

EVOLUTIONARY COMPUTATION FOR NON- CONVEX MACHINE LEARNING

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Sophisticated optimization problems (non-convex, non-differentiable, with many local optimal, etc.) lay in many machine learning tasks. While mathematical programming methods are the mainstream tools in machine learning community, they are hard to solve problems with non-convexity. Evolutionary computation provides a set of direct search tools that make it possible to tackle non-convex optimization problems for machine learning. This tutorial intends to introduce the latest advances on how emerging machine learning problems are successfully addressed by EC techniques. On this basis, key issues that may further boost the application of EC to non-convex machine learning will also be discussed, from the perspective of both theoretical and industrial-standard applications, with the aim to shed lights on directions for future research.