

Comparing Unsupervised Word Translation Methods Step by Step

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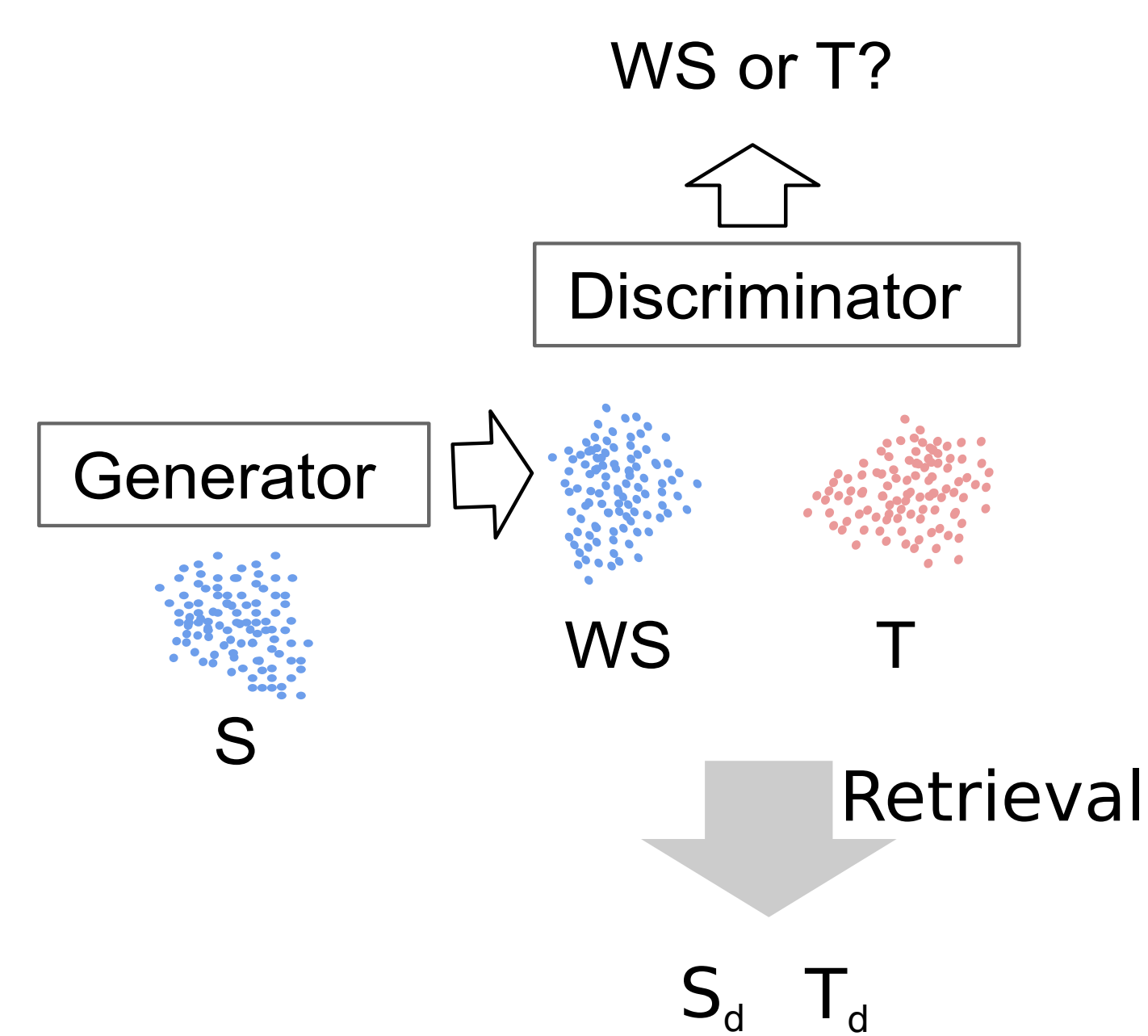
Task:

Align monolingual word embeddings such that representations of translations are close to each other

