

# Introduction to a System for Implementing Neural Net Connections on SIMD Architectures

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## Abstract:

Neural networks have attracted much interest recently, and using parallel architectures to simulate neural networks is a natural and necessary

application. The SIMD model of parallel computation is chosen, because systems of this type can be built with large

numbers of processing elements. However, such systems are not naturally suited to generalized communication. A method is proposed that allows

an implementation of neural network connections on massively parallel SIMD architectures. The key to this system is an algorithm that

allows the formation of arbitrary connections between the "neurons". A feature is the ability to add new connections quickly. It

also has error recovery ability and is robust over a variety of network topologies. Simulations of the general connection

system, and its implementation on the Connection Machine, indicate that the time and space requirements are proportional to the

product of the average number of connections per neuron and the diameter of the interconnection network.