Energy Plot

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September 7, 2017

1 Main Idea

Compute derived metric of network topology: **Energy**.

For this purpose, firstly compute (normalized) Laplacian, a matrix which describes connectivity and is defined as

$$L_G = \begin{cases} 1 & \text{if i = j and } d_i \neq 0 \\ -1/\sqrt{d_i d_j} & \text{if } (i,j) \in E \\ 0 & \text{otherwise} \end{cases}$$

where d_i is the rank, i.e. the number of outgoing edges of neuron i.

Secondly, compute the energy of the network which is given by the sum of the absolute eigenvalues of L.

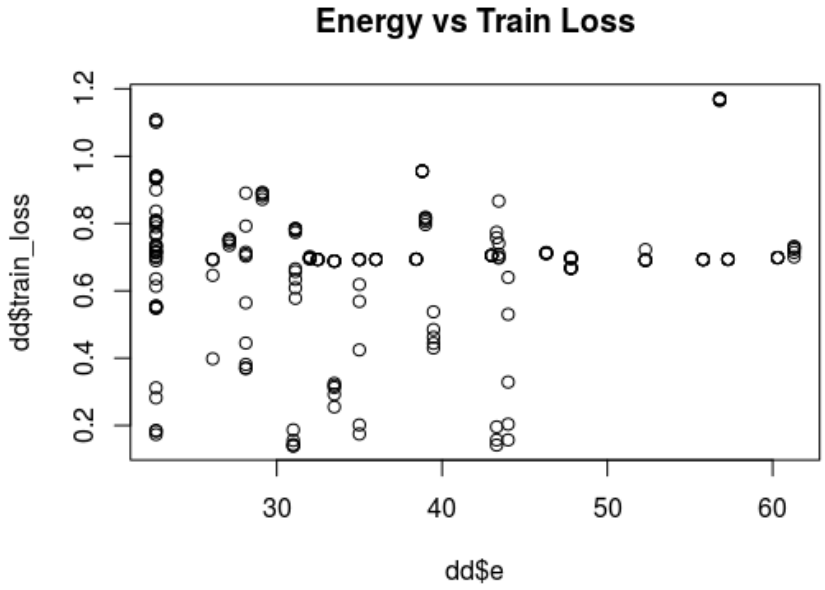
2 Result

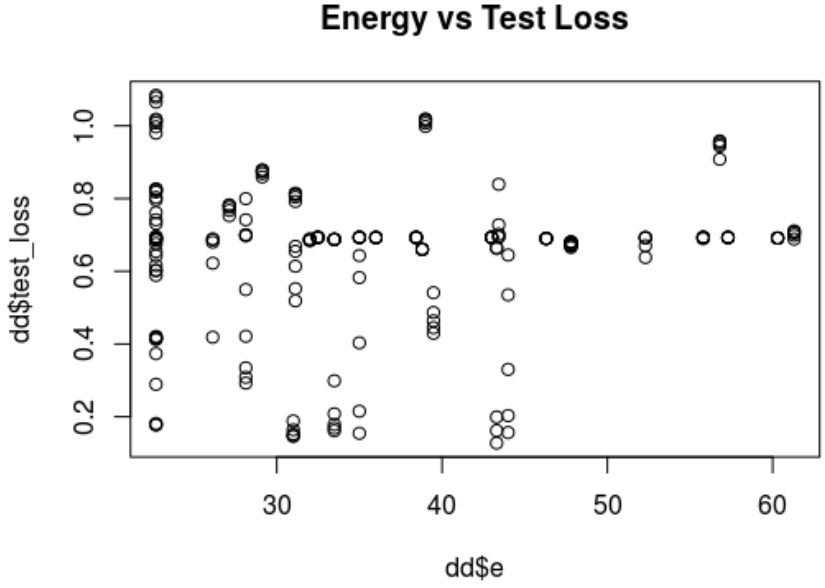
Get some error message from VisRSeq and it's already very late..

