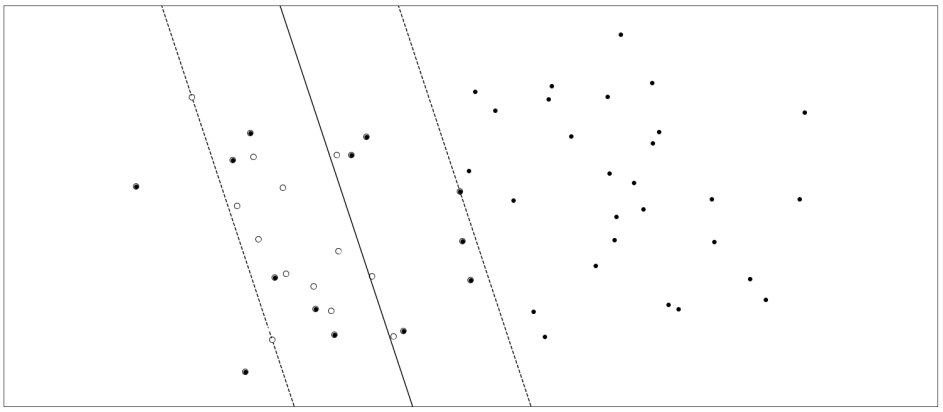
QUESTIONS SVM GUI

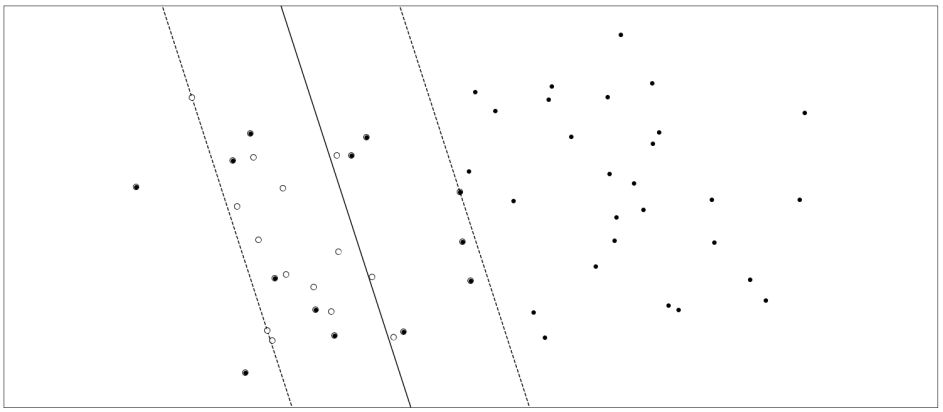
CAPITAN Guillaume, MOALIC Baptiste

Here are the graphs obtained:

