

Project (maximum 4 students in a group):

Add 4 new features to the union of 3 datasets (representing years 2019-2021) available at <https://fragilestatesindex.org/excel/> and extract classification rules and action rules from it. The attribute/column D in these datasets shows the Fragile States Index (FSI) which is the decision feature. The FSI scores should be interpreted with the understanding that the lower the score, the better. Therefore, a reduced score indicates an improvement and greater relative stability, just as a higher score indicates greater instability. Clearly, the decision feature needs to be discretized. Action rules should suggest what changes in values of classification features are needed to lower FSI.

Follow the discretization presented in this article: https://en.wikipedia.org/wiki/Fragile_States_Index
You should think about what new features make sense to add (they should be correlated with the decision feature) and find sources on the web which you can use to find values of these features. You need to motivate the choice of these additional features, and shortly describe each of them (type, source) and motivate its choice. The motivation behind choice of additional features should be preferably supported by classification results (try to run classifiers with and without these additional features and report/ analyze the results).

For extracting classification rules you can use RSES, Orange, WEKA,....
Lisp Miner can be used (<http://lispminer.vse.cz/>) to extract action rules.

Before defining action rule mining task in LIsp-Miner (module: Ac4ft-Miner) you need to analyze attributes in your dataset- which one is stable/flexible and how to define your analytical task (hypothesis). You should shortly describe patterns you defined in Lisp-Miner in the report and justify the choice of the defined pattern (hypothesis) you are extracting. You should also attach the exported text file with the action rules you extracted. You should analyze a couple of the rules (with the highest support) so that to suggest actions that can be taken into consideration for the chosen countries to change their status to less fragile.

There is no specific format for the report, but the mandatory parts are: description of the problem area (your understanding of the problem in your own words), the choice and justification of additional 4 features, along with the method and source for their extraction, description of all the preprocessing methods performed on the datasets, report and analysis of classification results, report and analysis of action rule mining results. Your report should be concise and using your own wording