

Renato Negrinho

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RESEARCH INTERESTS Machine Learning, Natural Language Processing, Optimization

EDUCATION **Carnegie Mellon University**, Pittsburgh, United States

Ph.D., Machine Learning, 2020 (Expected)

- Focused on architecture search, imitation learning, and structured prediction.
- Advisors: Geoff Gordon, Matt Gormley

Instituto Superior Técnico, Lisbon, Portugal

M.Sc., Electrical and Computer Engineering, 2013

- Master's Thesis: "Shape Representation Via Symmetric Polynomials: a Complete Invariant Inspired by the Bispectrum"
- Advisor: Pedro M. Q. Aguiar
- Grade: 20 (out of 20)

B.Sc., Electrical and Computer Engineering, 2011

RESEARCH/WORK EXPERIENCE **Microsoft Research**, Redmond, United States June 2018 - August 2018
Research Intern

Twelve-week research internship at Microsoft Research working under the supervision of Ben Zorn and Alex Polozov. Explored deep learning methods for building semantic tools for Excel spreadsheets.

Petuum, Pittsburgh, United States February 2018 - May 2018
Research Scientist Intern

Part-time research scientist at Petuum working on developing new architecture search algorithms and integrating architecture search capabilities in the Petuum platform.

Microsoft Research, Redmond, United States May 2016 - August 2016
Research Intern

Twelve-week research internship at Microsoft Research working under the supervision of Asela Gunawardana. We explored ways of improving user experience in WordFlow through the development of machine learning models. Our work can be broadly categorized as Machine Learning for User Interaction, and involved aspects of Machine Learning and Human-Computer Interaction.

Xerox Research Centre Europe, Grenoble, France May 2015 - August 2015
Research Intern

Three-month research internship at XRCE working under the supervision of Ariadna Quattoni and Xavier Carreras. Our work focused on the problem of learning weighted finite automata using spectral methods, with an emphasis on scalability issues. We identified computational and memory bottlenecks at the different steps of the learning algorithm. We used algorithms from the matrix sketching and count sketching literature, and proposed new optimization-based learning approaches

and a trie-based Hankel matrix representation to address some of the problems.

Carnegie Mellon University, Pittsburgh, United States
Research Intern

February 2015 - April 2015

Three-month CMU-Portugal program internship working under the supervision of Noah Smith. The work focused on finding effective methods to deal with multiword expressions. We considered a semi-supervised learning approach using a variation of the latent CRF autoencoder model.

Instituto Superior Técnico, Lisbon, Portugal
Research Scholar

January 2014 - December 2014

FCT scholarship to research on Machine Learning and Natural Language Processing under the supervision of André Martins from Priberam. We studied the regularized estimation problem, where we proposed a new framework where known symmetries of the model can be directly taken into account. I also worked on the problem of cross-lingual transfer.

Instituto Superior Técnico, Lisbon, Portugal
Research Scholar

July 2012 - December 2012

FCT scholarship for an undergraduate student to work on distributed optimization and online optimization under the supervision of João Xavier.

PUBLICATIONS

Renato Negrinho, Matt Gormley, Geoff Gordon. *Learning Beam Search Policies via Imitation Learning*. Neural Information Processing Systems (NeurIPS), Montreal, Canada, December, 2018.

Renato Negrinho and Geoff Gordon. *DeepArchitect: Automatically Designing and Training Deep Architectures*. In submission, arXiv preprint arXiv:1704.08792.

Han Zhao, Otilia Strectu, Renato Negrinho, Alex Smola, and Geoff Gordon. *Efficient Multi-task Feature and Relationship Learning*. In submission, arXiv preprint arXiv:1702.04423.

Renato Negrinho and André F. T. Martins. *Orbit Regularization*. Neural Information Processing Systems (NeurIPS), Montreal, Canada, December, 2014.

Renato Negrinho and Pedro M. Q. Aguiar. *Symmetric Polynomials for 2D Shape Representation*. IEEE International Conference on Image Processing (ICIP), Paris, France, October, 2014.

Renato Negrinho and Pedro M. Q. Aguiar. *Shape representation Via Elementary Symmetric Polynomials: a Complete Invariant Inspired by the Bispectrum*. IEEE International Conference on Image Processing (ICIP), Melbourne, Australia, September, 2013.

TALKS

“Learning Beam Search Policies via Imitation Learning”. Artificial Intelligence Seminar. Carnegie Mellon University. October 2018.

“Orbit Regularization”. Priberam Machine Learning Lunch Seminar. Instituto Superior Técnico. November 2014.

“Shape Representation Via Symmetric Polynomials: A Complete Invariant Inspired by the Bispectrum”. Priberam Machine Learning Lunch Seminar. Instituto Superior Técnico. February 2014.

TEACHING EXPERIENCE

Lab monitor at Lisbon Machine Learning Summer School 2017 (LxMLS 2017). July 20 - 27, 2017.

Teaching Assistant for 10-703 Deep Reinforcement Learning and Control at Carnegie Mellon University. Spring 2017.

Teaching Assistant for 10-601 Machine Learning at Carnegie Mellon University. Fall 2016.

Lab monitor at Lisbon Machine Learning Summer School 2015 (LxMLS 2015). July 15 - 23, 2015.

Lab monitor at Lisbon Machine Learning Summer School 2014 (LxMLS 2014). July 22 - 29, 2014

COURSEWORK AT CARNEGIE MELLON UNIVERSITY 10-715 Advanced Introduction to Machine Learning, 10-705 Intermediate Statistics, 10-708 Probabilistic Graphical Models, 10-725 Convex Optimization, 10-807 Topics in Deep Learning, 15-859N Spectral Graph Theory.

OTHER RELEVANT EXPERIENCE AND INFORMATION Currently mentoring four CMU undergraduate students (Darshan Patil, Kirielle Singajarah, Max Le, and Zejie Ai) to help develop an open-source architecture search framework for deep learning.

Served in the admissions committee for the Machine Learning PhD Program at Carnegie Mellon University for the incoming class of 2018.

Mentioned in the New York Times article “Building A.I. That Can Build A.I.”¹ for our work on automatic architecture search.

Served in the admissions committee for the Machine Learning Masters Program at Carnegie Mellon University for the incoming class of 2017.

Volunteered at Neural Information Processing Systems (NeurIPS) 2014. December 8 - 13, 2014.

Attended Lisbon Machine Learning Summer School 2013 (LxMLS 2013). Expenses were covered by a Priberam Scholarship. July 24 - 31, 2013.

Achieved a score of 325 out 340 in the GRE exam. 165 out of 170 in the quantitative part (90 percentile) and 160 out of 170 in the verbal part (84 percentile). May 5, 2014.

Achieved a score of 118 out 120 in the TOEFL exam (98+ percentile). 30 out 30 in the listening and speaking parts and 29 out of 30 in the reading and writing parts. June 14, 2014.

Earned certificates for the following Coursera courses: Programming Languages, Functional Programming Principles in Scala, Economics of Money and Banking (Part One), Economics of Money and Banking (Part Two), The Power of Macroeconomics, and The Power of Microeconomics.

PROGRAMMING LANGUAGES Python, Tensorflow, PyTorch, C, Matlab, Java, Scala, LaTeX, Git.

¹<https://www.nytimes.com/2017/11/05/technology/machine-learning-artificial-intelligence-ai.html>