Mauro Camara Escudero

MauroCE | website | in/maurocamaraescudero | maurocamaraescudero@gmail.com

Statistical ML researcher specialised in Bayesian inference, probabilistic models and generative ML (DDPMs, LLMs, FMs), with a decade of Python experience, and competent at coding complex Machine Learning models from scratch using Pytorch, as well as leveraging Hugging Face off-the-shelf models.

Academic Experience

PostDoc Statistical Machine Learning | University of Bristol 2024 - Present
Generative modelling for scalable sampling under CoSInES and Bayes4Health grants

PhD Statistical Machine Learning | University of Bristol 2019-2023
Approximate Manifold Sampling: Robust Bayesian Inference for Machine Learning

BSc Mathematics with Year in Employment | University of Southampton 2015-2019
Approximation techniques for Bayesian Logistic Regression

Industry Experience

Research Scientist | *Afiniti* | CausalML, Robustness 2021
- Researched a novel high-speed, high-accuracy treatment effect R-learning model and developed it in Julia, outperforming the company's previous approach by over an order of magnitude.

Data Scientist and Modeller | *Uniper* 2017-2018
- Led a high-value project with technical and client development components.
- Developed gas turbine blades damage detection software in OpenCV.
- Modelled wind power forecasting and researched gradient-free optimization methods to enhance wind farm layout.

Projects

Dante-GPT | *LLM, PyTorch* MauroCE/DanteGPT
- Build and benchmarked several transformer-based LLMs trained on Dante's work.

Integrator Snippets | *Robust Sampling, Parallel Computing* MauroCE/IntegratorSnippets
- Robust, embarassingly-parallel and geometry-aware Bayesian inference in Python.

LLMs Course | *LLMs, AI Safety, Alignment* Website
- Designed and implemented a mathematical course on LLMs with a focus on alignment.

Spotify Wrapped Weekly | *Flask, Python, SpotifyAPI* Website
- Real-time Python Web App summarising this week's Spotify listening habits.

AI, Safely (TikTok) | *Outreach, AI Safety* AI Safely
- Outreach videos on AI safety, focusing on the latest research.

Assessing and Mitigating Bias and Discrimination in AI | *Holistic AI, Python*
- Fairness, Explainability (Feature importance, Shapley, LIME) with HolisticAI package.

Responsibilities

Generative Models Reading Group | *University of Bristol* | Website 2024
Neural Networks Reading Group | *University of Bristol* | Website 2019-2021
Modern Jive President | *University of Bristol* | Article 2019-2021

Skills

Languages: Python, Julia, R, SQL, CQL, Unix
Tools: Pytorch, Transformers, Jax, Scikit-learn, Posteriors, HolisticAI, Tensorflow, Git, MPI, OpenMP, HPC, Flask

Invited Talks

Approximate Inference in Theory and Practice | ESSEC, Paris | 10 June 2024
BayesComp | Levi, Finland | March 2023
Computational Statistics and Machine Learning Seminar | Lancaster University, UK | March 2023
MCQMC | Linz, Austria | July 2022

Publications

Andrieu C., **Camara Escudero M.**, Chang Zhang , Monte Carlo Sampling with Integrator Snippets, 2404.13302
Camara Escudero M., Andrieu C., Sanz-Serna JM, Approximate Manifold Sampling (in progress, based on thesis)