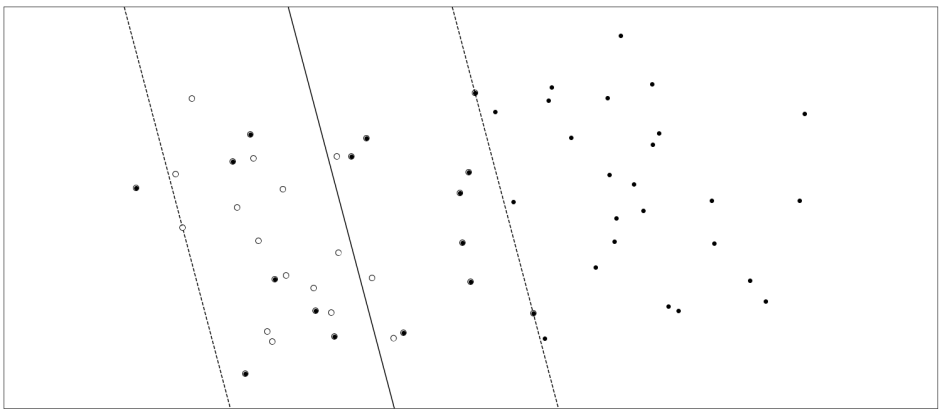
C = 15



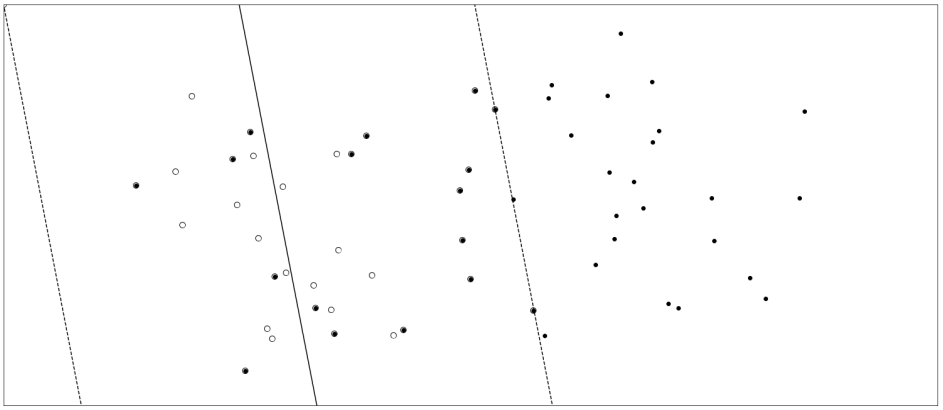
C = 8



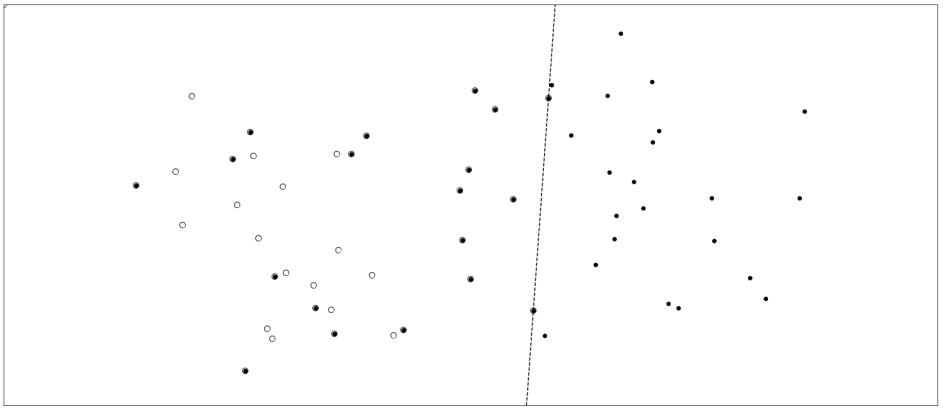
C = 2



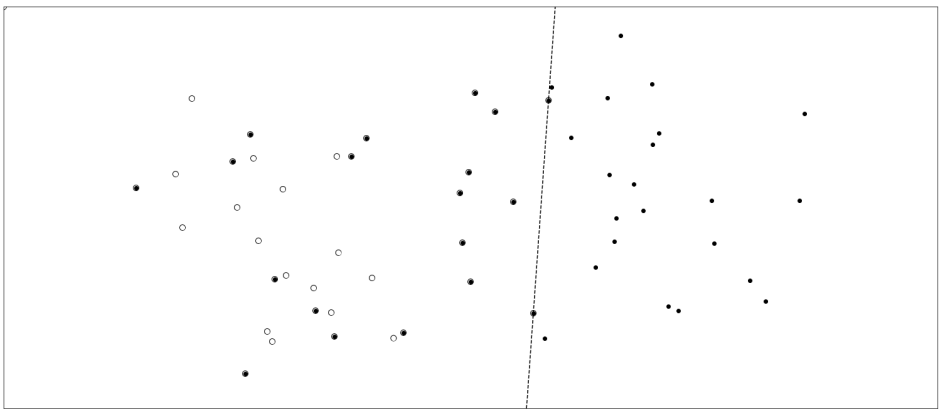
C = 1



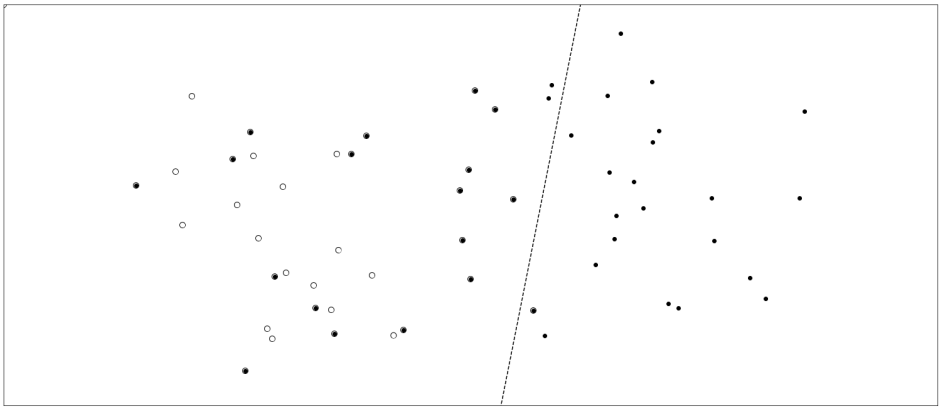
C = 0.1



C = 0.01



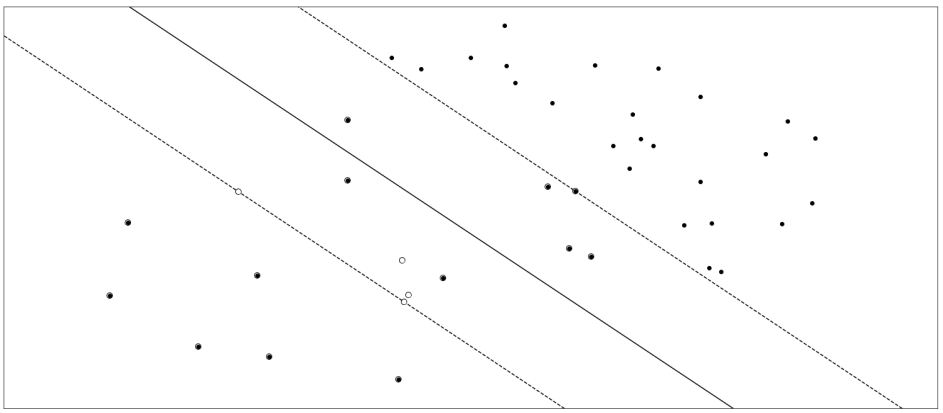
C = 0.001



Comment: For the high C, we can clearly see the margins.
As we get closer to 1, the margins gets closer to the black samples.
