Gonçalo Mordido

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Experience

2022 – Now | **Mila - Quebec AI Institute** (Canada)
Postdoctoral Fellow
- Efficient training and inference methods for deep neural networks.
- Mentored a total of 7 Ph.D. students, 5 M.Sc. students, and 2 interns.
- Awarded FRQ's *postdoctoral merit scholarship*.
- *Advisors*: Prof. Sarath Chandar, Prof. François Leduc-Primeau

2017 – 2021 | **Hasso Plattner Institute** (Potsdam, Germany)
Research Associate & Ph.D. Candidate (4 years)
- Diversification, compression, and evaluation methods for generative models.
- Mentored 7 M.Sc. students and 1 intern.
- Graduated with *great distinction*.
- *Advisor*: Prof. Christoph Meinel

Fall 2020 | **NVIDIA** (Germany)
Research Intern (4 months)
- Compression of depth-wise separable convolutions in deep neural networks.
- Awarded a *recognition award* for "exceptional and outstanding contributions".
- *Host*: Dr. Alexander Keller

Fall 2018 | **NVIDIA** (Germany)
Research Intern (6 months)
- Compression of deep neural networks using Monte Carlo methods.
- *Host*: Dr. Alexander Keller

Education

2017 – 2021 | **Hasso Plattner Institute** (Germany)
Ph.D. in Artificial Intelligence
- Grade: *Magna cum laude*
- Thesis: Diversification, compression, and evaluation methods for generative adversarial networks.

2012 – 2017 | **NOVA University Lisbon** (Portugal)
B. Sc. and M.Sc. in Computer Science & Engineering
- Grades: *A*
- Master's thesis: Automated organization and quality analysis of user-generated audio content.

Awards & Recognition

2023 | **Postdoctoral merit scholarship**. *Fonds de Recherche du Québec*

2021 | **Honors Ph.D. graduation**. Hasso Plattner Institute

2020 | **Recognition award** for "exceptional and outstanding contributions". NVIDIA

2015 | **Best final year B.Sc. project**. NOVA University Lisbon

2015 | **1st place hackathon winner**. NOVA University Lisbon

Publications

2023 **Deep learning on a healthy data diet: Finding important examples for fairness and performance.**
A. Zayed, P. Parthasarathi, G. Mordido, H. Palangi, S. Shabanian, S. Chandar. *AAAI 2023*

2022 **Sharpness-aware training for accurate inference on noisy DNN accelerators.**
G. Mordido, S. Chandar, F. Leduc-Primeau. *CoLLAs 2022 workshop & EIW 2022*
Improving meta-learning generalization with activation-based early-stopping.
S. Guiroy, C. Pal, G. Mordido, S. Chandar. *CoLLAs 2022*
MemSE: Fast MSE prediction for noisy memristor-based DNN accelerators.
J. Kern, S. Henwood, G. Mordido, E. Dupraz, A. Aissa-El-Bye, Y. Savaria, F. Leduc-Primeau. *AICAS 2022*
Tiny CNN for seizure prediction in wearable biomedical devices.
Y. Zhang, Y. Savaria, S. Zhao, G. Mordido, M. Sawan, F. Leduc-Primeau. *EMBC 2022*

2021 **Compressing 1D time-channel separable convolutions using sparse random ternary matrices.**
G. Mordido, M. Keirsbilck, A. Keller. *INTERSPEECH 2021*
Assessing image and text generation with topological analysis and fuzzy logic.
G. Mordido*, J. Niedermeier*, C. Meinel. *WACV 2021*

2020 **Mark-Evaluate: Assessing language generation using population estimation methods**.
G. Mordido, C. Meinel. *COLING 2020*
Best student forcing: A simple training mechanism in adversarial language generation.
J. Sauder*, T. Hu*, X. Che, G. Mordido, H. Yang and C. Meinel. *LREC 2020*
Monte Carlo gradient quantization.
G. Mordido, M. Keirsbilck, A. Keller. *CVPR 2020 EDLCV workshop*
Improving the evaluation of generative models with fuzzy logic.
J. Niedermeier*, G. Mordido* and C. Meinel. *AAAI 2020 Meta-Eval workshop*
microbatchGAN: Stimulating diversity with multi-adversarial discrimination.
G. Mordido, H. Yang, and C. Meinel. *WACV 2020*

2019 **Instant quantization of neural networks using Monte Carlo methods.**
G. Mordido*, M. Keirsbilck*, A. Keller. *NeurIPS 2019 EMC2 workshop*

