$$L_{i,j} = \begin{cases} w_{i,j} & \text{if } (i,j) \in E \end{cases}$$

$$L_{i,i} = -\sum_{l \neq i} L_{i,l}$$

where

$L \in \mathbb{R}^{n \times n}$

$w \in \mathbb{R}^{n \times n}$ edge weight matrix

$E \in \{\mathbb{Z}^2\}$ *index* edges