

## Documents

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**Nature Inspired Meta-heuristic Algorithms for Deep Learning: Recent Progress and Novel Perspective**  
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### Abstract

Deep learning is presently attracting extra ordinary attention from both the industry and the academia. The application of deep learning in computer vision has recently gain popularity. The optimization of deep learning models through nature inspired algorithms is a subject of debate in computer science. The application areas of the hybrid of nature inspired algorithms and deep learning architecture includes: machine vision and learning, image processing, data science, autonomous vehicles, medical image analysis, biometrics, etc. In this paper, we present recent progress on the application of nature inspired algorithms in deep learning. The survey pointed out recent development issues, strengths, weaknesses and prospects for future research. A new taxonomy is created based on nature inspired algorithms for deep learning. The trend of the publications in this domain is depicted; it shows the research area is growing but slowly. The deep learning architectures not exploit by the nature inspired algorithms for optimization are unveiled. We believed that the survey can facilitate synergy between the nature inspired algorithms and deep learning research communities. As such, massive attention can be expected in a near future. © 2020, Springer Nature Switzerland AG.

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