# AlgoMarker documentation

There are 3 steps to calculate score (assuming AM was loaded successfully and also LoadData was called successfully):

* 1. Testing eligibility before score calculation
  2. Apply the model - calculating score/explainability
  3. Testing eligibility after score calculation

If patient is not eligible (received error) – score is not calculated. If it’s warning score can be calculated. All errors of eligibility that happens before score calculation is reported and not just the first error. If score is calculated than also all the errors/warning in eligibility tests after score calculation are executed.

The configuration of algomarker eligibility tests – amconfig file:

Please refer to wiki: <http://confluence:8090/display/WIK/AlgoMarkers>

* simple, feature – are both happens before model execute – all errors/warning are presented
* attr – happens only when simple,attr test have no errors or failed tests so the model is executed

The model is a pipeline when each block of tests for outliers in the model is tested one after the other. The order of outlier tests depends on the model.

model tests order can be examined by:

* Flow --print\_model\_info --f\_model $MODEL\_PATH 2>&1
* Add in the end ‘| egrep “BasicOutlierCleaner|RepRuleBasedOutlierCleaner”’. If line has BasicOutlierCleaner – it’s simple outlier test of lab and you can see the lab range. If it has RepRuleBasedOutlierCleaner – you can see the rule that is being applied by those numbers: <http://node-04/Libs/html/classRepRuleBasedOutlierCleaner.html>

The output shows the pipeline and order of outlier’s tests being executed.

Error codes descriptions - [error\_codes.xlsx](https://medial.sharepoint.com/:x:/r/sites/algoteam/Shared%20Documents/General/AlgoMarker/error_codes.xlsx?d=w04b4e7905ddd45bc85a0c2fadc267433&csf=1&web=1&e=wXaT2n)

## Example aaa.amconfig

file starts with simple filters that check BDATE exists, the age is 65-75, have race, gender and smoking status. Then we have “feature” filter that checks the patient is current of former smoker. Only after all those tests the model executes and we check for outlier warnings.

AAA command output:

MODEL\_INFO: :: RP type 4(RepRuleBasedOutlierCleaner) : required(1): BP, affected(1): BP, Rules: [23]

MODEL\_INFO:->Multi[0] :: BasicOutlierCleaner: signal: -1 ALKP : v\_channel 0 : doTrim 1 trimMax 1000000015047466219876688855040.000000 trimMin -1000000015047466219876688855040.000000 : doRemove 1 : removeMax 5000.000000 removeMin 0.100000

MODEL\_INFO:->Multi[1] :: BasicOutlierCleaner: signal: -1 ALT : v\_channel 0 : doTrim 1 trimMax 1000000015047466219876688855040.000000 trimMin -1000000015047466219876688855040.000000 : doRemove 1 : removeMax 6500.000000 removeMin 0.100000

MODEL\_INFO:->Multi[2] :: BasicOutlierCleaner: signal: -1 AST : v\_channel 0 : doTrim 1 trimMax 1000000015047466219876688855040.000000 trimMin -1000000015047466219876688855040.000000 : doRemove 1 : removeMax 6000.000000 removeMin 0.100000

MODEL\_INFO:->Multi[3] :: BasicOutlierCleaner: signal: -1 B12 : v\_channel 0 : doTrim 1 trimMax 1000000015047466219876688855040.000000 trimMin -1000000015047466219876688855040.000000 : doRemove 1 : removeMax 2500.000000 removeMin 1.000000

MODEL\_INFO:->Multi[4] :: BasicOutlierCleaner: signal: -1 Basophils# : v\_channel 0 : doTrim 1 trimMax 1000000015047466219876688855040.000000 trimMin -1000000015047466219876688855040.000000 : doRemove 1 : removeMax 18.000000 removeMin 0.000000

MODEL\_INFO:->Multi[5] :: BasicOutlierCleaner: signal: -1 Basophils% : v\_channel 0 : doTrim 1 trimMax 1000000015047466219876688855040.000000 trimMin -1000000015047466219876688855040.000000 : doRemove 1 : removeMax 25.000000 removeMin 0.000000

