Sample Similarity Matrix

Multi-head Attention on the Neighborhood of Node x_1

$\alpha = 0.002$
$\alpha = 0.01$
$\alpha_{10} = 0.98$
$\alpha = 0.001$
$\alpha = 0.004$

Head 1

$\alpha = 0.007$
$\alpha = 0.02$
$\alpha = 0.001$
$\alpha_6 = 0.95$
$\alpha = 0.003$

Head 2

$\alpha = 0.007$
$\alpha_3 = 0.97$
$\alpha = 0.01$
$\alpha = 0.004$
$\alpha = 0.002$

Head h

Concatenation

Class Labels

Normal Tissue   Tumor Samples

Cancer Outcome Prediction
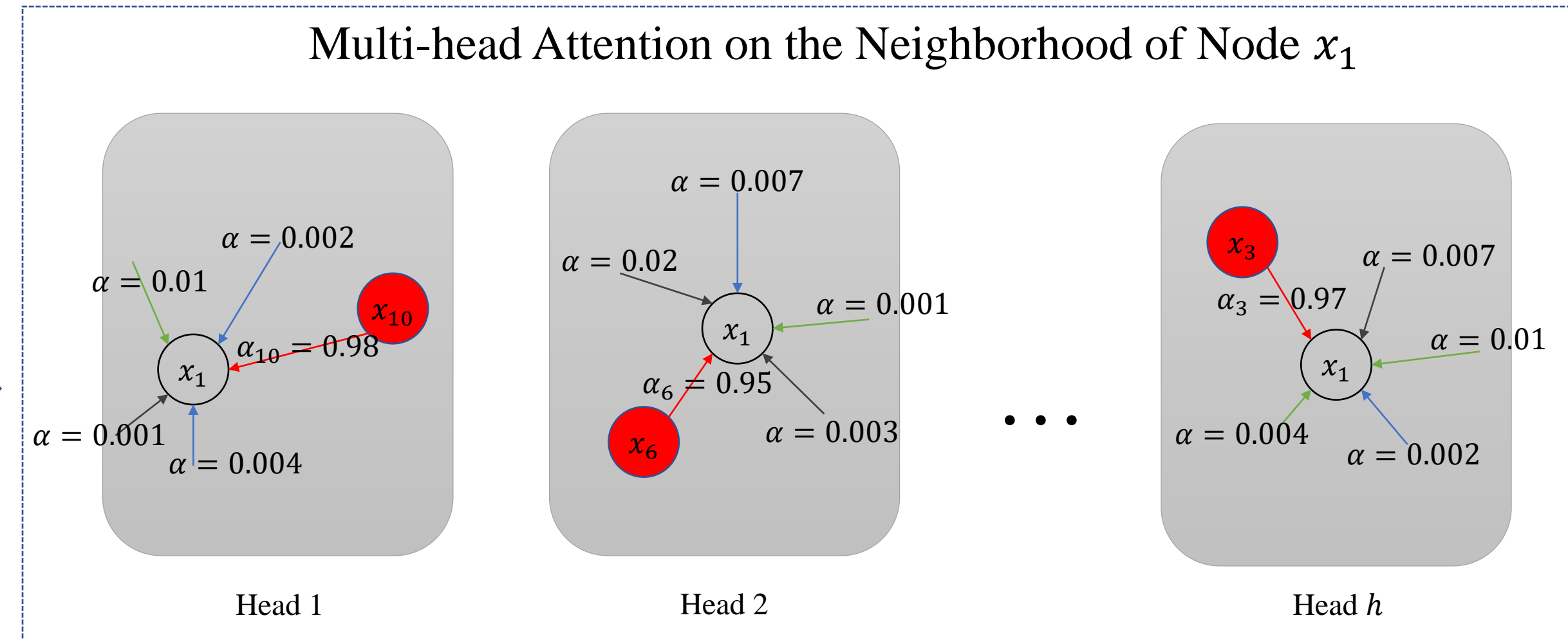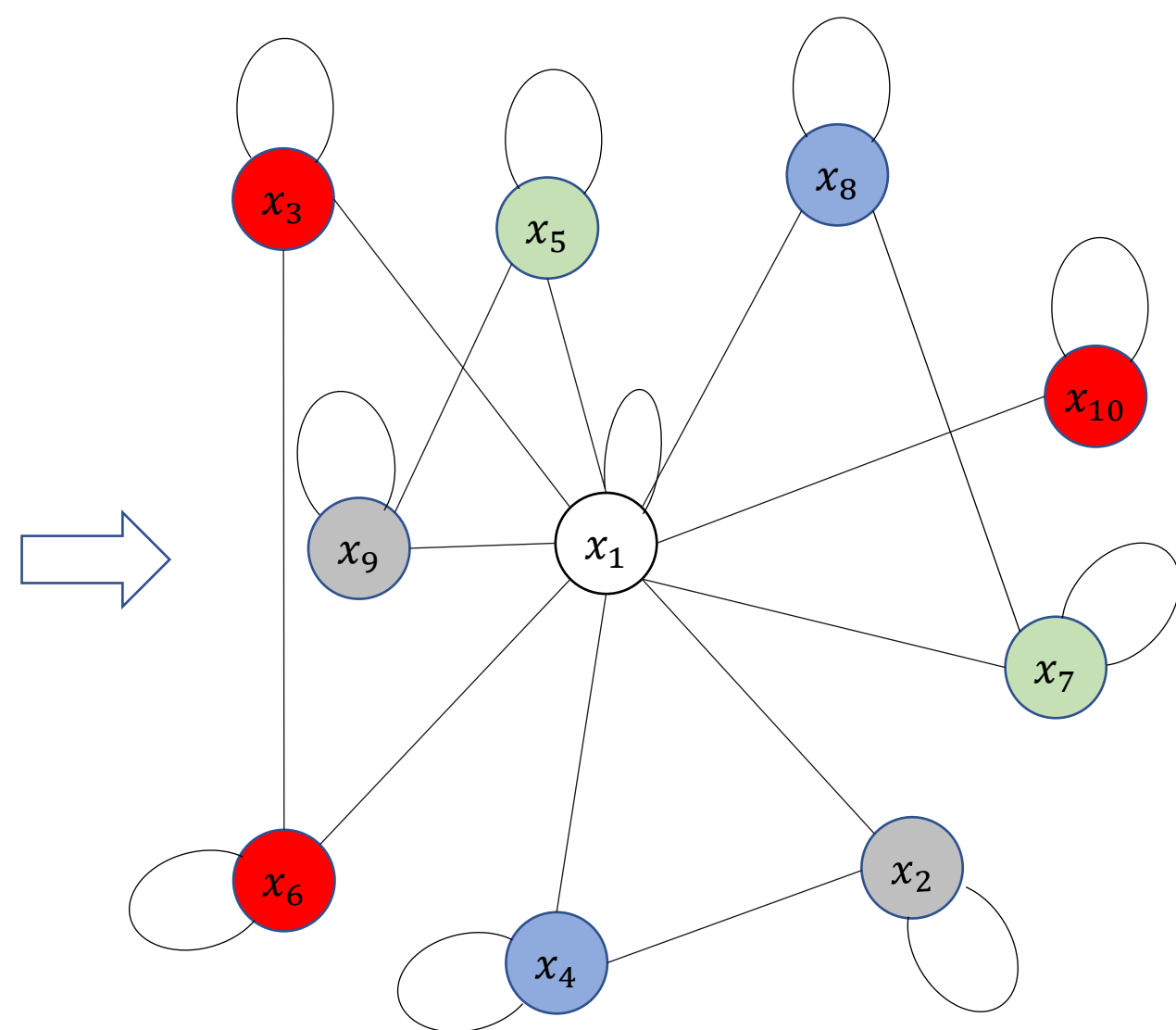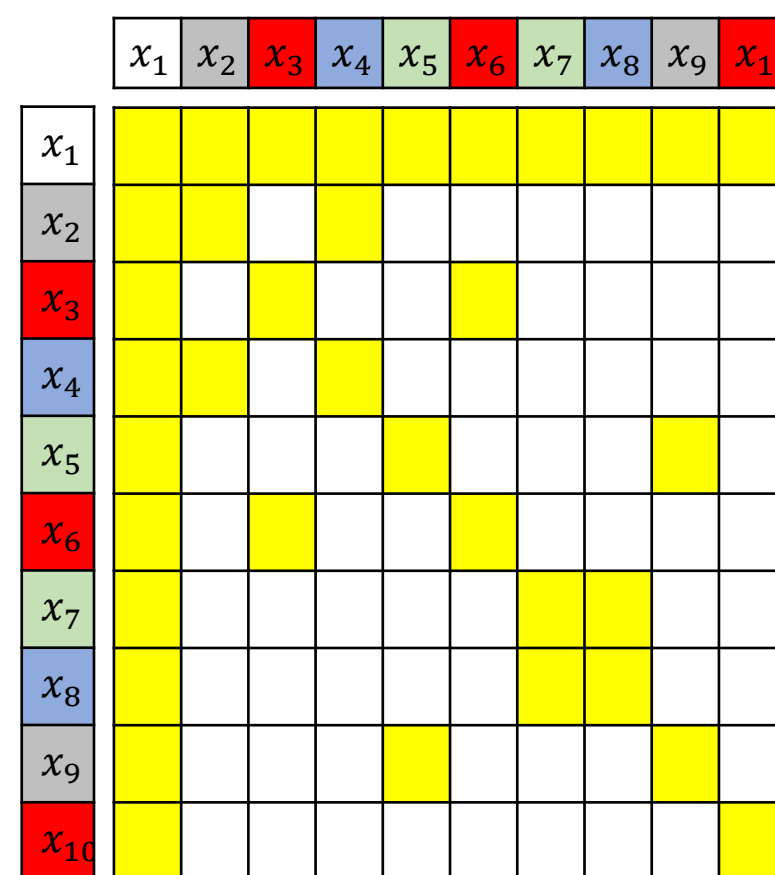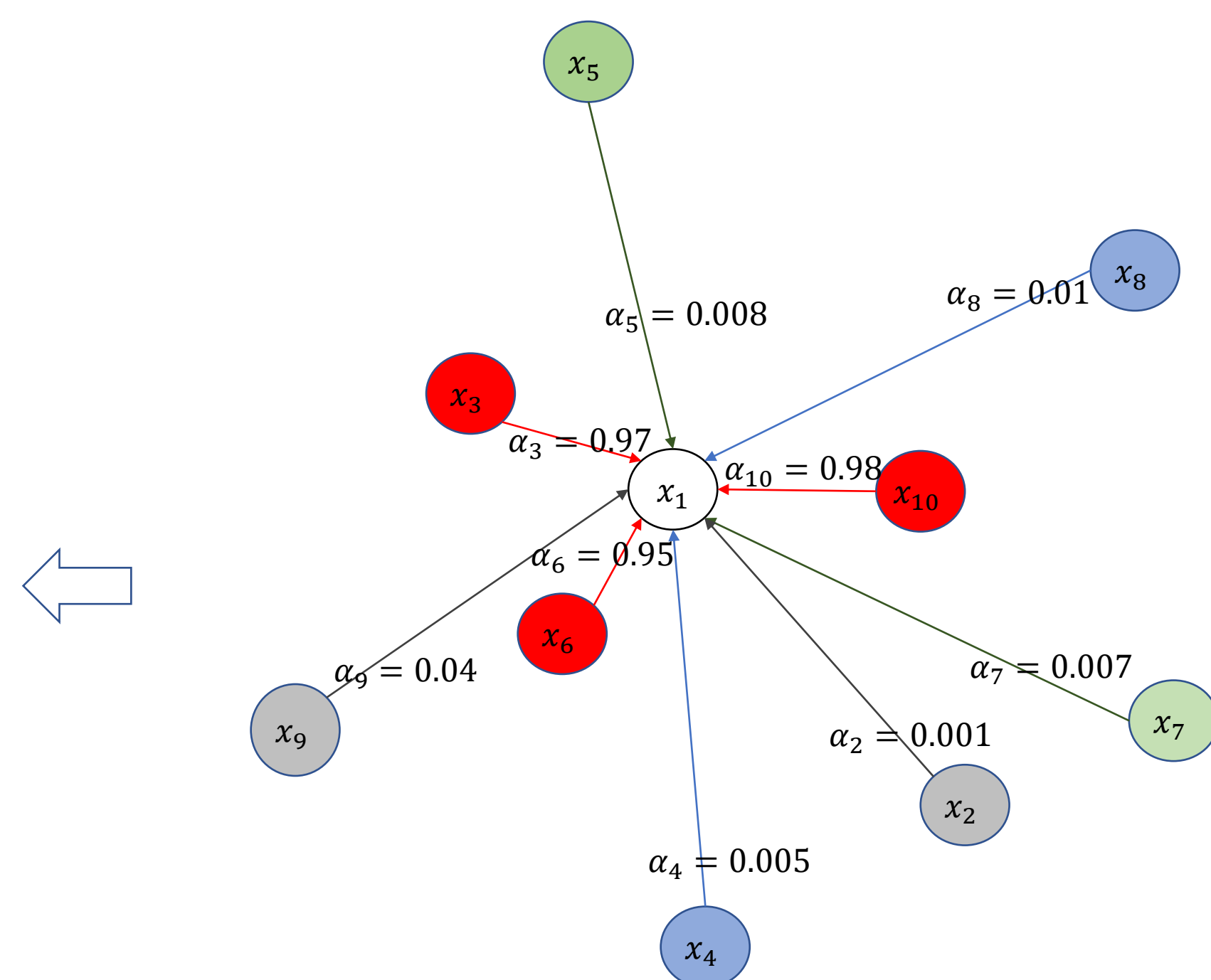
Classification

