Algorithm 2 Server Aggregation Stage for client k

Input: Total number of clients K, set of locally trained GNN parameters for all clients $\{\bar{\mathbf{W}}_i^{(t)}\}_{i=1}^{K}$, random graph $\tilde{G}$, and scaling factor τ

Output: Aggregated local GNN parameters $\mathbf{W}_k^{(t+1)}$

Initialize set $\mathbb{S} \leftarrow \emptyset$
for each client i from 1 to K **do**
  Optimize $\tilde{\mathbf{S}}_i^{(t)}$ according to Equation (3)
  $\tilde{\mathbf{S}}_i^{(t)} \leftarrow \text{CLIP}(\tilde{\mathbf{S}}_i^{(t)})$
  Add element $\tilde{\mathbf{S}}_i^{(t)}$ to $\mathbb{S}$
end for
Using the $\mathbb{S}$, compute

$$\mathbf{W}_k^{(t+1)} \leftarrow \sum_{n=1}^{K} \frac{\exp(\tau \cdot Sim(k,n))}{\sum_p \exp(\tau \cdot Sim(k,p))} \bar{\mathbf{W}}_n^{(t)}$$