

Information Theory in Computational Neuroscience

Günther Palm

University of Ulm, Ulm, Germany

http://www.informatik.uni-ulm.de/ni/staff/GPalm_e.html



The tutorial will consist of 3 parts (about 50 minutes each):

- 1) Classical information theory (information, conditional and mutual information, relation to coding and Bayesian guessing).
- 2) New concepts in information theory (descriptions and covers, novelty and surprise) and applications in spike-train analysis.
- 3) Applications of information concepts to learning in neural networks (see G. Deco, D. Obradovic, 1996).

.....
Günther Palm studied mathematics at the Universities of Hamburg and Tübingen. After his graduation in mathematics he worked at the Max-Planck-Institute for Biological Cybernetics in Tübingen on the topics of nonlinear systems, associative memory and brain theory. In 1983/84 he was a fellow at the Wissenschaftskolleg in Berlin. From 1988 to 1991 he was professor for theoretical brain research at the University of Düsseldorf. Since then he is professor for computer science and head of the Department of Neural Information Processing at the University of Ulm. He is working on information theory, neural networks, associative memory and Hebbian cell assemblies. He has coauthored six books, the most well known might be: "G. Palm and A. Aertsen (eds.): Brain Theory. Springer, Berlin, Heidelberg, New York, Tokyo, 1986."