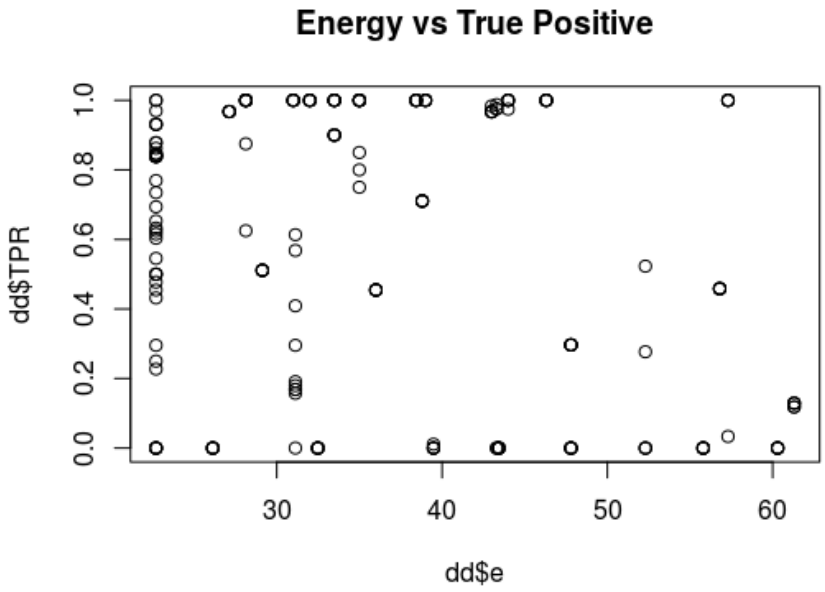
Here are some results in R:

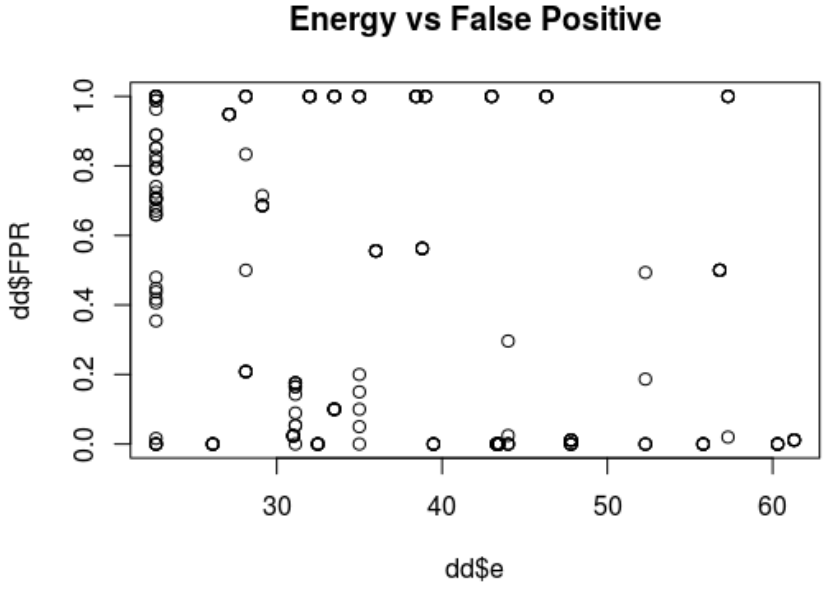
3 Findings

Seems rather random


Energy vs Train Loss
dd$train_loss
0.2
0.4
0.6
0.8
1.0
1.2
30
40
50
60
dd$e


Energy vs Test Loss
dd$test_loss
0.2
0.4
0.6
0.8
1.0
30
40
50
60
dd$e


Energy vs True Positive
dd$TPR
0.0
0.2
0.4
0.6
0.8
1.0
30
40
50
60
dd$e


Energy vs False Positive
dd$FPR
0.0
0.2
0.4
0.6
0.8
1.0
30
40
50
60
dd$e