**Weight Adjusting Algorithm**

**Input**

* All predictions Matrix

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | Sample 1 | Sample 2 | Sample 3 | Sample 4 | Sample 5 |
| Classifier 1 | 0 | 1 | 1 | 0 | 0 |
| Classifier 2 | 1 | 0 | 0 | 1 | 0 |
| Classifier 3 | 1 | 0 | 1 | 0 | 1 |
| Classifier 4 | 0 | 1 | 0 | 0 | 1 |
| Classifier 5 | 0 | 1 | 1 | 1 | 0 |

* Actual Values
* Step size 1
* Step size 2

**Output**

* Weights array 🡪 weights for each of the classifier

**Algorithm**

* Infer the “# of models” and “# of samples” from the ‘All predictions Matrix’

**n\_classifiers** = no of rows in the matrix

**n\_samples** = no of columns in the matrix

* Create a variable named ‘**majority**’ = int ( math.ceil ( n\_models / 2 ) )
* Create a **weights** array of size ‘n\_models’ with initial weights = 1 / n\_classifiers

If (the n\_ classifiers == 1 or 2)

{

Do not change the weights

}

* Compare the predictions of each classifier with the actual values and hence creating a matrix of 0's and 1's

for i in range (0, n\_ classifiers):

all\_predictions\_matrix [ i, : ] = ( [all\_predictions\_matrix[ i, : ] == actual\_values] )

Adjusting the Weights

Iterate over all the samples 🡪 for i in range (0 to n\_samples): and do the following

If (all classifiers predicted correct or if they all predicted wrong)

then do nothing, just continue

if (the number of positive votes > = majority)

{

weight of each correct classifier + = step\_size1 / (# correct classifier / #of wrong classifier) weight of each wrong classifier - = step\_size1

}

Else

{

weight of each correct classifier + = (# of wrong classifiers /# of correct classifiers) \* step\_size2

weight of each wrong classifier - = step\_size2

}

End of for loop;

Return weights

**Voting Algorithm**

**Input**

* A **List** of each classifiers predictions. For ex: { 0, 0, 0, 1, 1} .
* A list of each calssifiers **weights** obtained from the “Weight adjusting algorithm”.

**Output**

* An integer value (final prediction after voting).

**Algorithm**

* Create a variable named **majority** = int (math.ceil ( length (list) / 2) )

If ( the # of positive votes are **>** majority)

Return 1

Else

{

If ( average weight of positive voters **>** average weight of negative voters)

Return 1

Else

Return 0

}