

Cartograms, and how to obtain them using Self-Organizing Maps and controlling their Magnification Effect.

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ABSTRACT

Cartograms are geographic representations where the area of each region is distorted to as to be proportional to a given variable of interest. The most common ones are population cartograms, where regions with large populations are enlarged, squeezing the regions with less population. To obtain a good cartogram, not only each regions should occupy an area proportional to the variable of interest, but at the same time the necessary distortions should allow the users to still recognize the map. Several examples of cartograms shall be given, together with the algorithms that produce them. Finally, a method based on Self-Organizing Maps, named CartoSOM will be presented, together with a recent improvement based on a better estimation of the "Magnification Effect" of the SOM.

SPEAKER



Professor Victor Lobo has a 5 year degree in Electrical Engineering from the Engineering School of the University of Lisbon (IST), a MSc and PhD in Computer Science from NOVA School of Science and Technology (NOVA SST), and "agregação" (Habilitation) from NOVA IMS. He joined the Portuguese Navy in 1989 as a Naval Reserve Officer, and has been a civilian teacher at the Naval Academy since 1993, where he is currently Full Professor. Since 2003 he is also an invited professor at the Information Management School of the New University of Lisbon (NOVA IMS). From 2009 to 2019 he was on the board of the Naval Research Center (CINAV), having been the Director of the Center since 2012.

He has over 150 scientific publications in Journals and Conference Proceedings. He has supervised 6 PhD students, 53 MSc, and 50 final projects (of 5 year engineering degree students). He has participated as researcher, principal investigator, institution or general coordinator in over 30 research projects with competitive funding. He was visiting faculty at San Diego State University, and at the French Naval Academy in Brest, and invited professor at FCT-UNL, ISCTE, and the Military University Institute. He has worked in various scientific areas, but his main focus is on Machine Learning, Self-Organizing Maps (Kohonen Neural Networks), Geo-spatial data analysis, mobile robotics, and underwater acoustics.