Finally, as we drop below 1, we do not even see the entire margin : the white samples are more or less “ignored”, they do not have the necessary weight according to the model.
⇒ The less important C is, the less penalty there is, so the more numbered samples take all the weight.

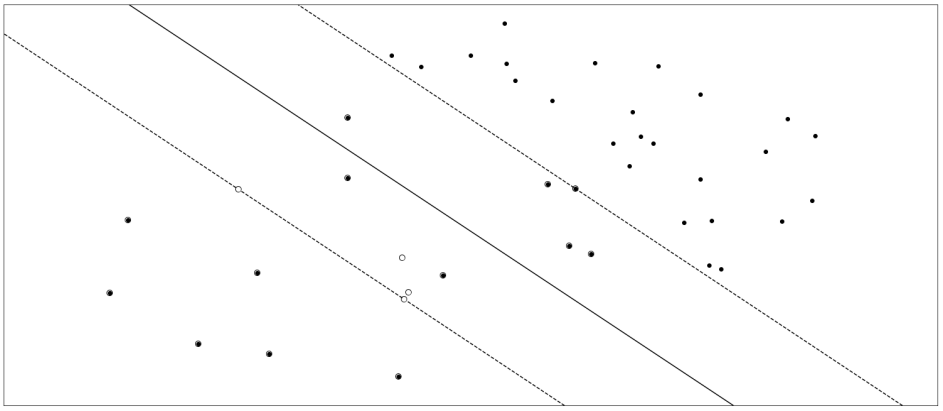
- Let’s now add the attribute class_weight=’balanced’ to our model.