Embedding Vector

Attention Coefficients for All the Heads

$\alpha_5 = 0.008$
$\alpha_8 = 0.01$
$\alpha_3 = 0.97$
$\alpha_{10} = 0.98$
$\alpha_6 = 0.95$
$\alpha_9 = 0.04$
$\alpha_7 = 0.007$
$\alpha_2 = 0.001$
$\alpha_4 = 0.005$

Cancer Patient Stratification

Clustering

Clusters

Single Cell Clustering
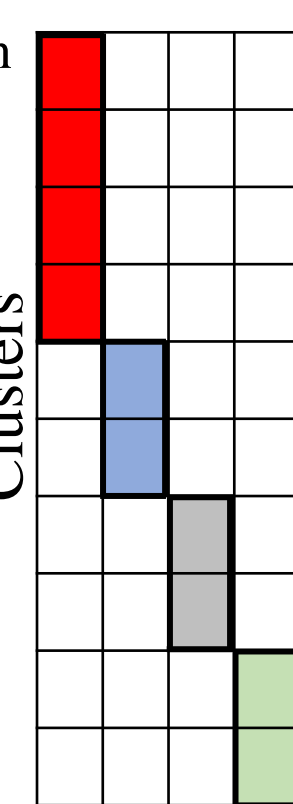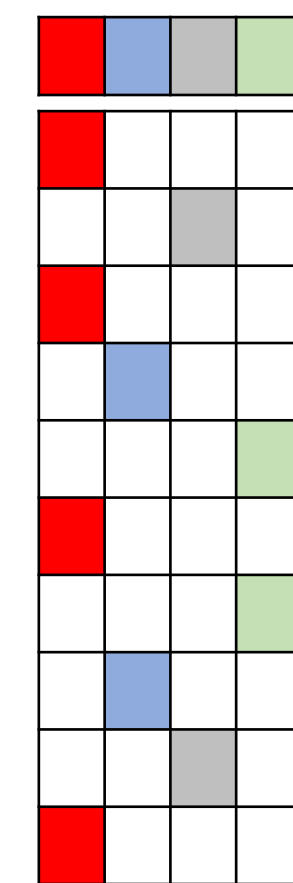
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