MODEL\_INFO:->Multi[6] :: BasicOutlierCleaner: signal: -1 BMI : v\_channel 0 : doTrim 1 trimMax 1000000015047466219876688855040.000000 trimMin -1000000015047466219876688855040.000000 : doRemove 1 : removeMax 70.000000 removeMin 5.000000

MODEL\_INFO:->Multi[7] :: BasicOutlierCleaner: signal: -1 Cholesterol : v\_channel 0 : doTrim 1 trimMax 1000000015047466219876688855040.000000 trimMin -1000000015047466219876688855040.000000 : doRemove 1 : removeMax 1200.000000 removeMin 1.000000

MODEL\_INFO:->Multi[8] :: BasicOutlierCleaner: signal: -1 Cholesterol\_over\_HDL : v\_channel 0 : doTrim 1 trimMax 1000000015047466219876688855040.000000 trimMin -1000000015047466219876688855040.000000 : doRemove 1 : removeMax 36.096695 removeMin 1.000000

MODEL\_INFO:->Multi[9] :: BasicOutlierCleaner: signal: -1 Creatinine : v\_channel 0 : doTrim 1 trimMax 1000000015047466219876688855040.000000 trimMin -1000000015047466219876688855040.000000 : doRemove 1 : removeMax 20.000000 removeMin 0.000000

MODEL\_INFO:->Multi[10] :: BasicOutlierCleaner: signal: -1 CRP : v\_channel 0 : doTrim 1 trimMax 1000000015047466219876688855040.000000 trimMin -1000000015047466219876688855040.000000 : doRemove 1 : removeMax 300.000000 removeMin 0.000000

MODEL\_INFO:->Multi[11] :: BasicOutlierCleaner: signal: -1 Eosinophils# : v\_channel 0 : doTrim 1 trimMax 1000000015047466219876688855040.000000 trimMin -1000000015047466219876688855040.000000 : doRemove 1 : removeMax 50.000000 removeMin 0.000000

MODEL\_INFO:->Multi[12] :: BasicOutlierCleaner: signal: -1 Eosinophils% : v\_channel 0 : doTrim 1 trimMax 1000000015047466219876688855040.000000 trimMin -1000000015047466219876688855040.000000 : doRemove 1 : removeMax 100.000000 removeMin 0.000000

MODEL\_INFO:->Multi[13] :: BasicOutlierCleaner: signal: -1 Ferritin : v\_channel 0 : doTrim 1 trimMax 1000000015047466219876688855040.000000 trimMin -1000000015047466219876688855040.000000 : doRemove 1 : removeMax 20000.000000 removeMin 0.000000

MODEL\_INFO:->Multi[14] :: BasicOutlierCleaner: signal: -1 Glucose : v\_channel 0 : doTrim 1 trimMax 1000000015047466219876688855040.000000 trimMin -1000000015047466219876688855040.000000 : doRemove 1 : removeMax 5000.000000 removeMin 10.000000

MODEL\_INFO:->Multi[15] :: BasicOutlierCleaner: signal: -1 HbA1C : v\_channel 0 : doTrim 1 trimMax 1000000015047466219876688855040.000000 trimMin -1000000015047466219876688855040.000000 : doRemove 1 : removeMax 50.000000 removeMin 0.000000

MODEL\_INFO:->Multi[16] :: BasicOutlierCleaner: signal: -1 HDL : v\_channel 0 : doTrim 1 trimMax 1000000015047466219876688855040.000000 trimMin -1000000015047466219876688855040.000000 : doRemove 1 : removeMax 420.000000 removeMin 0.000000

MODEL\_INFO:->Multi[17] :: BasicOutlierCleaner: signal: -1 Height : v\_channel 0 : doTrim 1 trimMax 1000000015047466219876688855040.000000 trimMin -1000000015047466219876688855040.000000 : doRemove 1 : removeMax 300.000000 removeMin 20.000000

