Tiago Salvador

Research Scientist · Applied Data Scientist

Nationality: Portugal · Immigration Status: Green Card (Expected September 2022)

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Experience

Mila Quebec AI Institute & McGill University
Montreal, QC

Post-doctoral Researcher — *September 2020 - Present*

- Conduct research in deep learning under the direction of Dr. Adam Oberman. Write research papers for publication and present current work at conferences and seminars. Organize weekly meetings. Mentor graduate students. Assist with writing grant applications.

University of Michigan - Department of Mathematics
Ann Arbor, MI

Post-doctoral Assistant Professor — *September 2017 - August 2020*

- Conducted research in numerical analysis, under the guidance of Dr. Selim Esedoglu, focusing on threshold dynamics algorithms which are ideal for large scale simulations of grain growth. Wrote research articles for publication and presented work at conferences and 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.

Skills

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

Projects

Calibration Baselines (github.com/tiagosalvador/calibration-baselines)

Implemented and benchmarked several state-of-the-art post hoc calibration methods using Python and Pytorch.

Building Agents to Play Connect4 (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.

Publications (selected)

- **T. Salvador** and A. M. Oberman. *ImageNet-Cartoon and ImageNet-Drawing: two domain shift datasets for ImageNet.* *ICML Shift Happens Workshop* 2022.
- **T. Salvador**, S. Cairns, V. Voleti, N. Marshall, and A. M. Oberman. *FairCal: Fairness Calibration for Face Verification.* *ICLR* 2022
- A. M. Oberman and **T. Salvador**. *A Partial Differential Equation Obstacle Problem for the Level Set Approach to Visibility.* *J Sci Comput* 2020
- **T. Salvador** and S. Esedoglu. *A simplified threshold dynamics algorithm for isotropic surface energies.* *J Sci Comput* 2019
- B. F. Hamfeldt and **T. Salvador**. *Higher-order adaptive finite difference methods for fully nonlinear elliptic equations.* *J Sci Comput* 2018
- A. M. Oberman and **T. Salvador**. *Filtered schemes for Hamilton-Jacobi equations: a simple construction of convergent accurate difference schemes.* *JCP* 2015

Presentations (selected)

- *Threshold dynamics algorithms for curvature motion of networks of surfaces* — *Chicago, IL*
  Math Colloquium at Loyola University — *Jan 2020*
- *Γ-convergence of threshold dynamics algorithms* — *Phoenix, AZ*
  MRS Spring Meeting: Symposium on Mathematical Aspects of Materials Science-Modeling, Analysis and Computations — *April 2019*
- *Algorithms for fully anisotropic, continuum models of grain boundary motion* — *Portland, OR*
  SIAM Conference on Mathematical Aspects of Materials Science — *July 2018*
- *Filtered schemes for Hamilton-Jacobi equations: a simple construction of convergent accurate difference schemes* — *Linz, Austria*
  Workshop on Numerical Methods for Hamilton-Jacobi equations in optimal control and related fields — *Nov 2016*

Education

McGill University
Montreal, QC

Ph.D. in 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

Applied Data Science Specialization - University of Michigan — *Summer 2020*

Deep Learning Specialization - DeepLearning.AI — *Summer 2020*

Reinforcement Learning Specialization - University of Alberta — *Summer 2020*