# Luis A. Ortega

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## Experience

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

**Visitor Researcher**, *University of Cambridge* 09/2023 – 12/2023
Research on Uncertainty Estimation on Large Language Models with José Miguel Hernández Lobato.

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

## Publications

1. **Variational Linearized Laplace Approximation for Bayesian Deep Learning** [PDF] [Code]
   **Luis A. Ortega**, Simón Rodríguez-Santana and Daniel Hernández-Lobato
   International Conference on Machine Learning (ICML), 2024

2. **The Cold Posterior Effect Indicates Underfitting, and Cold Posteriors Represent a Fully Bayesian Method to Mitigate It** [PDF] [Code]
   Yijie Zhang, Yi-Shan Wu, **Luis A. Ortega** and Andrés R. Masegosa
   Transactions for Machine Learning Research (TMLR), 2024

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

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

## Ongoing Research

PAC-Chernoff Bounds: Understanding Generalization in the Interpolation Regime (under review) [Draft]
Explaining deep learning techniques (weight-decay, overparameterization, data-augmentation) using Large Deviation Theory.

PAC-Bayes-Chernoff Bounds for Unbounded Losses (under review) [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: *Variational Inference for Bayesian Deep Learning*

**M.S. in Data Science**, *Autonomous University of Madrid* 2020 – 2022
Master Thesis: *Deep Variational Implicit Processes*

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

**B.S. in Mathematics**, *University of Granada* 2015 – 2020
Bachelor Thesis: *Statistical Models with Variational Methods*

## Honors & Awards

Granted Santander-UAM Scholarship. Uncertainty Estimation in LLM at Cambridge University. 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
Department of Computer Science and Faculty of Science, University of Granada