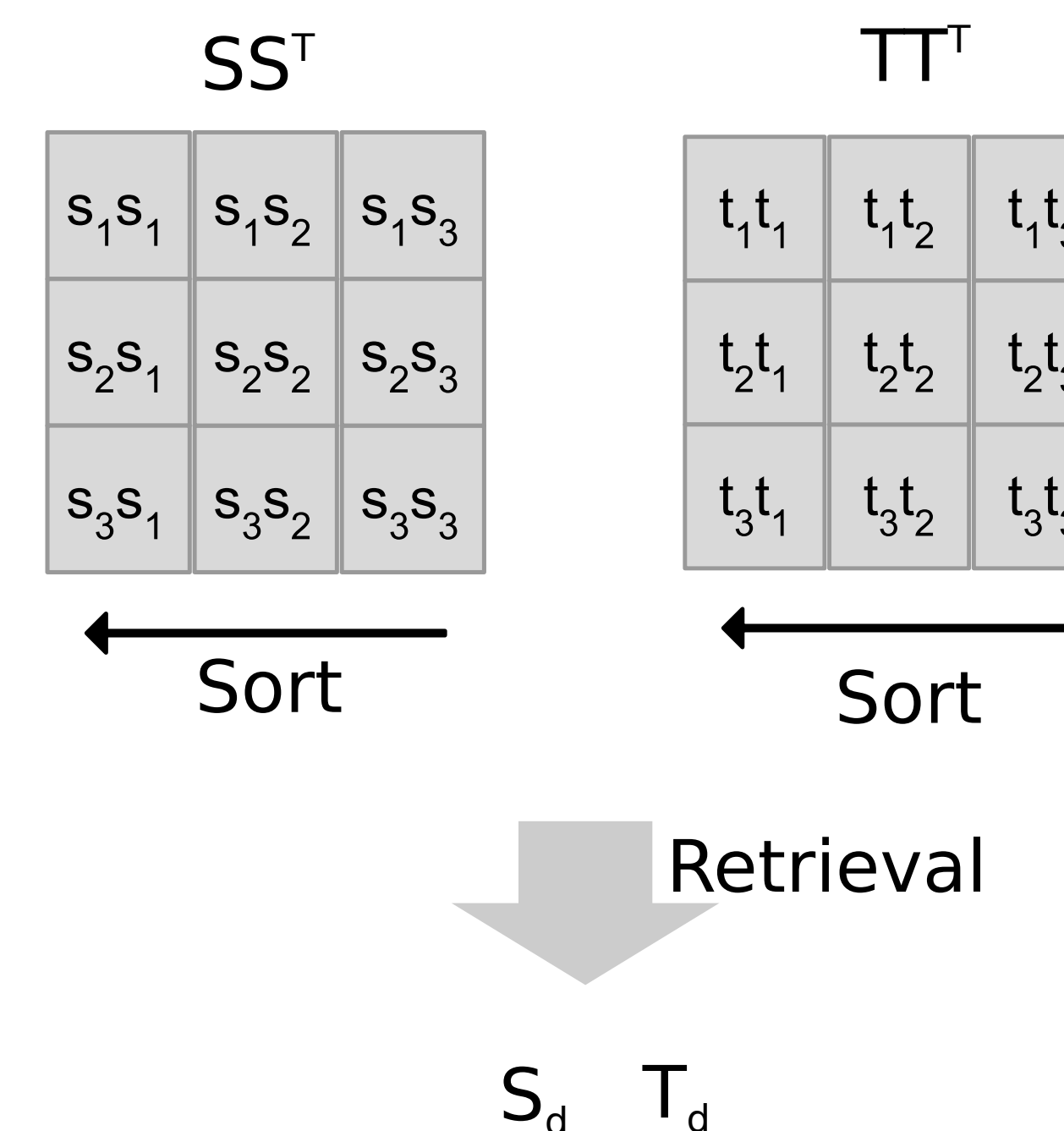
$$W^* = \underset{W}{\operatorname{argmin}} \|WS_d - T_d\| \quad (1)$$

Models:

