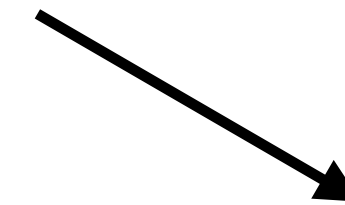
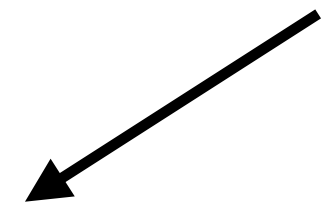


$$L_{emb} = L_{inter} + L_{intra}$$



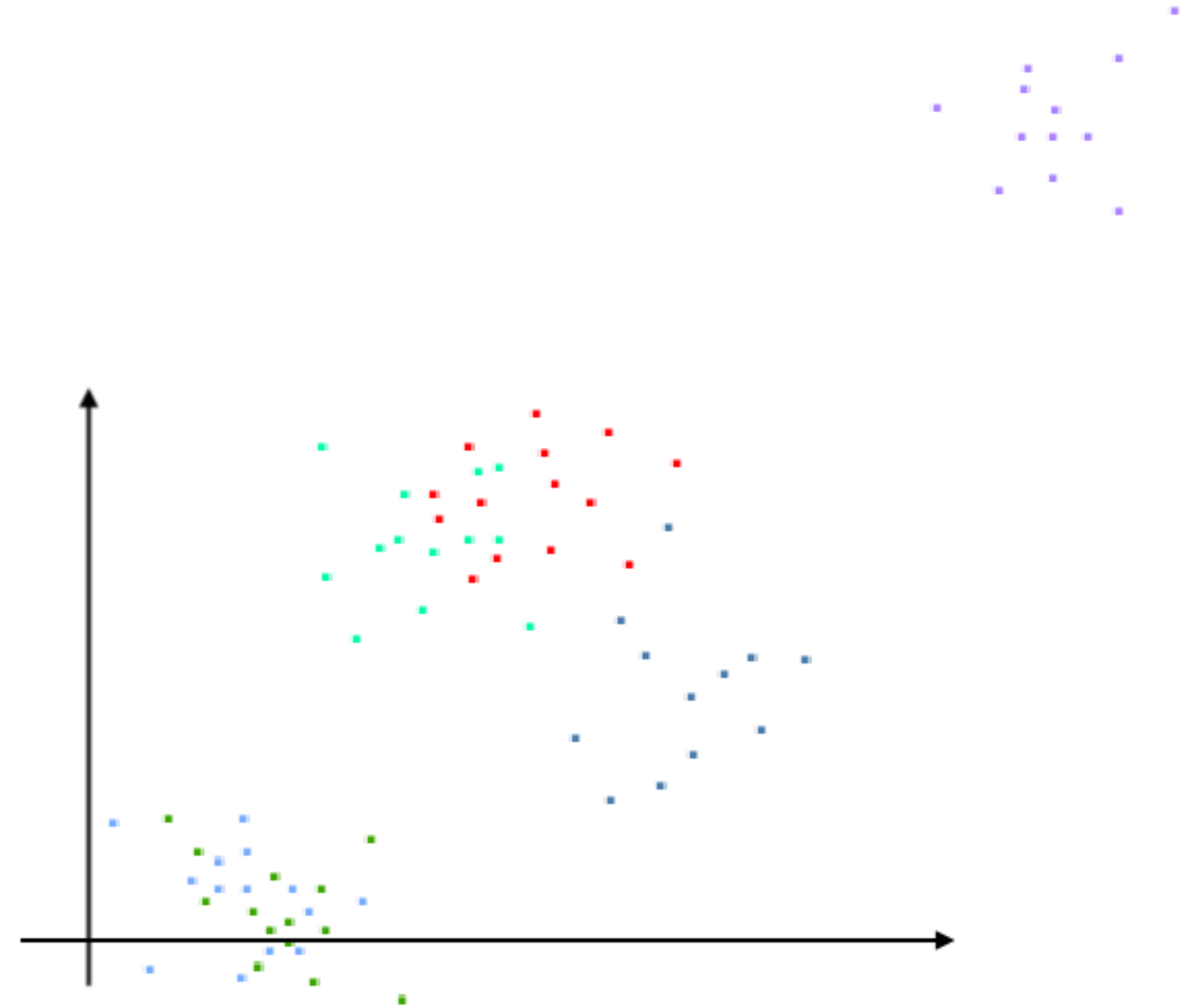
To repulse different-instance embeddings away    To attract same-instance embeddings together

# Loss Function: Cartesian

## Deep Pixel Embedding

$$L_{inter} = \frac{1}{C(C-1)} \sum_{\substack{c_A=1 \\ c_A \neq c_B}}^C \sum_{c_B=1}^C \left[ \overset{\text{Centres}}{\|\mu_{c_A} - \mu_{c_B}\|} - 2\delta_1 \right]_+^2$$

$$L_{intra} = \frac{1}{C} \sum_{c=1}^C \frac{1}{E_c} \sum_{i=1}^{E_c} \left[ \underset{\text{Embedding}}{\|e_i - \mu_c\|} - \delta_2 \right]_+^2$$



De Brabandere, B., Neven, D., Van Gool, L., & ESAT-PSI, K. U. *Semantic Instance Segmentation with a Discriminative Loss Function.*