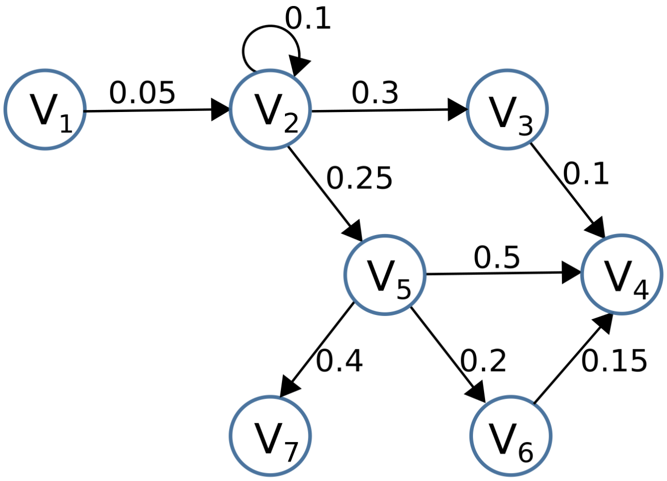


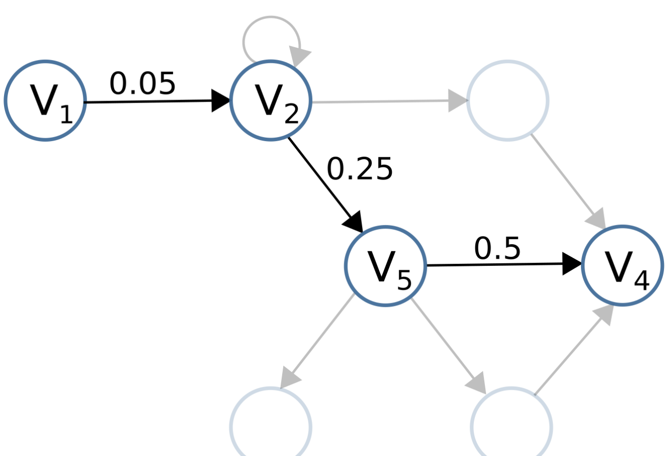
i	$\lvert V_i \rvert$	$\lvert \tilde{V}_i \rvert$
1	1000	10
2	250	2.5
3	100	1
4	500	5
5	300	3
6	400	4
7	150	1.5

Block connection prob. p_{ij}

0	0.05	0	0	0	0	0
0	0.1	0.3	0	0.25	0	0
0	0	0	0.1	0	0	0
0	0	0	0	0	0	0
0	0	0	0.5	0	0.2	0.4
0	0	0	0.15	0	0	0
0	0	0	0	0	0	0

Cost $c_{ij} := \dfrac{1}{p_{ij}|\widetilde{V}_i||\widetilde{V}_j|}$

0	0.8	0	0	0	0	0
0	0	1.33	0	0.53	0	0
0	0	0	2	0	0	0
0	0	0	0	0	0	0
0	0	0	0.13	0	0.42	0.56
0	0	0	0.33	0	0	0
0	0	0	0	0	0	0



Path:

$$\mathcal{P} = \{V_1, V_2, V_5, V_4\}$$

Path length:

$$\ell(\mathcal{P}) = c_{12} + c_{25} + c_{54}$$

$$= 0.8 + 0.53 + 0.42$$

$$= 1.75$$

Figure S1. A simple example illustrating how the path length of a random walk (V1 → V2 → V5 → V4) is calculated on a mock circuit consisting of just 6 classes (blocks). The number of neurons in each class, and edge weights between classes, is used to calculate the cost of each random step in the walk. The path length for the random walk is then obtained by summing the costs along the traversed path.