
Algorithm 1 The *node2vec* algorithm.

LearnFeatures (Graph $G = (V, E, W)$, Dimensions d , Walks per node r , Walk length l , Context size k , Return p , In-out q)

$\pi = \text{PreprocessModifiedWeights}(G, p, q)$

$G' = (V, E, \pi)$

Initialize $walks$ to Empty

for $iter = 1$ **to** r **do**

for all nodes $u \in V$ **do**

$walk = \text{node2vecWalk}(G', u, l)$

 Append $walk$ to $walks$

$f = \text{StochasticGradientDescent}(k, d, walks)$

return f

node2vecWalk (Graph $G' = (V, E, \pi)$, Start node u , Length l)

Initialize $walk$ to $[u]$

for $walk_iter = 1$ **to** l **do**

$curr = walk[-1]$

$V_{curr} = \text{GetNeighbors}(curr, G')$

$s = \text{AliasSample}(V_{curr}, \pi)$

 Append s to $walk$

return $walk$
