



Ricardo Pereira de Magalhães Cruz

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For the last five years, I have been working as a machine learning researcher at INESC TEC. I have just finished my Ph.D. thesis which I will defend very soon. Meanwhile, I also have been helping at FEUP as a teacher assistant: teaching Python and C++. As a machine learning researcher, I have worked mostly on deep learning applied to computer vision, using both TensorFlow and PyTorch. In the past, I have participated in many open-source projects and also did much consulting work: on web development (flask), databases (mongo, postgres), multimedia (sdl, gtk, qt), server administration (hpc) and others. In terms of education, I am about to finish my Ph.D. in computer science. I have a masters in applied mathematics and a bachelors in computer science.

[-] Education

- (2021) PhD in Computer Science (currently waiting for defense!)
co-joint University of Porto, Minho and Aveiro
- 2015 MSc in Applied Mathematics (Grade=18/20)
Faculty of Sciences, University of Porto
- 2012 BSc in Computer Science (Grade=16/20)
Faculty of Sciences, University of Porto

[-] Career

- 2018-2021 Teacher Assistant (Python and C/C++)
Faculty of Engineering, University of Porto
- 2016-2020 PhD Grant (deep learning and computer vision)
INESC TEC
- 2015 Research Grant (machine learning)
INESC TEC
- 2014 Research Grant (epidemiology modelling)
Mathematics Center of the University of Porto
- 2007 Google Grant: Summer of Code (dynamic layouts)
OpenOffice.org
- 2006 Google Grant: Summer of Code (YaST GTK port)
Novell / openSUSE

[-] Other related work

- 2018-2020 Consulting for a geography team at FLUP
In total, I have done seven scraping and automation jobs.
- 2018-2019 Mentor at Coursera
Andrew Ng's course on Improving Deep Neural Networks: Hyperparameter tuning, Regularization and Optimization
- 2014 Consulting at Flykt
Search algorithms for travel destinations.

[-] Awards

- 2020 Best Oral Presentation: Training Convolutional Neural Networks to be Background Invariant
RECPAD 2020 conference
- 2021 Pedagogical Recognition Award
Faculty of Engineering, University of Porto
- 2021 Sustainable Ideas
Faculty of Engineering, University of Porto

Publications

- **2021** Ordinal Losses for Classification of Cervical Cancer Risk [accepted]
T. Albuquerque, R. Cruz, J. Cardoso
PeerJ Computer Science
- **2021** Background Invariance by Adversarial Learning [accepted]
R. Cruz, R. Prates, E. Filho, J. Costa, J. Cardoso
25th International Conference on Pattern Recognition (ICPR), IEEE
- **2019** Automatic Augmentation by Hill Climbing
R. Cruz, J. Costa, J. Cardoso
28th International Conference on Artificial Neural Networks (ICANN), Springer
- **2019** Averse Deep Semantic Segmentation
R. Cruz, J. Costa, J. Cardoso
41st Engineering in Medicine and Biology Conference (EMBC), IEEE
- **2019** Insulator visual non-conformity detection in overhead power distribution lines using deep learning
R. Prates, R. Cruz, A. Marotta, R. Ramos, E. Filho, J. Cardoso
Journal Computers & Electrical Engineering, Springer
- **2018** A Class Imbalance Ordinal Method for Alzheimer's Disease Classification
R. Cruz, M. Silveira, J. Cardoso
2018 International Workshop on Pattern Recognition in Neuroimaging (PRNI), IEEE
- **2018** Binary ranking for ordinal class imbalance
R. Cruz, K. Fernandes, J. Costa, M. Pérez Ortiz, J. Cardoso
Journal Pattern Analysis and Applications, Springer
- **2018** Deep image segmentation by quality inference
K. Fernandes, R. Cruz, J. Cardoso
International Joint Conference on Neural Networks (IJCNN), IEEE
- **2017** Constraining type II error: building intentionally biased classifiers
R. Cruz, K. Fernandes, J. Costa, J. Cardoso
International Work-conference on Artificial Neural Networks (IWANN), Springer
- **2017** Fine-to-coarse ranking in ordinal and imbalanced domains: an application to liver transplantation
M. Pérez-Ortiz, K. Fernandes, R. Cruz, J. Cardoso
International Work-conference on Artificial Neural Networks (IWANN), Springer
- **2017** Combining ranking with traditional methods for ordinal class imbalance
R. Cruz, K. Fernandes, J. Costa, M. Pérez-Ortiz, J. Cardoso
International Work-conference on Artificial Neural Networks (IWANN), Springer
- **2017** Ordinal class imbalance with ranking
R. Cruz, K. Fernandes, J. Costa, M. Pérez-Ortiz, J. Cardoso
Iberian conference on pattern recognition and image analysis (Ibpria), Springer
- **2016** Tackling class imbalance with ranking
R. Cruz, K. Fernandes, J. Costa, J. Cardoso
International Joint Conference on Neural Networks (IJCNN), IEEE

Recommendation contacts will be provided upon request.

Consult my github for more projects: <https://github.com/rpmcruz>.