Luis A. Ortega

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Experience

Visitor Researcher, *University of Cambridge* (Ongoing research on Uncertainty Estimation on Large Language Models with José Miguel Hernández Lobato.) 09/2023 – Present

Research Personnel, *Autonomous University of Madrid* (Ph.D. Student granted with FPI-UAM Scholarship with Daniel Hernández Lobato.) 12/2021 – Present

Research Assistant, *University of Almería* (Worked with Andrés R. Masegosa studing the effect of diversity on Deep Neural Network ensembles.) 02/2021 – 12/2021

Publications

1. **Deep Variational Implicit Processes** [PDF] [Code]
   Luis A. Ortega, Simón Rodríguez-Santana and Daniel Hernández-Lobato
   International Conference on Learning Representations (ICLR), 2023

2. **Diversity and Generalization in Neural Network Ensembles** [PDF] [Code]
   Luis A. Ortega, Rafael Cabañas and Andrés R. Masegosa
   Artificial Intelligence and Statistics (AISTATS), 2022

3. **Correcting Model Bias with Sparse Implicit Processes** [PDF] [Code]
   Simón Rodríguez-Santana, **Luis A. Ortega**, Daniel Hernández-Lobato and Bryan Zaldívar
   ICML Workshop "Beyond Bayes: Paths Towards Universal Reasoning Systems", 2022

Ongoing Research

Variational Linearized Laplace Approximation for Bayesian Deep Learning [Draft]
Uncertainty estimation on pre-trained Deep Learning models using Variational Inference and LLA.

Understanding Generalization in the Interpolation Regime using the Rate Function [Draft]
Explaining deep learning techniques (weight-decay, SGD, overparameterization, data-augmentation) using Large Deviation Theory

If there is no underfitting, there is no Cold Posterior Effect [Draft]
Misspecification leads to Cold Posterior Effect (CPE) only when the resulting Bayesian posterior underfits.

PAC-Bayes-Chernoff bounds for unbounded losses [Draft]
PAC-Bayes version of the Chernoff bound which solves the open problem of optimizing the free parameter on many PAC-Bayes bounds.

Education

Ph.D. Student, *Autonomous University of Madrid* 11/2021 – 11/2025
Thesis: *New Learning Methods based on Implicit Processes*

M.S. in Data Science, *Autonomous University of Madrid* 2020 – 2022

B.S. in Computer Science, *University of Granada* 2015 – 2020

B.S. in Mathematics, *University of Granada* 2015 – 2020

Honors & Awards

Granted Santander-UAM Scholarship. Uncertainty estimation in LLM at Cambridge University. 09/2023 - 12/2023
Computational and Biological Learning Lab, University of Cambridge

Granted FPI-UAM Scholarship. Competitive Predoctoral Contract for Training Research Personnel 2021
Department of Computer Science, Autonomous University of Madrid

Research Collaboration Scholarship 2020
Department of Computer Science, Autonomous University of Madrid

Granted Highest Mark on Bachelor's Thesis, 10/10. Statistical Models with Variational Methods 2020