






# Mohammed Sabri

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## RESEARCH INTERESTS

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- Statistical machine learning and high-dimensional classification
- Functional data analysis and complex data structures
- Novel classification algorithms incorporating dynamic clustering
- Similarity measures for complex structured data
- Optimization of machine learning algorithms
- Applications in finance, healthcare, and data science

## EDUCATION

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- **Università degli studi della Campania Luigi Vanvitelli** Caserta, Italy  
*Ph.D. Candidate in Machine Learning* *September 2020 - Present*
- **Paris Nord (Paris XIII) University** Paris, France  
*M.Sc Data Science and Machine Learning* *September 2018 - June 2019*
- **Faculty of Sciences Dhar EL Mahraz** Fez, Morocco  
*M.Sc Applied Mathematics and Data Science* *Septembre 2018 – Juillet 2019*
- **Chouaib Doukkali University** EL Jadida, Morocco  
*Bachelor's Degree in Applied Mathematics* *September 2016 - June 2017*

## EXPERIENCE

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- **BMCE Bank Of Africa Group - SALAFIN** Casablanca, Morocco  
*Data Scientist* *September 2019 - June 2020*
  - **Financial Risk Management:** As a data scientist, I designed and deployed new machine learning system for Credit Default Risk and Credit Loss Evaluation. I accomplished performance of 80% for Credit Risk, and I achieved 90% for Credit Loss on some financial products and at least 70% on most of them. Resulted in cutting \$1.0M in financial credit losses.
  - **Tools:** Auto-ML with H2O, Spark, R, Python, ETL programming, Shell scripting.
- **EVEAD Group** Casablanca, Morocco  
*Machine Learning - Graduate Research* *March 2019 – July 2019*
  - **Subject:** Development of an AI system capable of segmenting users according to their areas of interest.
  - **Tools:** Python.
- **OCP Group** Casablanca, Morocco  
*Final Practicum Master* *August 2018 - September 2018*
  - **Subject:** Implementation of a decision support solution allowing the construction of KPI's.
  - **Tools:** Microsoft BI(SSIS, SSAS SSRS).

## RESEARCH EXPERIENCE

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- **Extending Fused Gromov-Wasserstein distance for functional data and graph analysis**  
*Aiming to create unified frameworks for measuring similarities across complex structured data*
- **Novel Classification Algorithm Based on Dynamic Clustering and K-Nearest Neighbors**  
*Developed a classification method combining adaptive distance dynamic clustering with K-Nearest Neighbors*
- **Advanced Credit Card Fraud Detection**  
*Invented a novel classification method incorporating a priori class partitioning*
- **Functional Data Classification with Example Data Refining Strategy**  
*Created a new classification approach for functional data using a refining strategy of example data*
- **Functional Local Mean K-Nearest Neighbor Algorithm**  
*Introduced a novel metric to enhance algorithm performance in functional data analysis*
- **ECG Signal Classification Using Functional Data Analysis and Machine Learning**  
*Applied functional data analysis techniques to classify ECG signals*
- **Clustering-Enhanced Functional Classification for ECG Data**  
*Developed a method exploiting clustering to improve functional classifier performance*

