Guillermo Ortiz-Jiménez

guillermo.ortizjimenez@epfl.ch
es.linkedin.com/in/gortizji/en
gortizji
@gortizji
gortizji.github.io
Spain

About me

I am a **PhD student at EPFL** working under the supervision of Prof. Pascal Frossard. My current research focuses on **understanding deep learning** by studying the complex interactions between datasets, architectures and optimization. My work provides a **novel framework** to design more reliable neural networks that are **robust to adversarial perturbations** and all sorts of **natural distribution shifts**.

Education

Nov 2018 - (Nov 2023) **PhD. Electrical Engineering**
Ecole Polytechnique Fédérale de Lausanne, EPFL (*Switzerland*)

Sep 2016 - Aug 2018 **MSc. Electrical Engineering** (***Best graduate***)
Delft University of Technology, TU Delft (*Netherlands*)

Sep 2011 - Jun 2015 **BSc. Telecommunications Engineering** (***Best graduate***)
Universidad Politécnica de Madrid, UPM (*Spain*)

Research experience

Doctoral assistant at EPFL

Nov 2018 - (Nov 2023) *Lausanne, Switzerland*

Studying the **inductive bias** of deep learning and how it affects its generalization and robustness properties. My research has already provided insights to improve **adversarial defenses**, **out-of-distribution generalization**, and to understand the **role of architecture in deep learning**.

Master thesis at TU Delft

Nov 2017 - Aug 2018 *Delft, Netherlands*

Introduced a novel algorithm based on submodular optimization to sample tensor data and reconstruct it with near-optimal guarantees. Applications to point cloud compression and recommender systems.

Research Intern at Philips Healthcare Research

Jul 2017 - Oct 2017 *Hamburg, Germany*

Developed self-supervised deep learning algorithms for representation learning and medical image reconstruction of fetal ultrasounds and CT scans.

Research Assistant at Universidad Politécnica de Madrid

Jul 2015 - Jul 2016 *Madrid, Spain*

Pioneered the use of 3D rendering techniques from computer graphics to simulate radar scattering from the human skin at the THz band.

Software skills

DL frameworks: PyTorch, Tensorflow, JAX.
Languages: Python, C, Java, Matlab, Javascript.
Misc: Git, Linux, LaTeX, Illustrator, InDesign.

Languages

Spanish: ●●●●●
German: ●●●○○
Dutch: ●○○○○
English: ●●●●◐
French: ●●●○○

Awards

2018 **National Award for Excellence in Academic Performance** by Government of Spain

2018 **Best graduate** by TU Delft (~1000 students)

2016 **"La Caixa" Postgraduate Fellowship** by La Caixa Foundation (~45,000$)

2015 **Best graduate** by Universidad Politecnica de Madrid (~800 students)

Other competitive grants (~18,000$)

Featured publications

GOJ, A. Modas, S.M. Moosavi-Dezfooli and P. Frossard. **"Neural Anisotropy Directions"**. In *Advances of Neural Information Processing Systems (NeurIPS 2020)*, December 2020

GOJ, A. Modas, S.M. Moosavi-Dezfooli and P. Frossard. **"Hold me tight! Influence of discriminative features on deep network boundaries"**. In *Advances of Neural Information Processing Systems (NeurIPS 2020)*, December 2020

GOJ, A. Modas, S.M. Moosavi-Dezfooli and P. Frossard. **"Optimism in the face of adversity: Understanding and improving deep learning through adversarial robustness"**. *Proceedings of the IEEE (Under review)*, October 2020

GOJ, A. Modas, S.M. Moosavi-Dezfooli and P. Frossard. **"Redundant features can hurt robustness to distribution shifts"**. In *Uncertainty & Robustness in Deep Learning Workshop (ICML 2020)*, July 2020

C. Vignac, **GOJ**, and P. Frossard. **"On the choice of graph neural network architectures"**. In *IEEE International Conference in Audio, Speech and Signal Processing (ICASSP 2020)*, May 2020

GOJ, M. El Gheche, E. Simou and P. Frossard. "**Forward-backward splitting for optimal transport based problems"**. In *IEEE International Conference in Audio, Speech and Signal Processing (ICASSP 2020)*, May 2020

GOJ, M. El Gheche, E. Simou and P. Frossard. **"CDOT: Continuous domain adaptation using optimal transport"**. In *Optimal Transport Workshop (NeurIPS 2019)*, December 2019

GOJ, M. Coutino, S.P. Chepuri and G. Leus. **"Sparse sampling for inverse problems with tensors"**. *IEEE Transactions on Signal Processing*, June 2019

Student supervision

Itamar Salazar Franco (Graduate intern), *Adversarial Robustness and NADs*, Fall 2020

Mariam Hakobyam (Semester project), *On the role of architecture on NADs*, Fall 2020

Maja Stamenkovic (Semester project), *Transferring inductive biases*, Fall 2020

Johannes Ruether (MSc. Thesis), *On the geometry of adversarial robustness*, Spring 2020

Julien Heitmann (Semester project), *Weight subspace dynamics*, Fall 2019

Manuel Faysse (Semester project), *Time-varying graph neural networks*, Fall 2019

Teaching experience

Machine learning (MSc. course)

A network tour of data science (MSc. course)

Computational optimal transport (PhD. course)

Personal interests

Climbing, running, hiking, skiing, cooking and photography.