HENRIQUE K. MIYAMOTO

Laboratory of Signals and Systems (L2S) · CentraleSupélec · Université Paris-Saclay
Bât. Bréguet A5.03 · 3 rue Joliot Curie, 91190 Gif-sur-Yvette, France
E-mail: *henrique.miyamoto@centralesupelec.fr* · Webpage: *miyamotohk.github.io*

EDUCATION

Université Paris-Saclay, France *2022–present*
Ph.D. in Network, Information and Communication Sciences
Graduate School of Computer Science

University of Campinas (Unicamp), Brazil *2021–2022*
M.Sc. in Applied Mathematics
Dissertation: *Geometry, Statistics and Applications to Communications and Learning*

CentraleSupélec, France *2018–2021*
Diplôme d'Ingénieur
Major: Applied Mathematics

University of Campinas (Unicamp), Brazil *2015–2021*
B.Sc. in Electrical Engineering
Class rank: 1/74, GPA: 9.196/10

INTERESTS

Information and communication theory (MSC2020 94A and 94B).

RESEARCH EXPERIENCE

Nov. 2022–present, **Laboratory of Signals and Systems (L2S)**, France, *Ph.D. student*.

- Ph.D. project *From universal compression to universal communications*. Supervisor: Prof. Sheng Yang.

Aug. 2021–Sep. 2022, **IMECC, University of Campinas (Unicamp)**, Brazil, *master's student*.

- Master's project *Information geometry and applications*. Supervisor: Prof. Sueli I. R. Costa.

Apr. 2020–Oct. 2020, **Huawei Mathematical and Algorithmic Sciences Lab**, France, *intern*.

- Research internship project *Logic transfer learning between neural networks*. Supervisors: Dr. Ingmar Land, Dr. Apostolos Destounis and Prof. Jean-Claude Belfiore.

Jul. 2019–Apr. 2020, **Laboratory of Signals and Systems (L2S)**, France, *student researcher*.

- Research project *Connections between data compression and Bayesian inference*. Supervisor: Prof. Sheng Yang.

Apr. 2016–Aug. 2018, **IMECC, University of Campinas (Unicamp)**, Brazil, *student researcher*.

- Undergraduate research project *Construction of spherical codes by Hopf foliations*. Supervisors: Prof. Henrique N. Sá Earp and Prof. Sueli I. R. Costa.

TEACHING EXPERIENCE

2022–present, **CentraleSupélec**, France, *graduate teaching assistant*.

- Tutorials: Signal Processing (2022–2023).
- Lab sessions: Communication Theory (2022–2023), Multiuser Access and MIMO Communications (2022–2023), Digital Signal Processing (2023–2024).

- Project supervision: M2 Advanced Wireless Communications (2022–2023).

2021–2022, **University of Campinas (Unicamp)**, Brazil, *undergraduate/graduate teaching assistant*.

- EE881–Principles of Communications I (1S2021, 1S2022).

PREPRINTS

[Z1] H. K. Miyamoto, F. C. C. Meneghetti and S. I. R. Costa, "On closed-form expressions for the Fisher–Rao distance", *arXiv*, 2023. doi: 10.48550/arXiv.2304.14885.

JOURNAL PAPERS

[J3] H. K. Miyamoto, F. C. C. Meneghetti and S. I. R. Costa, "The Fisher-Rao loss for learning under label noise", *Information Geometry*, vol. 6, pp. 107–126, Jun. 2023. doi: 10.1007/s41884-022-00076-8.

[J2] H. K. Miyamoto and S. Yang, "Context-tree-based lossy compression and its application to CSI representation", *IEEE Transactions on Communications*, vol. 70, no. 7, pp. 4417–4428, July 2022. doi: 10.1109/TCOMM.2022.3173002.

[J1] H. K. Miyamoto, S. I. R. Costa and H. N. Sá Earp, "Constructive spherical codes by Hopf foliations", *IEEE Transactions on Information Theory*, vol. 67, no. 12, pp. 7925–7939, Dec. 2021. doi: 10.1109/TIT.2021.3114094.

CONFERENCE PAPERS

[C6] F. C. C. Meneghetti, H. K. Miyamoto, S. I. R. Costa and M. H. M. Costa, "Revisiting lattice tiling decomposition and dithered quantisation", *Geometric Science of Information (GSI)*, Saint-Malo, 2023. In: F. Nielsen and F. Barbaresco (eds.), *GSI 2023*, LNCS 14071, pp. 318–327, Springer, 2023. doi: 10.1007/978-3-031-38271-0_319.

[C5] F. C. C. Meneghetti, H. K. Miyamoto and S. I. R. Costa, "Information properties of a random variable decomposition through lattices", *41st International Conference on Bayesian and Maximum Entropy Methods in Science and Engineering (MaxEnt)*, Paris, 2022. In: *Physical Sciences Forum*, vol. 5, no. 1, 2022. doi: 10.3390/psf2022005019.

