

# Smart system for predicting climate degradation for monitoring the adaptation of agriculture to climate change



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### **Abstract**

Agriculture is undoubtedly one of the most climate-dependent human activities. However, the latter has tried to overcome this dependence and therefore often seeks to modify the environment, for example by rinsing, by standardizing the topography, by increasing the size of the plot, by reducing the landscape heterogeneity by ensuring that the varieties high-yielding varieties bred for a familiar environment are always in optimum growing conditions. In this approach, which assumes that it is still possible to control crop growth conditions, climate change appears as a new factor. In these modern landscapes characterized by agricultural intensification, innovative systems are needed to satisfy the overall long-term increase in global demand for food and wood while addressing environmental concerns. Current forecasts suggest that the Mediterranean region is likely to be strongly impacted by climate change. Projections indicate that these changes are likely to negatively affect ecosystems and agricultural production throughout the Mediterranean basin. North Africa is expected to face significant challenges in terms of climate change. Smart agriculture based on adaptation to climate change is a practice that will be very useful for Mediterranean countries such as Morocco, Spain and Tunisia, especially in desert and hilly areas where agricultural land and water are rare. Our aim to study the effect of climate change on olive cultivation in the Mediterranean regions based on new techniques of data mining and data analysis to predict in advance the damage caused by the climate change on the quality of crop yields will allow a better decision.

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*Keywords: Agriculture, Climate Change, Prediction, IA, Data mining, Data Analytics, Machine learning, Knowledge, Agri-Food, Crops, TV White Space, Pollution*

## Short Bio:

Prof. Dr. Mostafa Ezziyyani, IEEE and ASTF Member received the “Licence en Informatique” degree, the “Diplôme de Cycle Supérieur en Informatique” degree and the PhD “Doctorat (1)” degree in Information System Engineering, respectively in 1994, 1996 and 1999 from Mohammed V University in Rabat, Morocco. Also, he received the second PhD degree “Doctorat (2)” in 2006, From Abdelmalek Essaadi University” in Distributed Systems and Web Technologies. In 2008 he receives a Researcher Professor Ability Grade. In 2015 he receives a PES Grade the highest degree at Morocco University. Now he is a professor of Computer Engineering and Information System in Faculty of Science and Technologies of Abdelmalek Essaadi University since 1996. His research activities focus on the modelling databases and integration of heterogeneous systems (with the various developments to the knowledge base, the object BD, active BD, Multi- System Agents, distributed systems and mediation). This research is at the crossroads of databases, artificial intelligence, Software Engineering and Programming. Professor at computer Science Department, Member of La.S.I.T laboratory, and responsible of the research direction Information Systems and Technologies, he formed a research team that works around this theme and more particularly in the area of integration of heterogeneous information systems and Multi-Agents Systems using WSN as technology for communication. He is the editor and coordinator of two basic projects with Ministry of higher education and scientific research and others as international project (ERANETMED3) in the topic modelling of distributed information systems reseed to environment and agriculture. The first project aims to propose an adaptive system for flood evacuation. This system gives the best decisions to be taken in this emergency situation to minimize damages. In the second project, aims to develop a research dynamic process of the itinerary in an events graph for blind and partially-sighted users. Moreover, he has been the principal investigator and the project manager for several research projects dealing with several topics concerned with his research interests mentioned above. He was an invited professor for several countries in the world (France, Spain Belgium, Holland, USA, Tunisia). He is member of USA-J1 program for TCI morocco delegation in 2007. He creates strong collaborations with research centers in Databases and Telecommunications for students exchange: LIP6, Valencia, Poitiers, Boston, Houston, China. He is the author of more than 60 papers which appeared in refereed specialized journals and symposia. He was also the author of 2 paper of the book "New Trends in Biomedical Engineering", AEU Publications, 2004. He was a member of the Organizing and the Scientific Committees of several symposia and conferences dealing with topics related with Computer Sciences, Distributed Databases and Web technology. has been actively involved in the research community by serving as reviewer for technical, and as an organizer/co-organizer of numerous international and national conferences and workshops. In addition, he served as a programme committee member for international conferences and Workshops. He was the responsible of the formation cycle “Maîtrise de Génie Informatique” in the Faculty of Sciences and Technologies in Tangier since 2006. He is the responsible too, and coordinator of two Master “DCESS - Systèmes Informatique pour Management des Entreprise” and “DCESS - Systèmes Informatique pour Management des Enterprise”. He is the coordinator of the computer sciences modules and responsible of the graduation projects and external relations of the Engineers Cycle “Statistique et Informatique Décisionnelle” in mathematic department of the Faculty of Sciences and Technologies in Tangier since 2007. He participates also in the Telecommunications Systems DESA / Masters, “Bio-Informatique” Masters and "Qualité des logiciels” Masters in the Faculty of Science in Tetuan since 2002. He is also the founder and the current Chair of the Blind’s and partially-sighted people association. His activity interests focus mainly on the software to help the Blind’s and partially-sighted people to use the ICT, specifically in Arabic countries. He is the founder the private centre of training and education in advanced technologies ACETAT, in Tangier since 2000.