UNIVERSITÀ DEGLI STUDI DI MILANO

TO MAGNIFICO RETTORE OF UNIVERSITA' DEGLI STUDI DI MILANO   ID CODE 4761

I the undersigned asks to participate in the public selection, for qualifications and examinations, for the awarding of a type B fellowship at **Dipartimento di Scienze Cliniche e di Comunità**

Scientist- in – charge: **Prof. Federico Ambrogi**

[HOUYEM DEMNI]

CURRICULUM VITAE

PERSONAL INFORMATION

Surname	DEMNI
Name	HOUYEM
Date of birth	[18, 09, 1991]

PRESENT OCCUPATION

Appointment	Structure
PhD Student in Statistics (expected to graduate by January 2021)	Dual degree PhD program between the University of Cassino and Southern Lazio and the University of Tunis

EDUCATION AND TRAINING

Degree	Course of studies	University	year of achievement of the degree
Degree	Bachelor's degree in Computer Sciences for Business	University of Tunis	2013
PhD	PhD in Statistics	University of Cassino and Southern Lazio, University of Tunis	January 2021
Master	Master degree in Information and decision modeling systems (Data analysis)	University of Tunis	2016
Other	High School Diploma specialized in Experimental Sciences.		2010

REGISTRATION IN PROFESSIONAL ASSOCIATIONS

Date of registration	Association	City
2016	Tunisian Decision Aid Society	Tunis

FOREIGN LANGUAGES

Languages	level of knowledge
English	Fluent
French	Fluent
Italian	B2 level
Arabic	Mother tongue

AWARDS, ACKNOWLEDGEMENTS, SCHOLARSHIPS

Year	Description of award
2019/2020	**International Mobility fellowship granted by the University of Cassino and Southern Lazio**, I pursued the period of mobility at the Department of Mathematical Analysis and Applications of Mathematics, Palacky university, Olomouc, Czech Republic, September–December.
2018/2019	**Erasmus+ International Credit Mobility fellowship**, University of Cassino and Southern Lazio, Cassino, Italy, September–April.
2017/2018	**Erasmus+ International Credit Mobility fellowship**, University of Cassino and Southern Lazio, Cassino, Italy, March–June.

TRAINING OR RESEARCH ACTIVITY

2017/2020: PhD Thesis: Title: "Depth-based supervised classification approaches for directional data". Advisors: Prof.Giovanni Camillo Porzio (University of Cassino and Southern Lazio, Cassino, Italy), Dr.Amor Messaoud (University of Tunis, Tunisia).
Aim: The aim of the thesis is to present novel methodologies and to perform reliable inferences for directional data, within the framework of supervised classification. Directional statistics methods are specifically designed for observations that are directions.
This thesis contains five chapters. The first focuses on introducing the main concepts and notions about directional data. The second Chapter introduces a supervised classification procedure for directional data, which is based on the cosine depth function. In Chapter 3, we investigate conditions under which the max-depth classifier and the depth distribution classifier are equivalent to the optimal Bayes rule. Chapter 4 tackles the problem of robustness of distance depth-based classifiers for directional data (max-depth, depth distribution and depth versus depth classifiers) in presence of class and label noise. In chapter 5, directional depth-based classifiers are employed to predict the presence or absence of cardiac arrhythmia.

2019: Research internship under the supervision of Dr.Ondrej Vencalek at the Department of Mathematical Analysis and Applications of Mathematics, Palacky university, Olomouc, Czech Republic.
Description: Within the context of supervised learning for directional data, the main objective of the research visit was to investigate properties of depth-based classifiers. Conditions under which the directional depth distribution and the directional max-depth classifiers are optimal in the sense of Bayes rule were studied.

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2020: Research work within the fields of machine learning and directional statistics (in progress).