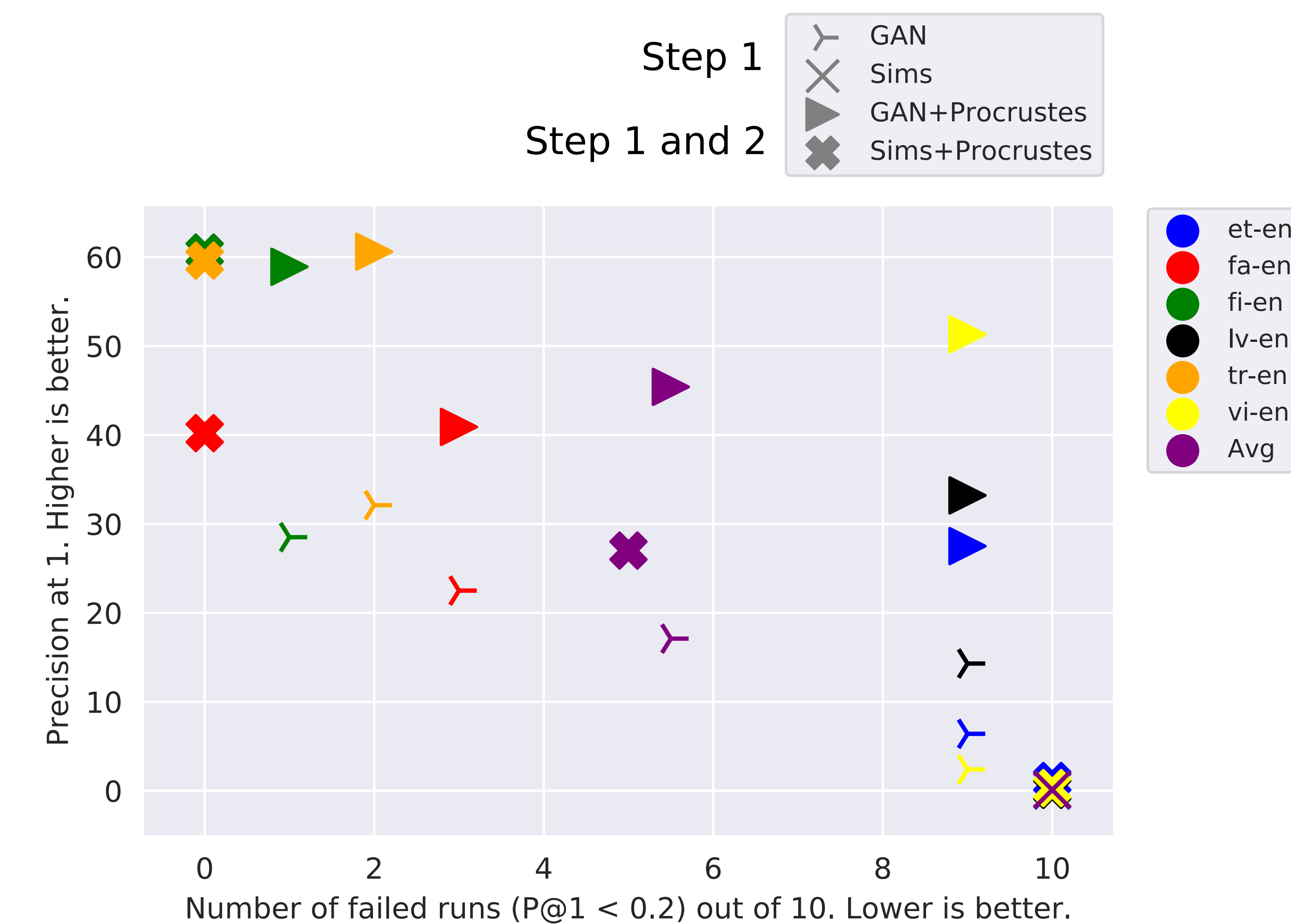
Generative Adversarial Network (MUSE, Conneau et al. 2018):



