

The definitions of the notations employed in the given system of equations are provided below:  $\begin{aligned} \mathbf{e} &: \text{Attribution array of edges} \backslash \\ \mathbf{n} &: \text{Attribution array of nodes} \backslash \\ \mathbf{m} &: \text{Message array} \backslash \\ \mathbf{L} &: \text{Layer index} \backslash \\ i, j &: \text{Node indices} \backslash \\ \mathbf{N} &: \text{Neighborhood operator} \backslash \\ \mathcal{N} &: \text{Edges updating function} \backslash \\ \mathcal{U} &: \text{Nodes updating function} \backslash \\ \mathcal{M} &: \text{Message generating function} \backslash \end{aligned}$   $\$$  Bsically, at each level  $L$  the GNN/MPNN model iteratively