

Jose Javier Gonzalez Ortiz

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SUMMARY

I am a final year PhD Student at MIT CSAIL, working on developing efficient deep learning methods. Throughout my doctoral studies, I have worked on several research projects in this area, which demanded both theoretical contributions and extensive empirical rigor. Notably, I have worked on projects such as 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 (Expected)

Ph.D. Computer Science

Advised by Prof. John Guttag and Prof. Adrian Dalca

Thesis Topic: Development of more general deep learning models trained to solve multiple problems simultaneously through strategies such as in-context learning and amortized learning with hypernetworks.

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)

Thesis: A Simple Power Analysis Attack on the TwoFish Key Schedule

Key Courses: Linear Algebra, Operations Research, Computer Architecture, Parallel Computing

Exchange program: University of Michigan, Computer Science (GPA: 3.94/4.00)

RESEARCH AND WORK EXPERIENCE

Microsoft Research, Cambridge, Research Intern 2022

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

Facebook AI Research, Montreal, Research Intern 2020

- Led a project analyzing distributed training of deep neural networks, with an emphasis on improving generalization performance & reducing communication costs by utilizing post-local SGD.
- Carried out experiments to identify the optimal synchronization trade-off when training ResNet models on ImageNet in a distributed data parallel regime over many nodes.

CERN Openlab, Geneva, Software Engineering Intern 2017

- Benchmarked the ROOT data framework for genomic data storage, improving read speed by over 15x.

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.

AWARDS

Qualcomm Innovation Fellowship 2018

la Caixa Foundation Fellowship 2017

Undergraduate Excellence Award Universidad Pontificia Comillas (awarded to top 3% of students) 2016

County of Madrid Scholarship for Excellent Academic Performance 2012, 2013, 2014, 2015

International Mathematics Competition, Bronze Medal – Blagoevgrad, Bulgaria 2013

PUBLICATIONS

(*) equal contribution

IN SUBMISSION

Jose Javier Gonzalez Ortiz, John Gutttag, and Adrian Dalca
“Magnitude Invariant Parametrizations Improve Hypernetwork Learning”
Preprint. arXiv:2304.07645 (2023).

Jose Javier Gonzalez Ortiz, John Gutttag, and Adrian Dalca
“Scale-Space Hypernetworks for Efficient Biomedical Imaging”
Preprint. arXiv:2304.05448 (2023).

CONFERENCES AND PEER REVIEWED WORKSHOPS

Jose Javier Gonzalez Ortiz*, Victor Ion Butoi*, Tianyu Ma, Mert R. Sabuncu, John Gutttag, and Adrian V. Dalca
“UniverSeg: Universal Medical Image Segmentation”
International Conference on Computer Vision – ICCV 2023 (2023).

Jose Javier Gonzalez Ortiz*, Kathleen M Lewis*, Divya M Shanmugam*, Agnieszka Kurant, and John Gutttag
“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 Gutttag
“What is the State of Neural Network Pruning?”
Third Conference on Machine Learning and Systems (2020).

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

Jose Javier Gonzalez Ortiz, Daryush Mehta, Jarrad Van Stan, Robert Hillman, John Gutttag, 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 Gutttag, 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”
M.Sc. 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.

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

Nvidia Research – Universal Medical Image Segmentation	2023
Path AI – Universal Medical Image Segmentation	2023
Google Brain – Universal Medical Image Segmentation	2023
Samaya AI – Universal Medical Image Segmentation	2023
Microsoft Research New England – Amortized Learning with Hypernetworks	2022
MGH & HMS – Scale-Space Hypernetworks	2022
Cornell Sablab – Scale-Space Hypernetworks	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

TECHNICAL SKILLS

Deep Learning : PyTorch, Keras, Transformers, Diffusers
Computer Vision : OpenCV, Torchvision, Skimage, Kornia
Data Science : NumPy, SciPy, Pandas, sklearn, seaborn
Software : Git, Python, C, Go, SQL
DevOps : Docker, Ansible
Databases : Redis, SQLite, LMDB