Jose Javier Gonzalez Ortiz Curriculum Vitae

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Summary

I am a final year PhD Student at MIT CSAIL working in efficient deep learning methods. During my PhD, I have worked on several research projects in this area, requiring both theoretical contributions, and extensive empirical rigor. Relevant projects include: few-shot in-context vision models, amortized learning with hypernetworks, asynchronous large-scale distributed training, and neural network pruning methods.

Education

Massachusetts Institute of Technology 2019-2023

Ph.D. Computer Science
Advisor: John Guttag and Adrian Dalca
Thesis: Learning Many Models at Once via Amortized and In-Context Learning

Massachusetts Institute of Technology 2017-2019

M.Sc. Computer Science (GPA: 5.00/5.00)
Thesis: Learning from Few Subjects with Large Amounts of Voice Monitoring Data
Key Courses: Machine Learning, Computer Vision, Distributed Systems, Computer Systems Security

Universidad Pontificia Comillas 2012-2016

B.Sc. Telematics Engineering, (GPA: 9.95/10.00, *Summa Cum Laude*)
Thesis: A Simple Power Analysis Attack on the TwoFish Key Schedule

University of Michigan, Ann Arbor 2015-2016

Exchange program in Computer Science (GPA: 3.94/4.00)
Key Courses: Cryptography, Parallel Computing, Entrepreneurship, Information Retrieval

Research and Work Experience

Microsoft Research, Cambridge, Research Intern 2022

- Studied deep learning model mixing dynamics informed by optimal transport dataset distance heuristics.
- Performed extensive experiments on how model weight interpolation can outperform finetuning for vision classification tasks.

Facebook AI Research, Montreal, Research Intern 2020

- Led a project analyzing distributed training of DNNs, with an emphasis on improving generalization performance & reducing communication.
- Carried out experiments to identify the synchronization trade-off when training networks in a data parallel regime over many nodes.

CERN Openlab, Geneva, Software Engineering Intern 2017

- Developed C++ software to store and access genomic data using ROOT big data framework.
- Benchmarked the tools using Python and performed statistical analysis over the parameter space, improving read speed by over 15 times.

University of Michigan, Ann Arbor, Research Assistant 2016

- Developed a machine learning classifier for heart sound classification algorithm based on temporal alignment techniques, MFCC frequency analysis and support vector machines.

Institute for Research in Technology, Madrid, Research Assistant 2014-2015

- Development of applications with Google Glass for people with motor disabilities.

Publications

(∗) equal contribution

Under Review

Jose Javier Gonzalez Ortiz*, Victor Ion Butoi*, Tianyu Ma, Mert R. Sabuncu, John Guttag, and Adrian V. Dalca
"UniverSeg: Universal Medical Image Segmentation"
Preprint. arXiv:2304.02643 (2023).

Jose Javier Gonzalez Ortiz, John Guttag, and Adrian Dalca
"Non-Proportional Parametrizations for Stable Hypernetwork Learning"
Preprint. arXiv:2304.07645 (2023).

Jose Javier Gonzalez Ortiz, John Guttag, and Adrian Dalca
"Amortized Learning of Dynamic Feature Scaling for Image Segmentation"
Preprint. arXiv:2304.05448 (2023).

Conferences and Peer Reviewed Workshops

Jose Javier Gonzalez Ortiz*, Kathleen M Lewis*, Divya M Shanmugam*, Agnieszka Kurant, and John Guttag
"At the Intersection of Conceptual Art and Deep Learning: The End of Signature"
NeurIPS 2022 WBRC Workshop (2022).

Jose Javier Gonzalez Ortiz, Jonathan Frankle, Mike Rabbat, Ari Morcos, and Nicolas Ballas
"Trade-Offs of Local SGD at Scale: An Empirical Study"
NeurIPS 2020 Optimization for Machine Learning Workshop (2020).