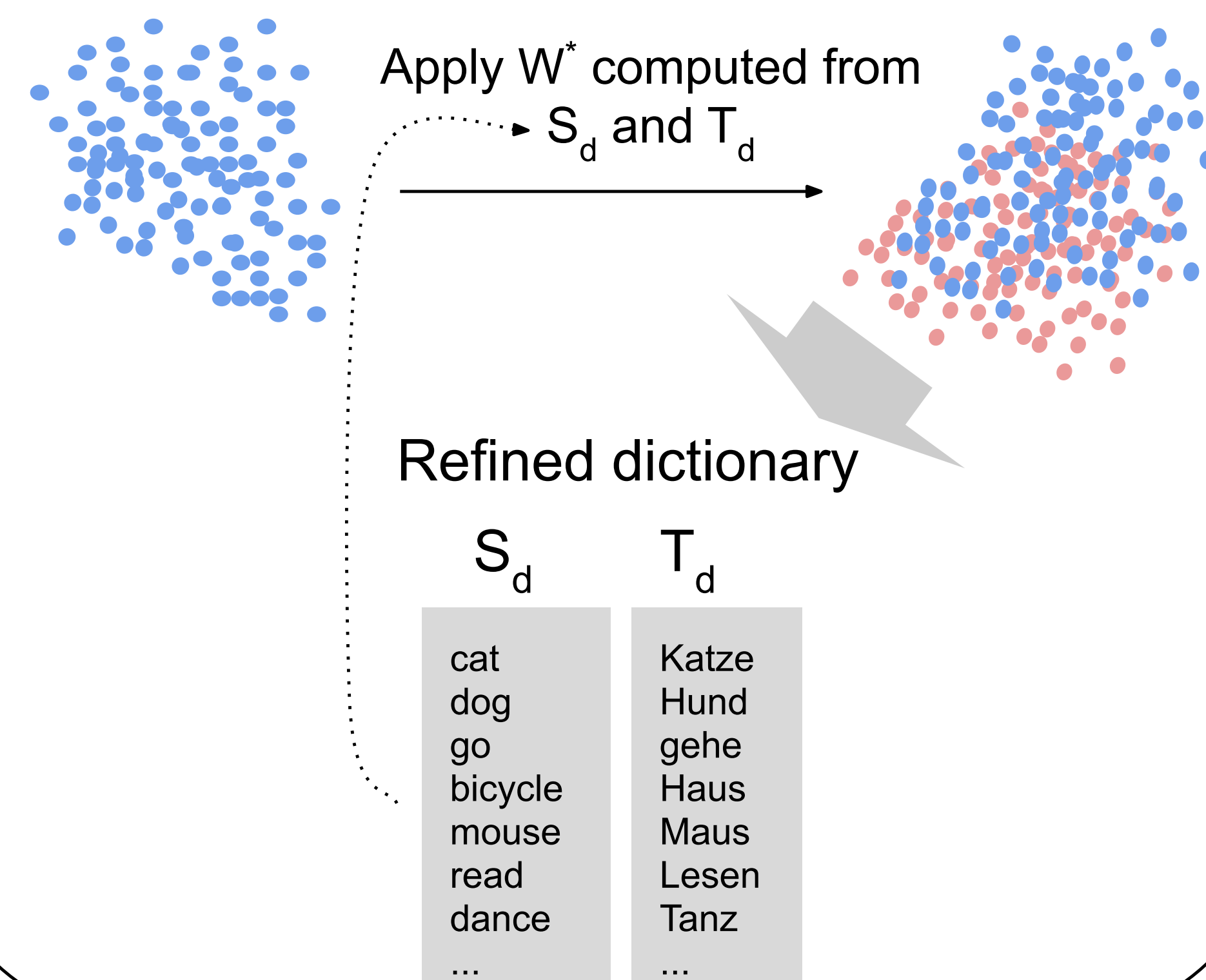
Second order similarities (VecMap, Artetxe et al. 2018):



Experiments:



Step 2: (Pseudo) supervised refinement



Procrustes:

