Summary of Rummelhart Hinton and Ronald's "Learning representations by back-propagating errors"

Jer Moore a02082167

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1 Brief statement of the problem addressed in the paper

Networks with hidden units do not have the guarantee to perform mappings between ending and starting values if the structure of the input and outputs are too different. The hidden layer networks do not have the benefit of a clear and concise learning rule. In the paper Rummelhart, Hilton, and Ronald, derive an extension of the learning rule, called the generalized delta rule, illustrate it's use from some of their simulations and then build on their generalizations.

2 What I liked about the paper

The derivation of the delta rule seems more in depth than what we did in class, but that may just be because this is the second time looking at it. It definitely helps with the understanding of the derivation of the generalized delta rule.

Staring out with a very simple example, like XOR, helped generalize when they moved to the parity and Encoding problem. I do not currently understand the architecture Rummelhart and company describe for the last problem T-C, but with time I may be able to grasp it.

3 What I did not like about the paper

Sigma Pi units terrify me. It is likely related to their short summary that makes nothing like an attempt at explaining what they are or how the generalized delta rule helps sigma pi units and recurrent networks.

4 Inspirations from the paper

XOR is a very simple problem that is likely to appear in other problems that you attempt. It seems to work as a base case for testing different learning schemes.