

Poster presentation

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The tree-edit-distance, a measure for quantifying neuronal morphology

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The shape of neuronal cells strongly resembles botanical trees or roots of plants. To analyze and compare these complex three-dimensional structures it is important to develop suitable methods. We review the so-called tree-edit-distance known from theoretical computer science and use this distance to define dissimilarity measures for neuronal cells. This measure intrinsically respects the tree-shape. It compares only those parts of two dendritic trees that have similar position in the whole tree. Therefore it can be interpreted as a generalization of methods using vector-valued measures. Moreover, we show that our new measure, together with cluster analysis, is a suitable method for analyzing three-dimensional shape of hippocampal and cortical cells.

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