

What Perceptrons Might Tell Us About Our Own Abilities

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Abstract

Minsky and Papert's (1969) book *Perceptrons* is often remembered as the book that (counter-productively) ended neural network research for nearly two decades. One of the authors' main results was that perceptrons (under reasonable limitations) cannot detect if a pattern is fully connected. Perhaps less known, to their initial surprise, the authors also showed that if guaranteed there are no holes in an image, perceptrons *can* detect if a pattern is fully connected. Given the simplicity of perceptrons, it seems reasonable to think that they might suggest a lower bound for what humans can visually detect without moving their eyes. If so, the results on connectedness suggest some counter-intuitive findings about human perception, namely that we should be able to learn to solve 2D mazes at a glance and detect how many objects are in an image at a glance (i.e., subitize) even when the number is large.