1

STRUCTURAL ASPECTS

Subjecting the anisotropic network model to a critical examination of its structural features, we identify prevalent patterns of connectivity and relate theoretical and computational results to findings from experiments in the rat's cortex.

1.1 MOTIFS

In this chapter we analyze the strucarl. The term motif referes to... . Studies of Song et al. (2005) and Perin et al. (2011) show stuff. Pernice2011, Sporns , Zhao2011.

In motifs consisting of 3 to 8 neurons, Perin et al. (2011) made a distinctive observation: than they would have expected from the networks distance-dependent connectivity profile. Here we

Simulating like this we find

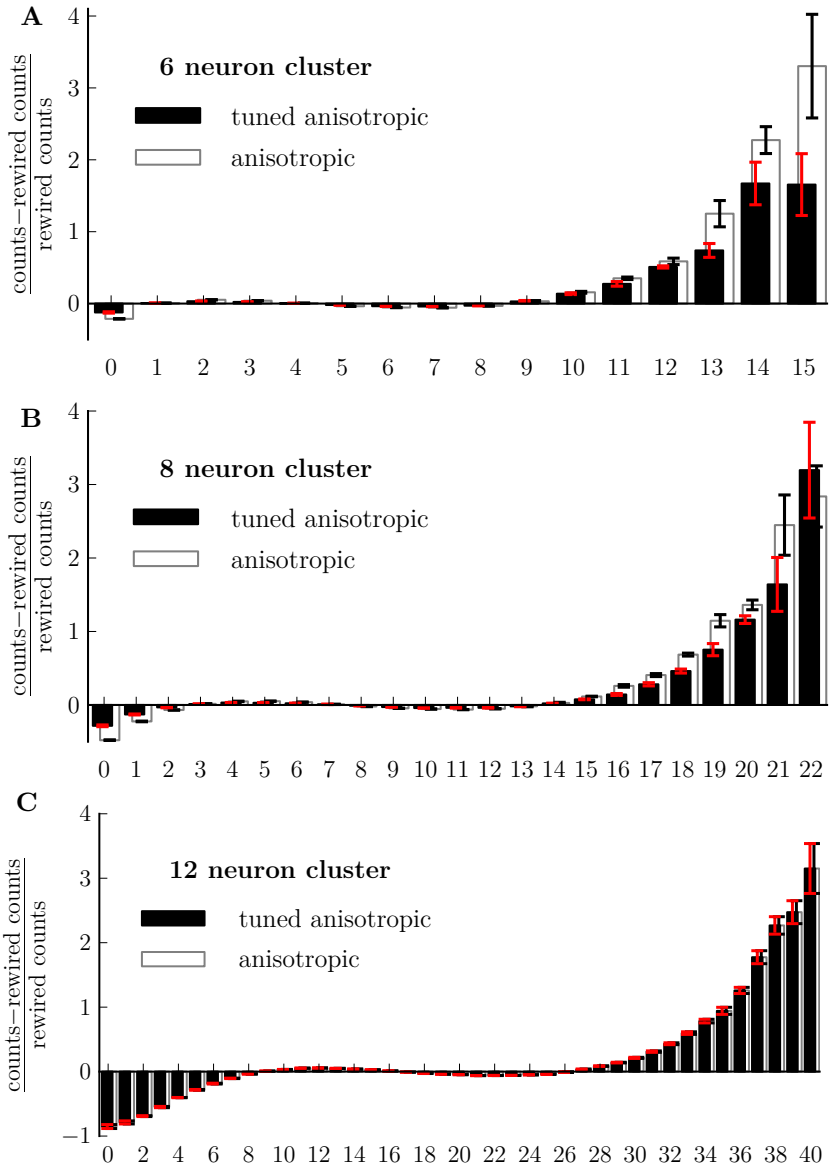

Figure 1.1: Increased occurrence of high edge counts in neuron clusters in anisotropic networks Showing the quotient of the difference Extracting the counts of three-node motifs in anisotropic (filled bars) an (`4839ce41`)

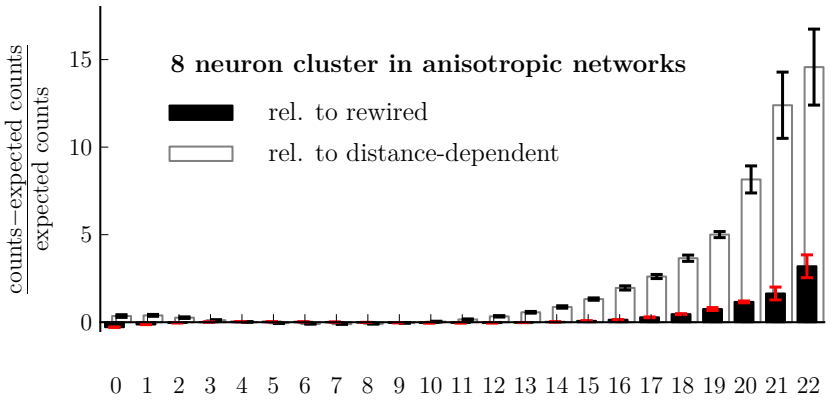

Figure 1.2: Stronger overrepresentation of clusters with high edge counts when compared with distance-dependent networks Showing we find that the overrepresentation of motifs with high edge counts is stronger (`7c826e10`)

In their study, Perin et al. follow their observation of increased edge counts in neuron clusters with a common neighbor rule. Hebb ("fire together, wire together"). Here we also investigate our networks for the existence of a common neighbor relationship.

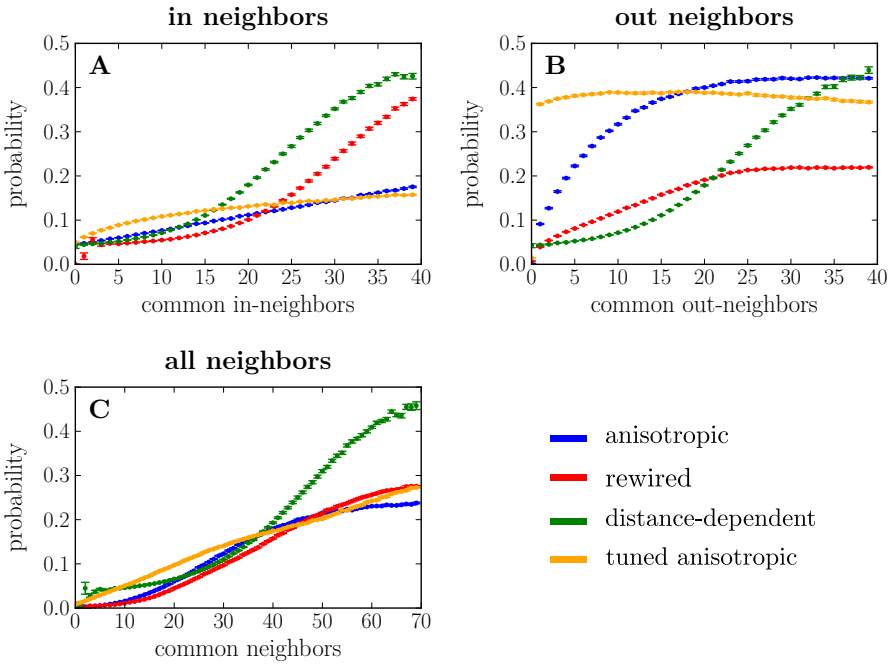

Figure 1.3: Distance-independent overrepresentation of reciprocal connections (`something`)