas
Course: MS211 – Numerical Calculus

Courses

2020 **Neural Networks and Deep Learning**, *deeplearning.ai — Coursera*
Instrutor: Andrew Ng
Verification link: coursera.org/verify/E6JMDZGC822C

2020 **Improving Deep Neural Networks: Hyperparameter tuning, Regularization and Optimization**, *deeplearning.ai — Coursera*
Instrutor: Andrew Ng
Verification link: coursera.org/verify/3S7YVAX5744V

2019 **All Geometry in one Algebra?!**, *CNMAC 2019 Minicourse*
Instructor: Leo Dorst
Certificate link: fabiom.net/docs/cert/cnmac2019-minicourse.pdf

Events

2022 **41st International Conference on Bayesian and Maximum Entropy methods in Science and Engineering**, *Institut Henri Poincare*, Paris, France
Oral presentation and published work (Proceedings link)

2021 **5th International Conference on Geometric Science of Information**, *Sorbonne Université*, Paris, France

2021 **XL Brazilian Congress of Computational and Applied Mathematics**, *Virtual Event (Co-organized by Federal University of Mato Grosso do Sul)*, Brazil
(Certificate link)

2019 **XXXIX Brazilian Congress of Computational and Applied Mathematics**, *Federal University of Uberlândia*, Uberlândia, Brazil
Poster presentation (Resume link)

2019 **Latin American Week on Coding and Information**, *University of Campinas*, Campinas, Brazil
Oral and poster presentation (Certificate link)

2016 **XXIV Congresso de Iniciação Científica**, *University of Campinas*, Campinas, Brazil
Poster presentation (Resume link)

Interests

- Geometry of uniform vector quantization
- Information geometry of statistical manifolds, with particular focus to discrete distributions
- Measures of information and divergence between probability distributions
- Lattices and applications to information sciences

Languages

Portuguese — First language

English — TOEFL ITP Advanced Level C1 (2023) — *Certificate link*

Grants

2020–2024 **Doctorate Degree Scholarship**, *National Council for Scientific and Technological Development (CNPq)*, Brazil
Grant 141407/2020-4

2018–2020 **Master's Degree Scholarship**, *National Council for Scientific and Technological Development (CNPq)*, Brazil
Grant 131290/2018-5

2016–2017 **Junior Scientific Initiation Scholarship**, *São Paulo Research Foundation (FAPESP)*, Brazil
Grant 15/25812-3

Computer skills

Programming: Julia, Python (with numpy), Matlab & GNU Octave, Wolfram Mathematica, GAP, Shell script

Typesetting: LaTeX, HTML, CSS

Operating Sytems: Linux, macOS, Windows

Membership

2021 IEEE Information Theory Society *USA*

Others

2019 Organization of the Group of Logic and Mathematics (GLM) *Certificate link*

Publications

[1] F. C. C. Meneghetti, H. K. Miyamoto, and S. I. R. Costa, "**Information Properties of a Random Variable Decomposition through Lattices**," *Physical Sciences Forum*, 2022, (MaxEnt 2022). DOI: 10.3390/psf2022005019.

[2] H. K. Miyamoto, F. C. C. Meneghetti, and S. I. R. Costa, "**The Fisher-Rao Loss for Learning under Label Noise**," *Information Geometry*, 2022. DOI: 10.1007/s41884-022-00076-8.

[3] F. C. C. Meneghetti and S. I. R. Costa, "**Lattices: a study of some relevant parameters for applications in cryptography**," Master's Thesis, 2020. DOI: 10.47749/T/UNICAMP.2020.1128851.

[4] F. C. C. Meneghetti, "**Reticulados e Aplicações em Criptografia**," in *Proceeding Series of the Brazilian Society of Computational and Applied Mathematics*, (CNMAC 2019), 2019. [Online]. Available: https://proceedings.sbmac.org.br/sbmac/article/view/2975.

[5] F. C. C. Meneghetti, M. Firer, and S. D. Cardell, "**A study of Superregular Matrices and MDS Codes**," in *XXIV Congresso de Iniciação Científica da Unicamp*, Campinas, 2016. DOI: 10.19,146/pibic-2016-51367.