2018 **Pseudo-ground-truth for adversarial text generation using reinforcement learning**.
J. Sauder, X. Che, G. Mordido, H. Yang and C. Meinel. *NeurIPS 2018 Deep RL workshop*
Dropout-GAN: Learning from a dynamic ensemble of discriminators.
G. Mordido, H. Yang, and C. Meinel. *KDD 2018 Deep Learning Day*

2017 **Automatic organisation, segmentation, and filtering of user-generated audio content**.
G. Mordido, J. Magalhaes, and S. Cavaco. *MMSP 2017*
Automatic organisation and quality analysis of user-generated content with audio fingerprinting.
G. Mordido, J. Magalhaes, and S. Cavaco. *EUSIPCO 2017*

Patents

2022 **Incorporating a ternary matrix into a neural network**.
A. Keller, G. Mordido, M. Van keirsbilck. *US Patent*

2019 **Representing a neural net utilizing paths within the network to improve a performance of the neural net**.
A. Keller, G. Mordido, N. Gamboa, M. Van keirsbilck. *US Patent*

Submissions (under review)

AAAI'24 | **Fairness-aware structured pruning in Transformers.**
A. Zayed, G. Mordido, S. Shabanian, I. Baldini, S. Chandar.
Sharpness-aware minimization scaled by outlier normalization for improving DNN robustness.
G. Mordido*, S. Henwood*, S. Chandar, F. Leduc-Primeau

EACL'24 | **Should we attend more or less? Modulating attention for fairness.**
A. Zayed, G. Mordido, S. Shabanian, S. Chandar.

ICLR'24 | **Lookbehind optimizer: k steps back, 1 step forward.**
G. Mordido*, P. Malviya*, A. Baratin, S. Chandar.
Promoting exploration in memory-augmented Adam using critical momenta.
P. Malviya, G. Mordido, A. Baratin, R. Harikandeh, J. Huang, S. Lacoste-Julien, R. Pascanu, S. Chandar.

TMLR | **Training DNNs resilient to adversarial and random bit-flips by learning quantization ranges.**
K. Chitsaz, G. Mordido, J. David, F. Leduc-Primeau.

IEEE TSP | **Fast and accurate output error estimation for memristor-based deep neural networks.**
J. Kern, S. Henwood, G. Mordido, E. Dupraz, A. Bey, Y. Savaria, F. Leduc-Primeau.

Invited Talks

2023 | **Lookbehind optimizer: k steps back, 1 step forward**. *Mila*

2022 | **Sharpness-aware training for accurate inference on noisy DNN accelerators**. *Mila*

2021 | **Compression methods for neural networks**. *MIT and University of British Columbia*
1x1-convolutions by random ternary matrices. *GPU Technology Conference (GTC)*
Towards sustainable digital technologies. *OpenHPI*

2017 | **Dialogue generation with generative adversarial networks**. *SAP TechEd*

Selected Activities

2022 – Now | **Organizer**. *Hardware-Aware Efficient Training* (HAET) workshop at ICML 2022, *1st Conference on Lifelong Learning Agents* (CoLLAs 2022), *Chandar Research Lab* (CRL) 2022 and 2023 symposium at Mila

2017 – Now | **Reviewer**. *EMNLP 2023, ACL 2023, EMNLP 2021, EACL 2021, CVPR 2021, Knowledge-Based Systems (2021), ACL 2020, EMNLP 2020, WACV 2020, ICIS 2019, Neural Computing and Applications (2019),*

Selected Skills

Python (PyTorch, TensorFlow, Hugging Face, NumPy), C++

Teaching

2022 **Machine Learning** (graduate course, Polytechnique Montreal)
Lead Teaching Assistant
Neural networks: Architectures and applications (graduate course, Polytechnique Montreal)
Guest Lecturer & Assignment Editor

2020 **Practical applications of deep learning** (graduate course, Hasso Plattner Institute)
Teaching Assistant

2019 **Machine intelligence with deep learning** (graduate course, Hasso Plattner Institute)
Teaching Assistant

2018 **Competitive problem solving with deep learning** (graduate course, Hasso Plattner Institute)
Teaching Assistant

2017 **Machine intelligence with deep learning** (graduate course, Hasso Plattner Institute)
Teaching Assistant
Natural language generation using GANs (graduate project, Hasso Plattner Institute)
Teaching Assistant