CONGRESSES AND SEMINARS

Date	Title	Place
November 21-23, 2019	**Workshop on Theory and Practice of Statistical Data Processing:** Presentation "Depth-based classifiers for directional data".	Organized by the department of Mathematical Analysis and Applications of Mathematics, Palacky university in Nova Seninka, Czech Republic.
September 11-13, 2019	**The International Conference on CLAssification and Data Analysis (CLADAG2019):** Presentation "On the robustness of directional depth-based classifiers".	University of Cassino and Southern Lazio, Italy.
May 24-25, 2018	**The Joint Meeting of SIS SDS Group and itENBIS Statistics and Data Science: new Developments for Business and Industrial Applications (SDS 2018):** Presentation "Non parametric classification of directional data through depth functions".	Organized by the University of Turin in Collegio Carlo Alberto, Turin, Italy.
February, 2017	**Workshop on Computing, Management and Decision Making (CMDM 2017):** Presentation "A Comparative study of the performance of the GLR and CUSUM control charts for monitoring the process mean".	Organized by the University of Tunis in Tozeur, Tunisia.
July, 2016	**The International Conference on Decision Aid Sciences and Applications (DASA 2016):** Presentation "A Review and perspectives on Control charting with 3D scanned Data".	Organized by the University of Tunis in Hammamet, Tunisia.
November 9, 2020	**The 1st Virtual Symposium on Directional Statistics.** Participation.	Organized by Karlsruhe Institute of Technology.
October 19-20, 2018	**Workshop on High Dimensional Small Data.** Participation.	Ca' Foscari University of Venice, Italy.
October, 2019	Seminar: Jensen's alpha measured and decomposed under skew symmetric semi-parametric model for error terms in the market model.	Palacky university, Olomouc, Czech Republic.
November, 2019	Seminar: Non-parametric forecasting of multivariate probability density functions.	Palacky university, Olomouc, Czech Republic.

PUBLICATIONS

Book's chapters
DEMNI, H., MESSAOUD, A., and PORZIO, G.C., (2019), **The Cosine depth distribution classifier for directional data.** In: Ickstadt K, Trautmann H, Szepannek G Lubke K, and N, Bauer (eds), Applications in Statistical Computing. Studies in Classification, Data Analysis, and Knowledge Organization. Springer, Cham, pp. 49-60. DOI: _https://doi.org/10.1007/978-3-030-25147-5-4_.

DEMNI, H., (2020), **Directional supervised learning through depth functions: an application to ECG waves analysis** In: Balzano S., Porzio G.C., Salvatore R., Vistocco D., Vichi M. (eds) Statistical Learning and Modeling in Data Analysis. Studies in Classification, Data Analysis and Knowledge Organization, to appear.

Journal Articles

VENCALEK, O., **DEMNI, H.**, MESSAOUD, A., and PORZIO, G.C., (2020), **On the optimality of the max-depth and max-rank classifiers for spherical data.** Applications of Mathematics, 65(3), 331-342. https://doi.org/10.21136/AM.2020.0331-19.

DEMNI, H., MESSAOUD, A., and PORZIO, G.C., Distance-based directional depth classifiers: a robustness study. Submitted from July 2020.

Congress proceedings

DEMNI, H., MESSAOUD, A., and PORZIO, G.C., (2019), **On the robustness of the Cosine distribution depth classifier.** In: Porzio G.C., Greseling F., Balzano S., (eds) CLADAG 2019 Book of Short Papers, pp. 158-161. Edizioni Università di Cassino, Cassino. ISBN 978-88-8317-108-6. https://www.unicas.it/media/4700049/CLADAG2019.pdf.

OTHER INFORMATION

Courses:
- March-June 2018, Statistical learning and Data mining lectures, University of Cassino and Southern Lazio, Cassino, Italy (Exam grade 28/30).
- September-December 2018, Applied statistics lectures, University of Cassino and Southern Lazio, Cassino, Italy (Exam grade 28/30).
- September-December 2019, Time series lectures, Palacky University, Olomouc, Czech Republic.
- September-December 2019, Neural networks lectures, Palacky University, Olomouc, Czech Republic.

Teaching Experience:
- Lecturer, University of Cassino and Southern Lazio, Italy, 2020. Statistics for Bachelor's degree in Economics and Business.
- Teaching Assistant, University of Cassino and Southern Lazio, Italy, 2018. Statistics for Bachelor's degree in Economics and Business (R Lab sessions).
- Teaching Assistant, Tunis Business School, University of Tunis, Tunisia, 2015-2017. Business Statistics and Production and Operation management for sophomore and junior students.

Software:
R, MATLAB, SPSS, Microsoft Office, SQL, SAS, Oracle, Python, C++, Latex.

Declarations given in the present curriculum must be considered released according to art. 46 and 47 of DPR n. 445/2000.

The present curriculum does not contain confidential and legal information according to art. 4, paragraph 1, points d) and e) of D.Lgs. 30.06.2003 n. 196.

Place and date: _Cassino_____, _13/11/2020_____

SIGNATURE

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