MODEL\_INFO:->Multi[18] :: BasicOutlierCleaner: signal: -1 INR : v\_channel 0 : doTrim 1 trimMax 1000000015047466219876688855040.000000 trimMin -1000000015047466219876688855040.000000 : doRemove 1 : removeMax 11.000000 removeMin 0.010000

MODEL\_INFO:->Multi[19] :: BasicOutlierCleaner: signal: -1 LDH : v\_channel 0 : doTrim 1 trimMax 1000000015047466219876688855040.000000 trimMin -1000000015047466219876688855040.000000 : doRemove 1 : removeMax 12000.000000 removeMin 1.000000

MODEL\_INFO:->Multi[20] :: BasicOutlierCleaner: signal: -1 LDL : v\_channel 0 : doTrim 1 trimMax 1000000015047466219876688855040.000000 trimMin -1000000015047466219876688855040.000000 : doRemove 1 : removeMax 2000.000000 removeMin 1.000000

MODEL\_INFO:->Multi[21] :: BasicOutlierCleaner: signal: -1 Lymphocytes# : v\_channel 0 : doTrim 1 trimMax 1000000015047466219876688855040.000000 trimMin -1000000015047466219876688855040.000000 : doRemove 1 : removeMax 500.000000 removeMin 0.000000

MODEL\_INFO:->Multi[22] :: BasicOutlierCleaner: signal: -1 Lymphocytes% : v\_channel 0 : doTrim 1 trimMax 1000000015047466219876688855040.000000 trimMin -1000000015047466219876688855040.000000 : doRemove 1 : removeMax 100.000000 removeMin 0.000000

MODEL\_INFO:->Multi[23] :: BasicOutlierCleaner: signal: -1 Monocytes# : v\_channel 0 : doTrim 1 trimMax 1000000015047466219876688855040.000000 trimMin -1000000015047466219876688855040.000000 : doRemove 1 : removeMax 40.000000 removeMin 0.000000

MODEL\_INFO:->Multi[24] :: BasicOutlierCleaner: signal: -1 Monocytes% : v\_channel 0 : doTrim 1 trimMax 1000000015047466219876688855040.000000 trimMin -1000000015047466219876688855040.000000 : doRemove 1 : removeMax 100.000000 removeMin 0.000000

MODEL\_INFO:->Multi[25] :: BasicOutlierCleaner: signal: -1 MPV : v\_channel 0 : doTrim 1 trimMax 1000000015047466219876688855040.000000 trimMin -1000000015047466219876688855040.000000 : doRemove 1 : removeMax 27.000000 removeMin 0.100000

MODEL\_INFO:->Multi[26] :: BasicOutlierCleaner: signal: -1 Neutrophils# : v\_channel 0 : doTrim 1 trimMax 1000000015047466219876688855040.000000 trimMin -1000000015047466219876688855040.000000 : doRemove 1 : removeMax 150.000000 removeMin 0.000000

MODEL\_INFO:->Multi[27] :: BasicOutlierCleaner: signal: -1 Neutrophils% : v\_channel 0 : doTrim 1 trimMax 1000000015047466219876688855040.000000 trimMin -1000000015047466219876688855040.000000 : doRemove 1 : removeMax 100.000000 removeMin 0.000000

MODEL\_INFO:->Multi[28] :: BasicOutlierCleaner: signal: -1 NonHDLCholesterol : v\_channel 0 : doTrim 1 trimMax 1000000015047466219876688855040.000000 trimMin -1000000015047466219876688855040.000000 : doRemove 1 : removeMax 1401.434326 removeMin 0.000000

MODEL\_INFO:->Multi[29] :: BasicOutlierCleaner: signal: -1 Platelets : v\_channel 0 : doTrim 1 trimMax 1000000015047466219876688855040.000000 trimMin -1000000015047466219876688855040.000000 : doRemove 1 : removeMax 3000.000000 removeMin 0.100000

