Stochastic gradient descent on Riemannian manifolds

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Stochastic gradient descent is a simple approach to find the local minima of a cost function whose evaluations are corrupted by noise. In this talk, we will propose a procedure extending stochastic gradient descent algorithms to the case where the function is defined on a Riemannian manifold. As in the Euclidean case, the gradient descent algorithm can be proved to converge to a critical point of the cost function. The algorithm has numerous potential applications, and will be illustrated by several examples.