C = 10



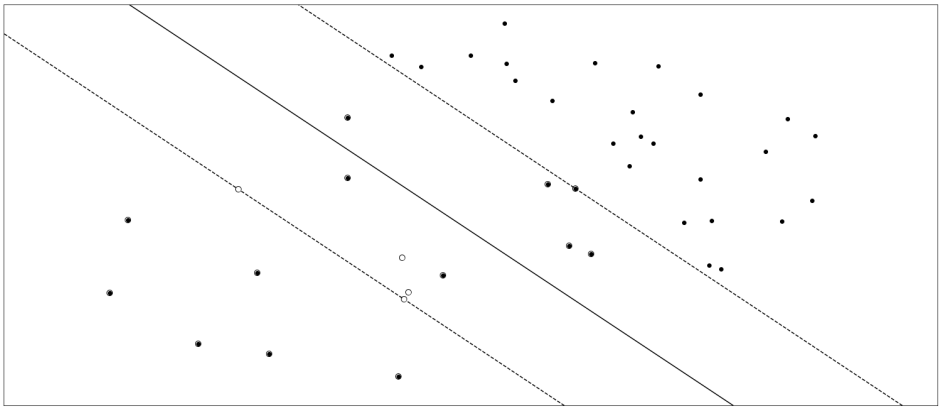
Linear: $u^T v$ RBF: $\exp(-\gamma\|u-v\|^2)$ Poly: $(\gamma u^T v + r)^d$

C = 1



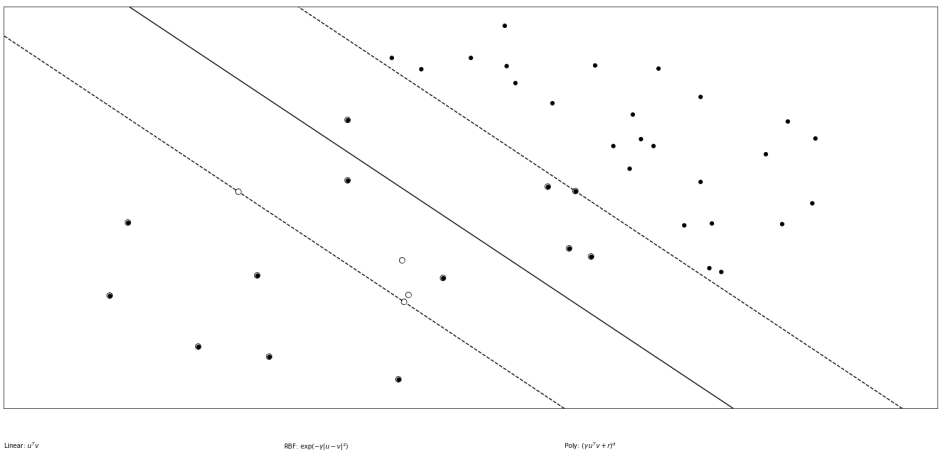
Linear: $u^T v$ RBF: $\exp(-\gamma\|u-v\|^2)$ Poly: $(\gamma u^T v + r)^d$