MODEL\_INFO:->Multi[30] :: BasicOutlierCleaner: signal: -1 RDW : v\_channel 0 : doTrim 1 trimMax 1000000015047466219876688855040.000000 trimMin -1000000015047466219876688855040.000000 : doRemove 1 : removeMax 100.000000 removeMin 0.000000

MODEL\_INFO:->Multi[31] :: BasicOutlierCleaner: signal: -1 Triglycerides : v\_channel 0 : doTrim 1 trimMax 1000000015047466219876688855040.000000 trimMin -1000000015047466219876688855040.000000 : doRemove 1 : removeMax 10000.000000 removeMin 5.000000

MODEL\_INFO:->Multi[32] :: BasicOutlierCleaner: signal: -1 WBC : v\_channel 0 : doTrim 1 trimMax 1000000015047466219876688855040.000000 trimMin -1000000015047466219876688855040.000000 : doRemove 1 : removeMax 150.000000 removeMin 0.010000

MODEL\_INFO:->Multi[33] :: BasicOutlierCleaner: signal: -1 Weight : v\_channel 0 : doTrim 1 trimMax 1000000015047466219876688855040.000000 trimMin -1000000015047466219876688855040.000000 : doRemove 1 : removeMax 300.000000 removeMin 1.000000

MODEL\_INFO:->Multi[34] :: BasicOutlierCleaner: signal: -1 ESR : v\_channel 0 : doTrim 1 trimMax 1000000015047466219876688855040.000000 trimMin -1000000015047466219876688855040.000000 : doRemove 1 : removeMax 2500.000000 removeMin 0.000000

MODEL\_INFO:->Multi[35] :: BasicOutlierCleaner: signal: -1 BP : v\_channel 0 : doTrim 1 trimMax 1000000015047466219876688855040.000000 trimMin -1000000015047466219876688855040.000000 : doRemove 1 : removeMax 200.000000 removeMin 20.000000

MODEL\_INFO:->Multi[36] :: BasicOutlierCleaner: signal: -1 BP : v\_channel 1 : doTrim 1 trimMax 1000000015047466219876688855040.000000 trimMin -1000000015047466219876688855040.000000 : doRemove 1 : removeMax 300.000000 removeMin 50.000000

MODEL\_INFO:->Multi[0] :: RP type 4(RepRuleBasedOutlierCleaner) : required(0): affected(0): ]

MODEL\_INFO:->Multi[1] :: RP type 4(RepRuleBasedOutlierCleaner) : required(6): Neutrophils#,WBC,Lymphocytes#,Basophils#,Monocytes#,Eosinophils#, affected(6): Neutrophils#, WBC, Lymphocytes#, Basophils#, Monocytes#, Eosinophils#, Rules: [5]

MODEL\_INFO:->Multi[2] :: RP type 4(RepRuleBasedOutlierCleaner) : required(3): Cholesterol,HDL,LDL, affected(3): Cholesterol, HDL, LDL, Rules: [9]

MODEL\_INFO:->Multi[3] :: RP type 4(RepRuleBasedOutlierCleaner) : required(3): Cholesterol,HDL,NonHDLCholesterol, affected(3): Cholesterol, HDL, NonHDLCholesterol, Rules: [10]

MODEL\_INFO:->Multi[4] :: RP type 4(RepRuleBasedOutlierCleaner) : required(3): HDL,Cholesterol,Cholesterol\_over\_HDL, affected(1): Cholesterol\_over\_HDL, Rules: [15]

MODEL\_INFO:->Multi[0] :: BasicOutlierCleaner: signal: -1 Smoking\_Duration : v\_channel 0 : doTrim 1 trimMax 1000000015047466219876688855040.000000 trimMin -1000000015047466219876688855040.000000 : doRemove 1 : removeMax 150.000000 removeMin 0.000000

MODEL\_INFO:->Multi[1] :: BasicOutlierCleaner: signal: -1 Smoking\_Intensity : v\_channel 0 : doTrim 1 trimMax 1000000015047466219876688855040.000000 trimMin -1000000015047466219876688855040.000000 : doRemove 1 : removeMax 200.000000 removeMin 0.000000