

1 Problem

There was a paper published by Minsky and Papert which greatly injured the neural network research and set it back by many years. The Minsky Papert paper proved that a neural network without hidden layers was incapable of training any non-linear cases. At the time, there existed no novel ways to train with hidden layers which essentially just decimated research efforts in this area. Among those that continued in spite of this paper to study this area included Rumelhart, Hinton, and Williams. Their paper of interest showed that Minsky and Papert had been a little too quick to dismiss Machine Learning as it shows that it is possible to train and handle most if not all cases of training with hidden layers via back propagation. They describe it as training networks with internal representation. This is the paper that first introduced the world to back propagation though at a rudimentary level as they had yet to explore the realm of training with incomplete data sets.

2 Interests

I really enjoyed Rumelhart sticking it to the pessimistic views presented by Minsky. This is not to say that Minsky was invalid in his paper. Indeed, though he was not optimistic, he mentioned a potential of what Rumelhart brought forward to be possible. Minsky simply found it very unlikely. And with this rebuttal of Minsky this paper brought machine learning research back to a level of importance.

3 Disagreements

I have no disagreements with this paper. It is a mathematically concrete conceptualization of a way to train a neural network with hidden layers.

4 Inspirations

Pondering on the topic of back propagation and how Rumelhart mentioned he could not "guarantee" a solution to all solvable problems, yields the question what can and cannot be solved problem wise? Indeed, it should very well be doable to establish a W-hierarchy for a neural network. A neural network is too eerily close to the description of a parameterized problem.