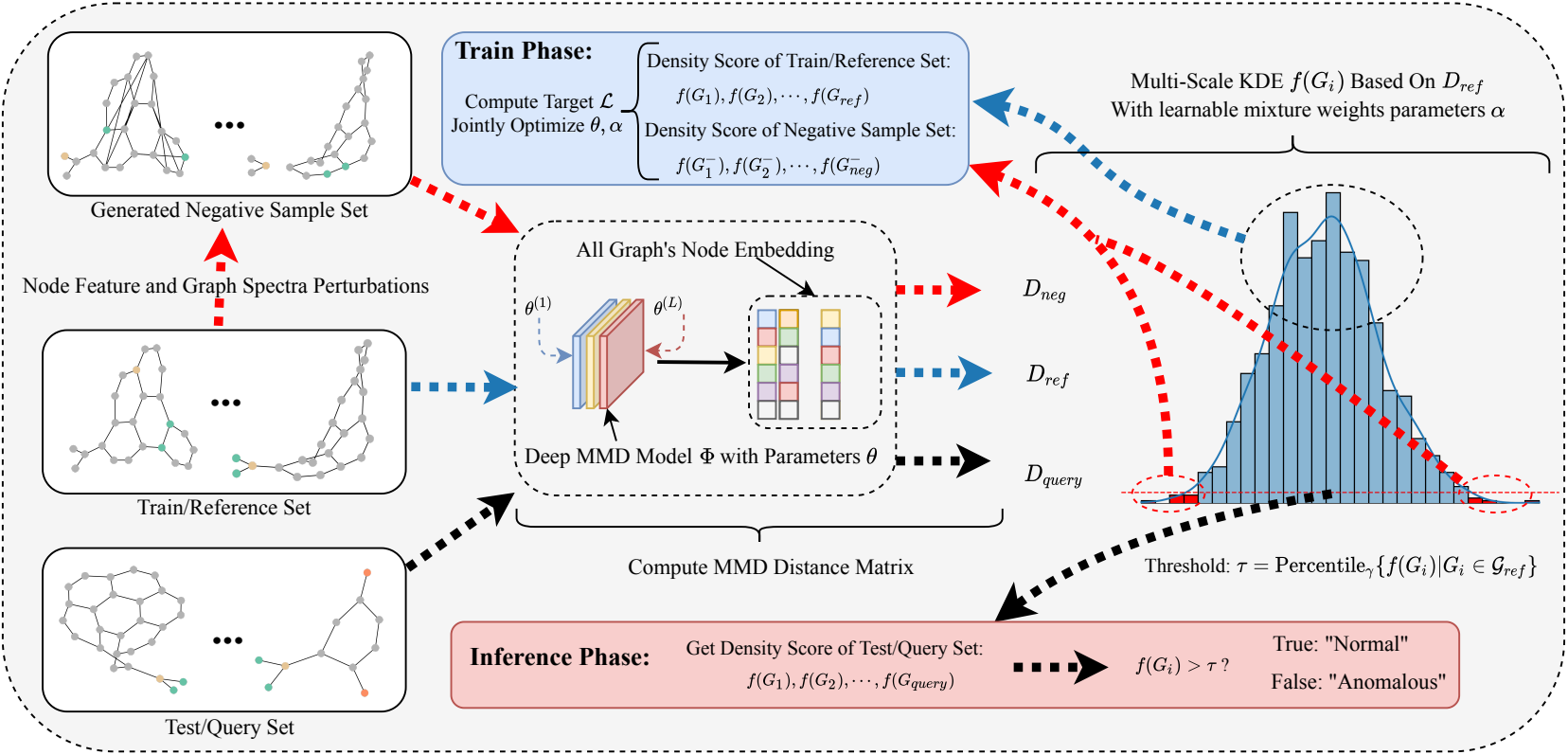
Train Phase:
Compute Target $\mathcal{L}$
Jointly Optimize θ, α
Density Score of Train/Reference Set:
$f(G_1), f(G_2), \cdots, f(G_{ref})$
Density Score of Negative Sample Set:
$f(G_1^-), f(G_2^-), \cdots, f(G_{neg}^-)$
Multi-Scale KDE $f(G_i)$ Based On D_{ref}
With learnable mixture weights parameters α
Generated Negative Sample Set
Node Feature and Graph Spectra Perturbations
Train/Reference Set
Test/Query Set
All Graph's Node Embedding
$\theta^{(1)}$
$\theta^{(L)}$
Deep MMD Model Φ with Parameters θ
D_{neg}
D_{ref}
D_{query}
Compute MMD Distance Matrix
Threshold: $\tau = \text{Percentile}_\gamma\{f(G_i)|G_i \in \mathcal{G}_{ref}\}$
Inference Phase:
Get Density Score of Test/Query Set:
$f(G_1), f(G_2), \cdots, f(G_{query})$
$f(G_i) > \tau$?
True: "Normal"
False: "Anomalous"