

UC Merced

Proceedings of the Annual Meeting of the Cognitive Science Society

Title

What Perceptrons Might Tell Us About Our Own Abilities

Permalink

<https://escholarship.org/uc/item/65t946bw>

Journal

Proceedings of the Annual Meeting of the Cognitive Science Society, 47(0)

Author

Doroudi, Shayan

Publication Date

2025

Copyright Information

This work is made available under the terms of a Creative Commons Attribution License, available at <https://creativecommons.org/licenses/by/4.0/>

Peer reviewed

What Perceptrons Might Tell Us About Our Own Abilities

Shayan Doroudi

University of California, Irvine, Irvine, California, United States

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.