
BERARDINO BARILE

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PROFESSIONAL EXPERIENCE

March 2023 – Ongoing **Research Scientist – Probabilistic Vision Group (McGill - Canada):**

Computer Vision for Personalized Medical Image Analysis:

- Causal Machine Learning for Personalized Medicine (Conditional Average Treatment Effect - CATE)
- Survival Analysis for Multiple Sclerosis disease progression using Deep Learning (DeepHit, DeepSurv, etc.)
- Generative Adversarial Network for 3D MRI embedding and latent trajectory prediction (StyleGAN, W-GAN, AAE, etc.)

July 2022 – March 2023 **Senior Data Scientist – Verti Spa**

Machine Learning (ML) expert in the context of assurance:

- Data driven optimal price identification through ML algorithms (Boosting, Bagging, GLM, Clustering)
- Generation of automated pipelines with AWS SageMaker for model training (notebook and docker)
- Deployment of ML systems on dedicated production server (docker, Oracle ML)
- Collaboration with University “La Sapienza” of Rome and Inail for modeling accidents at work and business failure (Causal Inference, Predictive Modelling, Bayesian Testing, Uplift Modelling, Causal ML)

May 2019 – Oct 2022 **Double PhD Fellow in Computer Science – Marie Skłodowska-Curie Fellowship (France - Belgium)**

Doctoral research thesis in “*Machine Learning Methods for Multiple Sclerosis Classification and Prediction using MRI Brain Connectivity*” (**Université Claude Bernard Lyon 1 (France) & University of Leuven (Belgium)**)

- Development of advanced cutting-edge predictive models for supervised and unsupervised tasks
- Scientific publications in peer-reviewed journals
- Statistical Learning, Data Mining, Machine Learning and Deep Learning for knowledge-based extraction

Nov 2017 – May 2019 **Big Data Scientist in Isiway Srl**

Machine Learning implementation in the context of Big Data

- Application of data-driven solutions for multiple heterogeneous consulting projects
- Data extraction, pre-processing and parallelization of ML models for big dimensional datasets
- Statistical analysis, data visualization and reporting

Apr 2014 – Nov 2017 **Data Analyst in Invitalia SpA**

Statistical analysis and data driven-solutions to support management in public policy intervention

- Econometric models and advanced statistical learning techniques for the analysis of public policy intervention
- Analysis and reporting of results for a non-technical audience
- Scientific annual report of public spending results for the European Commission (see Publications)
- International conferences and summer/winter schools for the evaluation of counterfactual scenario

EDUCATION

Nov 2011 – Oct 2013 **Master Degree in Statistics**

“La Sapienza” University of Rome, grade: **110/110 with honors**

Title: *Short and long structural effects of the international bank system, a Structural-VAR based approach.*

Oct 2008 – Nov 2011 **Bachelor Degree in Statistics**

“La Sapienza” University of Rome, grade: **110/110 with honors**

Title: *Purchase Power Parity (PPP) and equilibrium exchange rate in the financial market*

LANGUAGE AND TECHNICAL BACKGROUND

English: Advanced – **French:** Advanced – **Italian:** Native

Python: Advanced - **Matlab:** Advanced - **Stata:** Advanced - **R:** Intermediate - **SQL:** basic - **Office:** Advanced – **Latex:** Advanced – **Bash:** Advanced – **Linux:** Advanced

PUBLICATIONS

- **Annual Statistical Report on the Incentives Issued to the Italian Economic System**
Ministry of Economic Growth – DGIAI
Link: <https://www.mise.gov.it/index.php/it/per-i-media/pubblicazioni>
 - **Does Initial Access to Bank Loans Predict Start-ups' Future Default Probability? Evidence from Italy**
Castaldo A., De Luca G., Barile B., 2021. Contemporary Economic Policy, Western Economic Association International, vol. 39(1), pages 83-106
 - **Data Augmentation Using Generative Adversarial Neural Networks (GANs) on Brain Structural Connectivity in Multiple Sclerosis**
Barile B., Marzullo A., Stamile C. et al. 2021, Computer Methods and Programs Biomedicine, 206:106113
 - **Tensor Factorization of Brain Structural Graph for Unsupervised Classification in Multiple Sclerosis.**
Barile B., Marzullo A., Stamile C. et al. 2020 25th International Conference on Pattern Recognition (ICPR), 2021, Milan (virtual), Italy. pp.5052-5059
 - **Ensemble Learning for Multiple Sclerosis Disability Estimation Using Brain Structural Connectivity**
Barile B., Marzullo A., Stamile C. et al. 2021, Brain Connectivity doi: 10.1089/brain.2020.1003 PMID: 34269618
 - **T1/T2 ratio: A quantitative sensitive marker of brain tissue integrity in multiple sclerosis**
Hannoun, S, Kocevar, G, Codjia, P, Barile B., et. al, Journal of Neuroimaging. 2022; 32: 328– 336. <https://doi.org/10.1111/jon.12943>
 - **Longitudinal Multiple Sclerosis Lesion Segmentation Using Pre-activation U-Net**
Ashtari P, Barile B., Van Huffel S. et al. 2022, MSSEG-2 challenge proceedings, 2022, pp.45
 - **New Multiple Sclerosis Lesion Segmentation and Detection Using Pre-activation U-Net.**
Ashtari P., Barile B., Van Huffel S. et al. 2022, Frontiers in Neuroscience, in press
 - **Classification of Multiple Sclerosis Clinical Profiles using Machine Learning and Grey Matter Connectome.**
Barile B., Ashtari P., Van Huffel S. et al. 2022, Frontiers in Robotics and AI. <https://doi.org/10.3389/frobt.2022.926255>, in press
 - **A Kernel Based Blind Source Separation Approach for Classification of Multiple Sclerosis Clinical Profiles.**
Barile B., Ashtari P., Durand-Dubief F. et al. 2022, In: Proceedings 30th European Symposium on Artificial Neural Networks, Computational Intelligence and Machine Learning (ESANN 2022), Bruges, BE, October 5-7, 2022, in press
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