

# Review of: "Nested Neural Networks: A Novel Approach to Flexible and Deep Learning Architectures"

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Potential competing interests: No potential competing interests to declare.

The proposed neural network architecture of this article is mathematically equivalent to a multi-layer perceptron (MLP) with rectified linear unit (ReLU) activation functions. That is not novel; the MLP is over sixty years old,[1] and has been combined with nonlinear activation functions for over forty[2]. It's the current standard for Deep Neural Network (DNN) architecture components.

Given that the approach is not novel, I highly doubt that it is state of the art (SOTA). Indeed, the author gives absolutely no experimental data to support their assertion that this architecture is superior on CIFAR-10[3], MNIST[4], or ImageNet[5]. Not to mention, almost all of those datasets are considered solved problems nowadays and are not used for benchmarks of modern systems.

Furthermore, the overall writing quality is poor. Claims are not supported, there are no images or figures, the math is not well formatted, and there is no overall structure. It cites a total of three sources; that's two less than this review does! It doesn't even cite the datasets the authors claim to be using!

To improve the paper, do some actual science, then explain what you did.

- 1) Ivakhnenko, Alekseï Grigor'evich, and Valentin Grigorévich Lapa. "Cybernetic predicting devices."(*Group Method of Data Handling*) (1966).
- 2) Rumelhart, David E., Geoffrey E. Hinton, and Ronald J. Williams. "Learning representations by back-propagating errors." *nature* 323.6088 (1986): 533-536.
- 3) Krizhevsky, Alex, and Geoffrey Hinton. "Learning multiple layers of features from tiny images." (2009): 7.
- 4) Deng, L. (2012). The MNIST database of handwritten digit images for machine learning research. *IEEE Signal Processing Magazine*, 29(6), 141–142.
- 5) Deng, J., Dong, W., Socher, R., Li, L. J., Li, K., & Fei-Fei, L. (2009, June). ImageNet: A large-scale hierarchical image database. In *2009 IEEE conference on computer vision and pattern recognition* (pp. 248-255). IEEE.

