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USE OF GROUPING ALGORITHMS FOR FLOOD PREDICTION IN THE MOCHE RIVER.

Abstract

The floodings caused by the Moche River in Perú generate losses of millions of dollars yearly in the urban areas of Trujillo (one of this country's departments). Those occur in the summer season when that river reaches its maximum flow. Therefore, with this research, it is intended to predict with more precision the regions that will be affected in order to use better focalized strategies to reduce the damage caused by that natural phenomenon. For that objective, we will use satellite images owned by the United States Geological Service. From the webpage of that institution, pictures taken by the LansSat 8 satelite from 2013 to 2020 were downloaded. This present study monitor the change in the river Moche's flux with the analysis of those pictures which will consist of a border detection algorithm in order to determine which regions had suffered a channel increment. Furthermore, those images will be used with a grouping algorithm semi-supervised to obtain tagged values such as "flooding". Finally, that data will be compared with those given by Peru's government in order to determine the accuracy method. A trained neural network will be used in order to obtain those tagged images. With that networker can obtain preditions (using the method that give us the best accuracy) of what regions will have the most probability of suffering a flood. This study demonstrates that is feasible to use Machine learning so as to get predictions on flooding on the Moche River, that implies that in the future areas of high risk of flooding could be delimited.