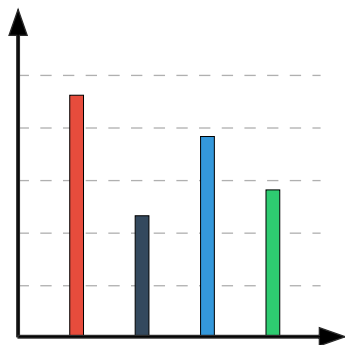
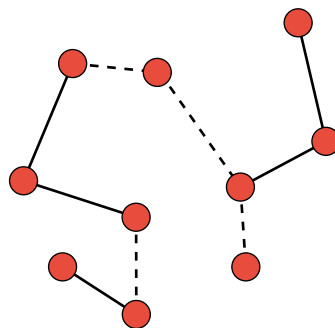


a. Gene expression

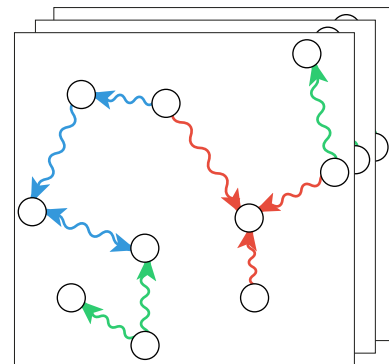


(Select most variable genes)

b. Build KNN graph



c. Attention MMD-VGAE

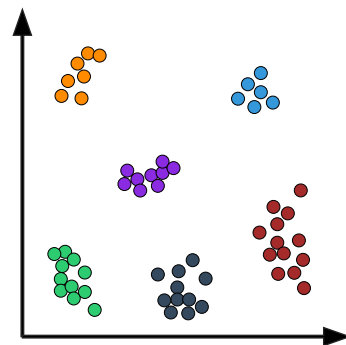


$$\begin{aligned} \mu & \left(\begin{aligned} z &= \mu + \sigma \odot \epsilon \\ \epsilon &\sim \mathcal{N}(0, \mathbf{I}) \end{aligned} \right) \sigma \end{aligned}$$

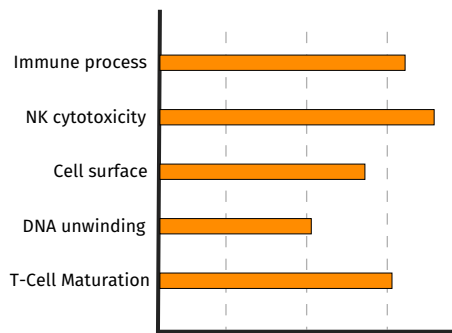
α_{ij}

$$\begin{aligned} \mathbf{W}_1 & \begin{pmatrix} W_{00}^{(1)} & W_{01}^{(1)} & \cdot \\ W_{10}^{(1)} & \textcolor{red}{W_{11}^{(1)}} & \cdot \\ W_{20}^{(1)} & \cdot & \cdot \end{pmatrix} \quad \mathbf{W}_2 \begin{pmatrix} W_{00}^{(2)} & W_{01}^{(2)} & \cdot \\ \textcolor{red}{W_{10}^{(2)}} & W_{11}^{(2)} & \cdot \\ W_{20}^{(2)} & \cdot & \cdot \end{pmatrix} \end{aligned}$$

Cd70, Osbpl5, Ccr3, Cd247, ...



f. Gene set enrichment analysis



e. Coefficient and weight analysis

d. HDBSCAN clustering