Jose Javier Gonzalez Ortiz*, Davis Blalock*, Jonatham Frankle, and John Guttag
"What is the State of Neural Network Pruning?"
Third Conference on Machine Learning and Systems (2020).

Jose Javier Gonzalez Ortiz, Davis Blalock, and John Guttag
"Standardizing Evaluation of Neural Network Pruning"
AI Systems Workshop at SOSP 2019 (2019).

Jose Javier Gonzalez Ortiz, Daryush D Mehta, Jarrad H Van Stan, Robert Hillman, John V Guttag, and Marzyeh Ghassemi
"Learning from Few Subjects with Large Amounts of Voice Monitoring Data"
Machine Learning for Healthcare Conference (2019).

Ava Soleimany, Harini Suresh, **Jose Javier Gonzalez Ortiz**, Divya Shanmugam, Nil Gural, John Guttag, and Sangeeta Bhatia
"Image Segmentation of Liver Stage Malaria Infection"
ICML 2019 Workshop on Computational Biology. 2019.

Jose Javier Gonzalez Ortiz, Cheng Perng Phoo, and Jenna Wiens
"Heart Sound Classification based on Temporal Alignment Techniques"
Computing in Cardiology Conference 2016 (CinC). IEEE. 2016, pp. 589–592.

Theses

Jose Javier Gonzalez Ortiz
"Learning from Few Subjects with Large Amounts of Voice Monitoring Data"
S.M. Thesis. Massachusetts Institute of Technology, June 2019.

Jose Javier Gonzalez Ortiz
"A simple power analysis attack on the TwoFish key schedule"
Bachelor Thesis. Universidad Pontificia Comillas ICAI, July 2016.

Awards

Qualcomm Innovation Fellowship	2018
la Caixa Foundation Fellowship	2017
Fulbright Scholarship (*declined in favor of la Caixa*)	2017
Undergraduate Excellence Award U.P.Comillas ICAI	2016
Excellence Scholarship for County of Madrid	2012-2016
International Mathematics Competition, Bronze Medal	2013

Academic Service

Teaching

Teaching Assistant, 6.5840 Distributed systems (previously 6.824), MIT	2021
Co-organizer, instructor, The Missing Semester of Your CS Education, MIT	2020
Co-organizer, instructor, 6.HT: Hacker Tools, MIT	2019
Teaching Assistant, 6.S191: Introduction to Deep Learning, MIT	2018

Reviewer

Neural Information Processing Systems (NeurIPS)	2022
International Conference on Learning Representations (ICLR)	2022
Neural Information Processing Systems (NeurIPS)	2021
International Conference on Machine Learning (ICML)	2021
Neural Information Processing Systems (NeurIPS)	2020
Machine Learning for Healthcare (MLHC)	2020

Invited Talks

Microsoft Research New England	Amortized Learning with Hypernetworks	2022
MGH & HMS	Amortized Learning of Dynamic Feature Scaling	2022
Cornell Sablab	Amortized Learning of Dynamic Feature Scaling	2022
MosaicML	What is the State of Neural Network Pruning?	2021
Sparse NN Workshop	What is the State of Neural Network Pruning?	2021
Facebook AI Montreal	Trade-Offs of Local SGD at Scale	2020
Universidad Pontificia Comillas	Standardizing Evaluation of Neural Network Pruning	2020
Google Research	What is the State of Neural Network Pruning?	2020
Facebook AI Montreal	What is the State of Neural Network Pruning?	2020
Qualcomm Research	Standardizing Evaluation of Neural Network Pruning	2019

Skills

Deep Learning: PyTorch, Transformers, Diffusers, Keras
Computer Vision: OpenCV, Kornia, Torchvision, Lightly
Data Science: NumPy, SciPy, Pandas, sklearn, seaborn
Software: Git, Python, C, Go, SQL
DevOps: Docker, Ansible
Databases: Redis, SQLite, LMDB
Web: HTML, CSS, JS
Languages: Spanish (native), English (fluent)