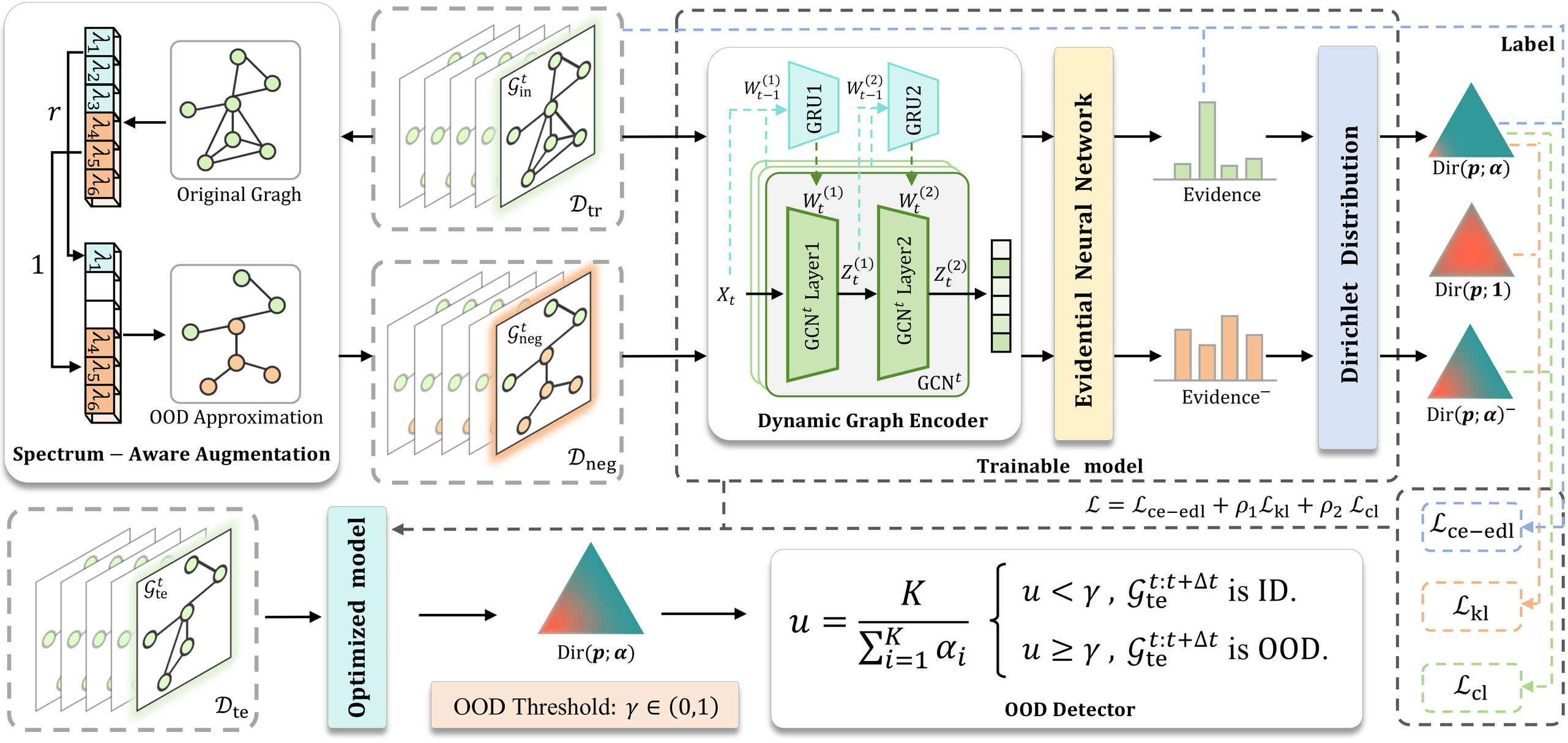
Spectrum – Aware Augmentation
Original Gragh
OOD Approximation
r
1
λ_1 λ_2 λ_3 λ_4 λ_5 λ_6
$\mathcal{G}_{\text{in}}^t$
$\mathcal{D}_{\text{tr}}$
$\mathcal{G}_{\text{neg}}^t$
$\mathcal{D}_{\text{neg}}$
$W_{t-1}^{(1)}$
$W_{t-1}^{(2)}$
GRU1
GRU2
$W_t^{(1)}$
$W_t^{(2)}$
X_t
GCN^t Layer1
GCN^t Layer2
$Z_t^{(1)}$
$Z_t^{(2)}$
GCN^t
Dynamic Graph Encoder
Evidential Neural Network
Evidence
Evidence$^-$
Dirichlet Distribution
Trainable model
Label
Dir($\boldsymbol{p}$; $\boldsymbol{\alpha}$)
Dir($\boldsymbol{p}$; $\mathbf{1}$)
Dir($\boldsymbol{p}$; $\boldsymbol{\alpha}$)$^-$
$\mathcal{L} = \mathcal{L}_{\text{ce-edl}} + \rho_1 \mathcal{L}_{\text{kl}} + \rho_2 \mathcal{L}_{\text{cl}}$
$\mathcal{L}_{\text{ce-edl}}$
$\mathcal{L}_{\text{kl}}$
$\mathcal{L}_{\text{cl}}$
$\mathcal{G}_{\text{te}}^t$
$\mathcal{D}_{\text{te}}$
Optimized model
Dir($\boldsymbol{p}$; $\boldsymbol{\alpha}$)
OOD Threshold: $\gamma \in (0,1)$
$u = \frac{K}{\sum_{i=1}^{K} \alpha_i} \begin{cases} u < \gamma\,,\ \mathcal{G}_{\text{te}}^{t:t+\Delta t} \text{ is ID.} \\ u \geq \gamma\,,\ \mathcal{G}_{\text{te}}^{t:t+\Delta t} \text{ is OOD.} \end{cases}$
OOD Detector