[C4] H. K. Miyamoto and S. Yang, "A CSI compression scheme using context trees", *International Zurich Seminar on Information and Communication (IZS)*, pp. 24–28, Zurich, 2022. doi: 10.3929/ethz-b-000535273.

[C3] H. K. Miyamoto, H. N. Sá Earp and S. I. R. Costa, "Constructive spherical codes in 2^k dimensions", *IEEE International Symposium on Information Theory (ISIT)*, pp. 1612–1616, Paris, 2019. doi: 10.1109/ISIT.2019.8849464.

[C2] H. K. Miyamoto, H. N. Sá Earp and S. I. R. Costa, "Construção de códigos esféricos usando a fibração de Hopf", *Jornada Nacional de Iniciação Científica (JNIC), 70ª Reunião Anual da SBPC*, Maceió, 2018 (in Portuguese). ISSN: 2176-1221.

[C1] H. K. Miyamoto, H. N. Sá Earp and S. I. R. Costa, "Construction of spherical codes using the Hopf fibration", *XXV Congresso de Iniciação Científica da Unicamp*, Campinas, 2017. doi: 10.19146/pibic-2017-78809.

PATENT APPLICATIONS

[P1] I. Land, H. K. Miyamoto, A. Destounis and J.-C. Belfiore, "Transfer Learning between Neural Networks", *WIPO Patent Application*, Publication No. WO202207097, Application No. PCT/EP2021/058462, 2022.

PRESENTATIONS

Geometric Science of Information (GSI), *oral presentation*, Saint-Malo, France, 2023.

IEEE European School on Information Theory (ESIT), *poster presentation*, Bristol, UK, 2023.

Journée des Doctorants en STIC du Plateau de Saclay, *poster presentation*, Palaiseau, France, 2023.

International Conference on Information Geometry for Data Science (IG4DS), *oral presentation*, Hamburg, Germany (virtual), 2022.

IEEE International Symposium on Information Theory (ISIT), *oral presentation*, Paris, France, 2019.

International Congress of Mathematicians (ICM), *oral presentation*, Rio de Janeiro, Brazil, 2018.

Jornada Nacional de Iniciação Científica (JNIC), *poster presentation*, Maceió, Brazil, 2018.

Latin American Week on Coding and Information (LAWCI), *poster presentation*, Campinas, Brazil, 2018.

Jornada de Matemática, Matemática Aplicada e Educação Matemática (J3M), *oral presentation*, Curitiba, Brazil, 2017.

XXV Congresso de Iniciação Científica da Unicamp, *poster presentation*, Campinas, Brazil, 2017.

AWARDS

1st place in **Clóvis Caesar Gonzaga Award** for best master's dissertation of the year in applied and computational mathematics, SBMAC, 2023.

Merit Award in Jornada Nacional de Iniciação Científica (JNIC), SBPC, 2018.

2nd place in **Beatriz Neves Award** for undergraduate research, SBMAC, 2018.

Academic Excellence in Undergraduate Work in Jornada de Matemática, Matemática Aplicada e Educação Matemática (J3M), category Geometry and Topology, PET Matemática/UFPR, 2017.

Scientific Merit in XXV Congresso de Iniciação Científica da Unicamp, PRP/Unicamp, 2017.

Merit Award for the essay produced in Unicamp's entrance exam, COMVEST/Unicamp, 2015.

SCHOLARSHIPS

2021–2022, *Master's Degree Scholarship*, São Paulo Research Foundation (FAPESP), 2021/04516-8.

2018–2020, *Eiffel Excellence Scholarship*, French Ministry of Europe and Foreign Affairs.

2016–2018, *Scientific Initiation Scholarship*, São Paulo Research Foundation (FAPESP), 2016/05126-0.

2013–2013, *Junior Scientific Initiation Scholarship*, Brazilian National Council for Scientific and Technological Development (CNPq).

SERVICE

2023, *reviewer*, Simpósio Brasileiro de Telecomunicações e Processamento de Sinais (SBrT).

2023, *reviewer*, IEEE International Symposium on Information Theory (ISIT).

2022, *reviewer*, Journal of Communication and Information Systems (JCIS).

2018–2019, *student representative*, Department of Communications (DECOM), FEEC, Unicamp.

MEMBERSHIP

2020–present, *student member*, Brazilian Society for the Advancement of Science (SBPC).

2018–present, *member*, Brazilian Society for Applied and Computational Mathematics (SBMAC).

2018–present, *graduate student member*, Institute of Electrical and Electronics Engineers (IEEE).

- Information Theory Society, Communications Society, Signal Processing Society.

LANGUAGES

Portuguese	native
English	advanced (Cambridge CAE; TOEFL ITP: 660/677)
French	advanced (TFI: 975/990)
Spanish	intermediate
Japanese	elementary (JLPT N4)

EXTRACURRICULAR ACTIVITIES

2017–2018, *member*, Bernardo Sayão Academic Centre (CABS), Unicamp.

2015–2018, *member and coordinator*, Group of Studies in Robotics (GER), Unicamp.

Last updated: October 1, 2023