C = 0.1



Linear: $u^T v$ RBF: $\exp(-\gamma\|u-v\|^2)$ Poly: $(\gamma u^T v + r)^d$

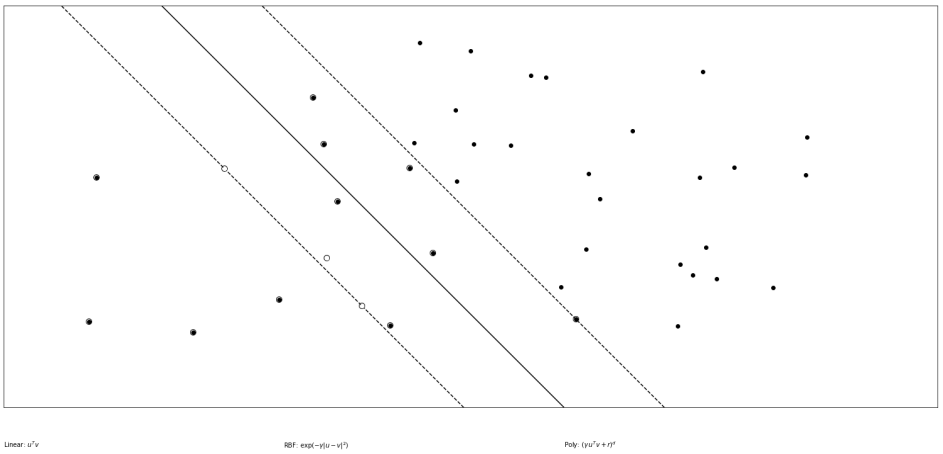
C = 0.01



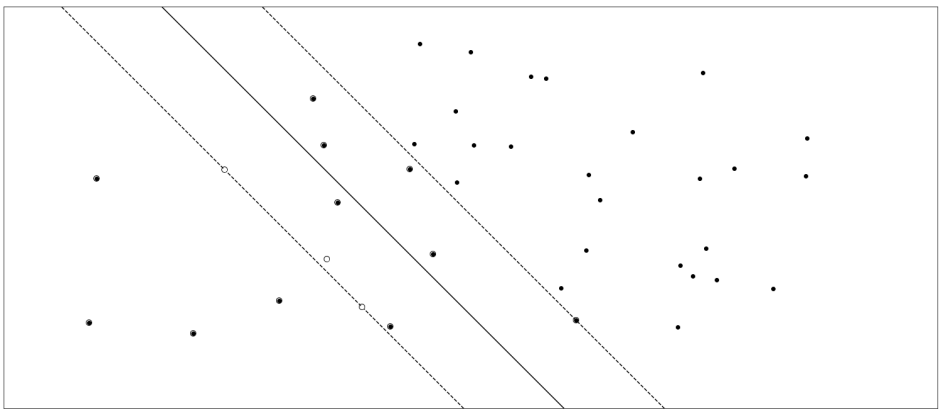
Comment: The difference is clear here. The margins hardly move, the outnumbered white samples conserve their weight, the model is more resistant to the penalty.

- Finally, let's add probability=True to our model.

C = 10

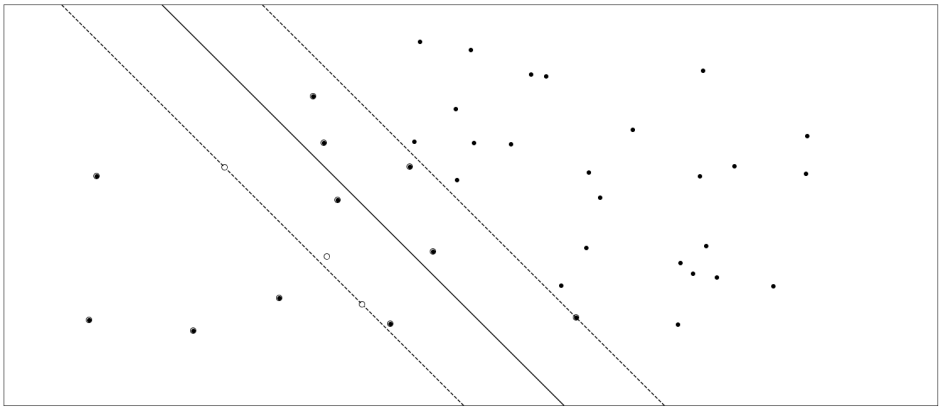


C = 1



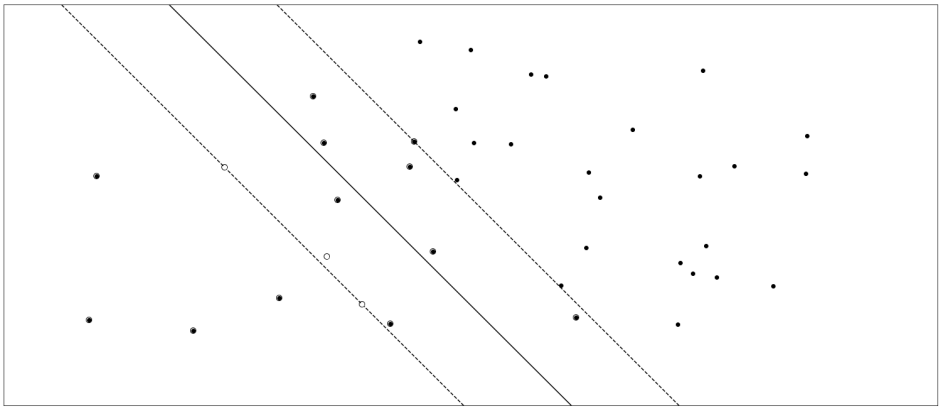
Linear: $u^T v$ RBF: $\exp(-\gamma|u-v|^2)$ Poly: $(\gamma u^T v + r)^d$

C = 0.1



Linear: $u^T v$ RBF: $\exp(-\gamma|u-v|^2)$ Poly: $(\gamma u^T v + r)^d$

C = 0.01



Linear: $u^T v$ RBF: $\exp(-\gamma|u-v|^2)$ Poly: $(\gamma u^T v + r)^d$

Comment: The same conclusion can be made. These two attributes contribute to the stability of our model by balancing the weights and giving less importance to how much samples there are.