

## Lab 02: Sentiment analysis enhancement

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Using the result of the last lab, try to enhance the performance of our model.

### 1 Possible enhancements

Try to enhance **AT LEAST** one of the following metrics without deterioration of others (a little deterioration is acceptable):

- **Model's size:** A model with less size can be useful for smaller devices. If we gain in other metrics, we can accept a bigger model.
- **Precision:** A model with more precision can be more specific (When a class is detected, we are more sure that it is true).
- **Recall:** A model with more recall can be more sensitive (We are more sure that a class will be detected).
- **Test time:** A model with less detection time is preferable. The time can deteriorate if our gain in precision or recall is significant.

We are more interested in positive and negative comments; neutral ones are not important in our case. So, even if there is a deterioration of their metrics, it is not a problem.

### 2 Our baseline

The baseline model is the one we want to beat (defeat not hit). The results for neural models may differ from execution to another. or the sake of the lab, we consider these results. The stable one and the better one is MNB. In this case, it will be our baseline.

Words enc.	Sent. enc.	Algo.	$P_+$	$R_+$	$P_-$	$R_-$	$P_0$	$R_0$	time
-	TF	MNB	<b>0.65</b>	<b>0.62</b>	0.41	<b>0.42</b>	<b>0.74</b>	0.76	<b>0.00068051</b>
Word2Vec	Centroid	MLP	0.54	0.31	<b>0.75</b>	0.01	0.62	0.95	0.10007042
	Concat	MLP	0.53	0.26	0.18	0.01	0.61	0.96	0.07459588
	Matrix	CNN	0.44	0.40	0.21	0.05	0.62	0.80	0.08896689
Fasttext	Centroid	MLP	0.49	0.38	0.40	0.03	0.64	<b>0.90</b>	0.07278778
	Concat	MLP	0.48	0.37	0.25	0.02	0.62	0.88	0.073478956
	Matrix	CNN	0.53	0.38	0.21	0.06	0.63	0.88	0.08597848

Table 1: Comparison between different architectures.