Test Result on Property

1. Result on Sequence

2. Result on Parallel

2.1 Add activities in parallel relation

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| ID | Model name | Log name | Result data | Figure type and name | Figure Description |
| 2.1 | model\_02\_parallism.pnml | 02\_log\_parallelism\_08.xes | result-02\_log\_parallelism\_08.xlsx | result-neg-weight-02\_log\_parallelism\_08.png | Recall , accuracy down,  F, Precision, Specificy overlapped stay stable |
| result-ext-weight-02\_log\_parallelism\_08.png | Recall varies a lot, overlapped with others, while it ranges from 0.5–0.9  Precision, F has missing values, but other part stays the 1.0  Specificity stays always at 1.0 |
| result-pos-weight-02\_log\_parallelism\_08.png | Recall, accuracy vary a lot.  Precision, F has missing values, but other part stays the 1.0  Specificity stays always at 1.0 |
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The effect at existing model varies so much, is because of the model generated by weighted data. It depends on the deviations of model and actual data. If they deviate a lot, then no need to keep the existing model;; Else, there is some ideas to keep the model.

To prove the significance of the existing model, we need to test the similarity of those models. We can compare it with the inductive miner and check their result.

# Analysis:

the figures show that with the weights of negative increases, the model becomes more power to address the accuracy. But the model is generated due to balance of existing model, positive and negative instances.

But we can see that, positive and

2.2 change parallel to xor

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| ID | Model name | Log name | Result data | Figure type and name | Figure Description |
| 2.2 | model\_02\_parallism.pnml | 02\_log\_parallelism\_02.xes | result-02\_log\_parallelism\_02.xlsx  Here we delete the effect of mixed standard, and now, we can have the right groups here. | result-neg-weight-02\_log\_parallelism\_02.png | ~~Recall , accuracy down,~~  ~~F, Precision, Specificy overlapped stay stable~~  With the negative weights goes, it grows up all the measurements.  Reason: negetive weights more, then  Precision and accuracy: the true positive got support and blocked from the model.  Tp up, FP down, TN up, FN down. |
| result-ext-weight-02\_log\_parallelism\_02.png | ~~Precision, and F are with NaN data, but the total frequency goes down.. while Fscore stays the same.~~  ~~Accuracy shows the similar changes, go down.~~  ~~Recall vabirate a lot but tendency goes down.~~  ~~Specificity has the same tendency like recall, but higher value.~~  With the existing values go up, the values go down, the reason for this??? Recall goes down is because the true positive goes down. Why?? The model needs change, it doesn’t fit the model anymore. Then TP smaller.  Accuracy goes down and precision: TP less and FP increases, but why?? Existing model deviates from the old model. True negative goes down. Because the model supports more negative instances.  Specificity: TN goes down and the models is unable to reject the resuls. |
| result-pos-weight-02\_log\_parallelism\_02.png | ~~Recall varies a lot, unstable,accuracy higer than precision, but varied also a lot.~~  ~~Specificity vabriate above 0.60. precision with missing values, but show a slow going up. Vabirate .~~  ~~F value varies a lot and stays around 0.0 value.~~  Positive goes up, the other goes up, except the specificity stays same. |

2.3 change parallel to sequence with overlapped labels.

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| ID | Model name | Log name | Result data | Figure type and name | Figure Description |
| 2.3 | model\_02\_parallism.pnml | 02\_log\_parallelism\_06.xes | result-02\_log\_parallelism\_06.xlsx | result-neg-weight-02\_log\_parallelism\_06.png | Accuracy and precision overlaps, the other goes up, recall and specificity.  TP down, Fp down, TN up, FN up. |
| result-ext-weight-02\_log\_parallelism\_06.png | Recall goes a bit up slowly, while accuracy and precision overlap and go down. The same wityh specificity.  TP up, FP up, TN down, FN down |
| result-pos-weight-02\_log\_parallelism\_06.png | Recall goes a bit up slowly, while accuracy and precision overlap and go down. The same wityh specificity.  TP up, FP up, TN down, FN down |

3. Result on Loop

3.1 delete loop

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| ID | Model name | Log name | Result data | Figure type and name | Figure Description |
| 3.1 | model\_03\_loop\_03.pnml | 03\_log\_loop\_07.xes | result-03\_log\_loop\_07.xlsx | result-neg-weight-03\_log\_loop\_07.png | Accuracy and precision overlaps and go up. Recall keep stable.  TP same, Fp down, TN up, FN 0.  Why false negative 0?? The model not change any positive choices, so it adjust the effect to avoid the negative isntances. Because TN up. |
| result-ext-weight-03\_log\_loop\_07.png | Recall keeps the same, while accuracy and precision overlap and go down. The same down with specificity.  TP same, FP up, TN down, FN same  Ext keeps the model and damages the precision and accuracy. |
| result-pos-weight-03\_log\_loop\_07.png | All keep 1.0.  Because the TN and TN keeps same, other 0. |

3.2

4. Result on Xor