Scaling Properties of Coarse-Coded Symbol Memories

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Abstract:

Abstract: Coarse-coded symbol memories have appeared in several neural network symbol processing models. In order to determine how these models

would scale, one must first have some understanding of the mathematics of coarse-coded representa(cid:173) tions. We define the general structure

of coarse-coded symbol memories and derive mathematical relationships among their essential parameters: memory

8ize, 8ymbol-8et size and capacity. The computed

capacity of one of the schemes agrees well with actual measurements oC tbe coarse-coded working memory of DCPS,

Touretzky and

Hinton's distributed connectionist production system.