

5 Supplemental Materials

Algorithm 2: Subgraph sampling algorithm (**GenSub**)

Input: Graph \mathcal{G} ; spatial aggregation iterations K ; skip time step L ; number of skip connections

M ; length of input time steps P ; input features at time t $\{x_v^{(t-P+1):t}, \forall v \in \mathcal{V}\}$;
neighborhood function $\mathcal{N} : v \rightarrow 2^{\mathcal{V}}$; target node v' ;

Output: Spatio-temporal subgraph $\mathcal{S}_{v',t}$

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/* get spatial neighborhood */
1  $\mathcal{S}_{v',t} \leftarrow \text{AddNode}(\{x_u^{(t-p+1):t}, \forall u \in \mathcal{N}(v')\})$ ;
/* get direct connections between time steps */
2 for  $i = (t - p + 1) : t$  do
3   |  $\mathcal{S}_{v',t} \leftarrow \text{AddEdge}(\mathcal{S}_{v',t}, \{(v'_i, v'_{i+1}), \forall v'_i \in \mathcal{S}_{v',t}\})$ ;
4 end
/* get skip connections along time */
5 for  $j = 1, \dots, M$  do
6   |  $\mathcal{S}_{v',t} \leftarrow \text{AddEdge}(\mathcal{S}_{v',t}, \{(v'_j, v'_{j+L+1}), \forall v'_j \in \mathcal{S}_{v',t}\})$ ;
7 end

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