**Project (maximum 4 students in a group)**:

Add six new features to 3 datasets (take 3 consecutive years) available at  <https://fragilestatesindex.org/excel/> and extract classification rules and action rules from them. The first column 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 which new features make sense in this decision problem area and find sources on the web to insert values of these features into your datasets. 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).

"Do not merge" datasets means that yearly datasets should be analyzed separately (run classifiers and action rules software on yearly datasets) and try to compare the results by year and how they change yearly.

For classification purposes you can use any software of your choice (like WEKA, RSES, Orange,…).

Use Lisp Miner (http://lispminer.vse.cz/) to extract action rules.

Lisp Miner manual: <https://webpages.uncc.edu/ras/Paper-AR.pdf>

Before defining Action rule mining task in the LISp-Miner (module: Ac4ft-Miner) you should analyze the attributes in your datasets- which one should be used as stable/flexible attributes 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 have extracted. You should analyze a couple of the rules (with the best support) so that to suggest actions that should be taken 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 6 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

Deadline for project submission: April 30, 2019