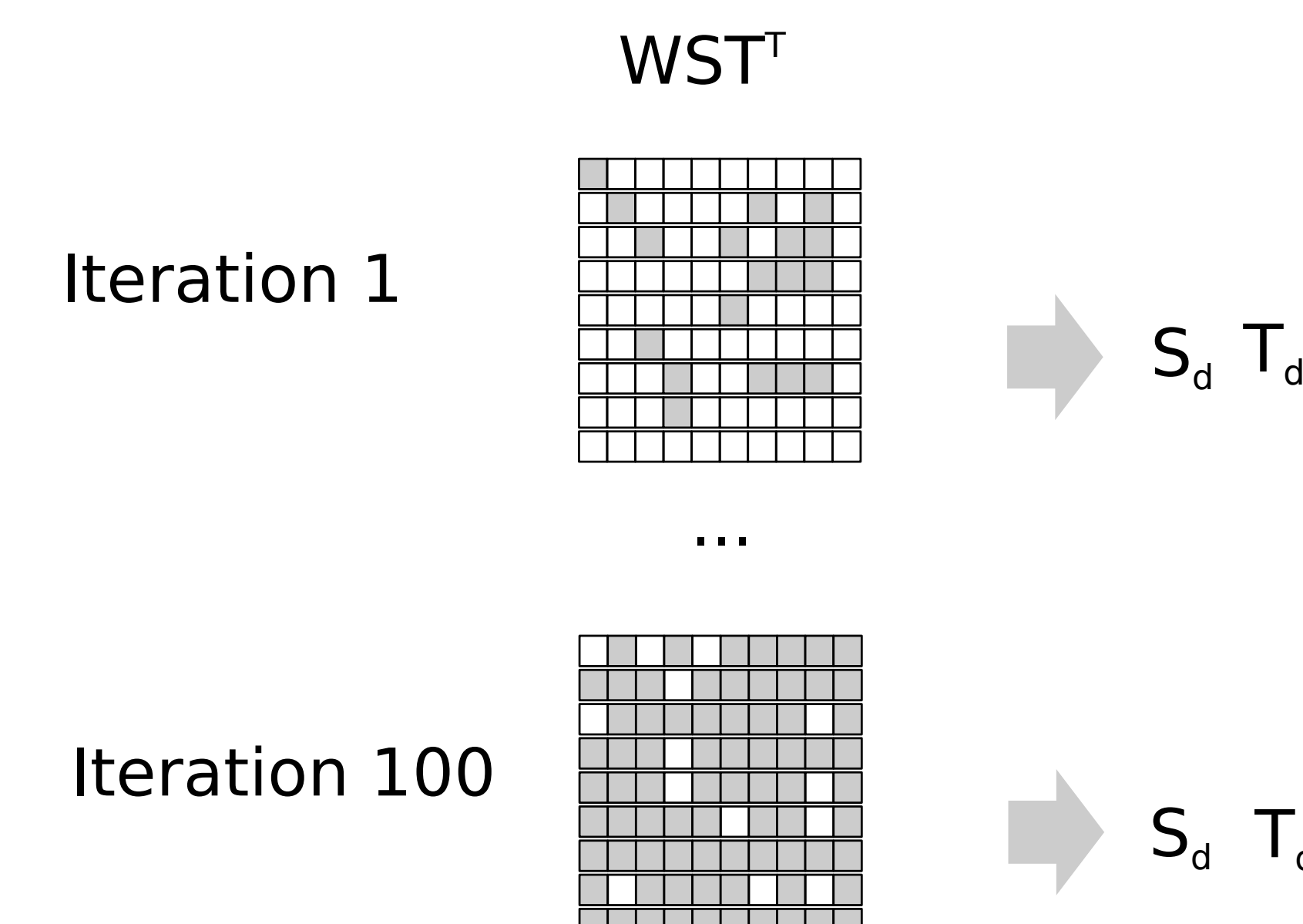
Closed form solution to equation (1)

$$W = UV^T$$

$$S_d T_d^T = U \Sigma V^T$$

Stochastic Dictionary Induction (SDI):

Randomly drop candidates for the refined dictionary



Select best of 10 GAN initializations and combine it with SDI

