Tiago Salvador

Published researcher in machine learning, deep learning and computer vision

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Experience

Mila Quebec AI Institute & McGill University — *Montreal, QC*

Post-doctoral Researcher in Machine Learning (Mentor: Dr. Adam Oberman) — *Sept. 2020 - Present*

- Conduct research in deep learning focusing on domain adaptation and out-of-distribution problems. Write research papers for publication, present work at conferences (2), organize meetings, mentor graduate students (4) and assist with grant applications.

University of Michigan - Department of Mathematics — *Ann Arbor, MI*

Post-doctoral Assistant Professor (Mentor: Dr. Selim Esedoglu) — *Sept. 2017 - Aug. 2020*

- Conducted research in numerical analysis focusing on threshold dynamics algorithms which are ideal for large scale simulations of grain growth. Wrote research articles for publication and presented work at 4 conferences and 3 seminars.
- Taught undergraduate mathematics courses. Designed and delivered lectures, facilitated group work, and wrote homework assignments and exams. Courses included multivariable and vector calculus, linear algebra, differential equations and numerical analysis. Received a student *Honored Instructor Nomination* that recognizes the teaching efforts of instructors who had a positive impact on their experience.

Skills

Programming Languages: Python, Matlab, Mathematica, SQL. **Operating Systems, Tools:** Linux, Jupyter notebook, Git.
Libraries: NumPy, Sci-Py, Pandas, Matplotlib, scikit-learn, BeautifulSoup, PyTorch.

Publications & Preprints (selected)

T. Salvador*, K. Fatras*, I. Mitliagkas & A. M. Oberman. *A Reproducible and Realistic Evaluation of PDA Methods. NeurIPS Distribution Shifts Workshop 2022*
A benchmark study on the impact of model selection strategies in partial domain adaptation methods. (∗ equal contribution) Code

T. Salvador & A. M. Oberman. *ImageNet-Cartoon and ImageNet-Drawing: two domain shift datasets for ImageNet. ICML Shift Happens Workshop 2022*
We propose two new datasets, using data augmentation, to measure model robustness to dataset shift. Project Page · Code

T. Salvador, S. Cairns, V. Voleti, N. Marshall & A. M. Oberman. *FairCal: Fairness Calibration for Face Verification. ICLR 2022*
We remove bias from face recognition models leveraging unsupervised clustering to bypass the need for sensitive attribute (such as race, ethnicity, etc). We improve different fairness metrics while increasing accuracy and without any additional training. Project Page · Code

T. Salvador, V. Voleti, A. Iannantuono & A. M. Oberman. *Frustratingly Easy Uncertainty Estimation for Distribution Shift. arXiv preprint* 2021
We propose two post-hoc calibration methods that leverage data augmentation to improve calibration in the presence of distribution shift.

Projects

Data Retrieval & Forecasting (github.com/tiagosalvador/soccer-predictions)
Web scrapped Premier League data from Transfermarkt and Football-Data.co.uk and built forecaster models to predict soccer games.

Calibration of Deep Learning Models (github.com/tiagosalvador/calibration-baselines)
Implemented and benchmarked several state-of-the-art post hoc calibration methods using Python and Pytorch.

Building Deep Learning Agents to Play Games (github.com/tiagosalvador/connect4)
Created a framework to play Connect4. Implemented baseline agents with simple heuristics (e.g. play a winning move if one is available). Implemented minmax agent with alpha-beta pruning. Implemented a Deep Q-Network that learns how to play Connect 4 by self-play.

Presentations (selected)

- *ImageNet-Cartoon and ImageNet-Drawing: two domain shift datasets for ImageNet* · Recording — *Online*
  ICML Shift Happens Workshop — *July 2022*
- *FairCal: Fairness Calibration for Face Verification* · Recording — *Online*
  International Conference on Learning Representations (ICLR) — *April 2022*
- *Fairness Calibration For Face Verification* — *Online*
  Montreal Machine Learning and Optimization (MTL MLOpt) Internal Meeting — *May 2021*

Education

McGill University — *Montreal, QC*

Ph.D. in Applied Mathematics — *2012-2017*

Instituto Superior Técnico, Universidade de Lisboa — *Lisbon, Portugal*

M.Sc in Mathematics and Applications — *2010-2012*

B.Sc in Applied Mathematics and Computation — *2007-2010*

Coursera Specializations

Applied Data Science (Univ. of Michigan) • Deep Learning (DeepLearning.AI) • Reinforcement Learning (Univ. of Alberta) — *Summer 2020*