## PUBLICATIONS AND PRESENTATIONS

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- **A Novel Classification Algorithm Based on the Synergy Between Dynamic Clustering with Adaptive Distances and K-Nearest Neighbors:** Sabri M., Verde R., Maturo F., Balzanella A., Tairi H., Yahyaouy A., and Riffi J., *Journal of Classification* 41, 264–288 (2024). [[Paper](#)]
- **K-Fuse: Credit card fraud detection based on a classification method with a priori class partitioning and a novel feature selection strategy.** : Sabri M., Verde R. and Balzanella A., *Applied Stochastic Models in Business and Industry* (2024). [[Paper](#)]
- **SFC2024:** A Classification method for functional data based on a refining strategy of the example data [Permalink](#) Verde R., Sabri M., Balzanella A., 29èmes Rencontres de la Société Francophone de Classification (SFC), 11-13 September 2024, Marseille (France).
- **ISCV2024:** Functional Local Mean K-Nearest Neighbor: introducing a novel metric for improved algorithm performance Sabri M., Yahyaouy A., Balzanella A., Verde R., Riffi J. and Tairi H., *International Conference on Intelligent Systems and Computer Vision (ISCV)*, 08-10 May 2024, Fez (Morocco). [[Paper](#)]
- **SDS2024:** Advancing credit card fraud detection with innovative class partitioning and feature selection technique Sabri M., Verde R., Balzanella A., *Statistics for Data Science and Artificial Intelligence (SDS)*, Page: 618-623, 11-12 April 2024, Palermo (Italy). [[Paper](#)]
- **ISBIS2023:** An Integrated Unsupervised and Supervised Classification Strategy: an application to Credit Card Fraud Detection Verde R., Sabri M., Balzanella A., *International Society for Business and Industrial Statistics (ISBIS)*, 13-14 July 2023, St. Catharines, (Canada).
- **SDS2023:** A new supervised classification technique based on the joint use of K-nearest neighbors and weighted K-means to discover new patterns in the data Sabri M., Verde R., Maturo F., Balzanella A., Tairi H., Yahyaouy A., and Riffi J., *SDS 2023 Statistics for Data Science and Artificial Intelligence (SDS)*, Page: 618-623, 27-28 April 2024, Pavia (Italy).
- **IES 2022:** Invited Talk at the Innovation and Society 5.0: statistical and economic methodologies for quality assessment, January 27, 2022 – January 28, 2022, Capua (Italy). Presentation: Classification of ECG signals based on functional data analysis and machine learning techniques. [[Paper](#)]
- **DSSV-ECDA 2021:** Data Science, Statistics and Visualisation (DSSV) and the European Conference on Data Analysis (ECDA), July 7 – July 9, 2021. Presentation: Exploiting clustering to improve the performance of a functional classifier: An application to ECG data using a new semi-metric.

## TEACHING EXPERIENCE

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- **Instructor:** Statistical Learning, University of Campania Luigi Vanvitelli.
- **Instructor:** Seminar, Credit Card Fraud Detection: Strategies and Solutions Understanding and Mitigating the Risks in the Digital Age, University of Campania Luigi Vanvitelli.
- **Instructor:** Seminar, Introduction to Recommender Systems: Principles and Applications, University of Campania Luigi Vanvitelli.
- **Teaching Assistant:** Machine Learning — Prof. Rosanna Verde, University of Campania Luigi Vanvitelli.
- **Teaching Assistant:** Machine Learning — Prof. Ali Yahyaouy, University of Sidi Mohamed Ben Abdellah.
- **Teaching Assistant:** Python — Prof. Ali Yahyaouy, University of Sidi Mohamed Ben Abdellah.

## SKILLS SUMMARY

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- **Technical Skills:** Machine Learning, Data Visualization, Big Data, Data Mining
- **Programming Languages:** Python, R, Java, Scala, AWS Cloud (SageMaker, EC2)
- **Data Integration:** Talend (TOS, TAC), Stack Microsoft (SSIS, SSAS), Informatica V9
- **Data Analysis:** Data Cleaning with Python; Data Exploratory Analysis with R Python
- **DataViz:** Tableau, Power BI, SSRS
- **Soft Skills:** Leadership, Event Management, Writing, Public Speaking, Time Management

## LANGUAGES

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- Arabic: C2 (Native proficiency)
- English: C1 (Advanced)
- French: C1 (Advanced)
- Italian: A2 (Elementary)

## REFERENCES

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1. Prof. Rosanna Verde Professor of Statistics, Università degli studi della Campania Luigi Vanvitelli Email: [rosanna.verde@unicampania.it](mailto:rosanna.verde@unicampania.it)
2. Prof. Ali Yahyaouy Professor of Computer Science, University of Sidi Mohamed Ben Abdellah Email: [ali.yahyaouy@usmba.ac.ma](mailto:ali.yahyaouy@usmba.ac.ma)
3. Prof. Antonio Balzanella Associate Professor of Statistics, Università degli studi della Campania Luigi Vanvitelli Email: [antonio.balzanella@unicampania.it](mailto:antonio.balzanella@unicampania.it)