Riemannian Geometry, Manifolds and Optimization

with Andrew Lam

Abstract: A manifold is a set that locally resembles Euclidean space near each point. When equipped with a metric we can define notions such as tangent vectors and normal vectors. A Riemannian manifold is a manifold equipped with a Riemannian metric which then provides the concepts of angle, length of curves, surface area and volume. Riemannian geometry is the study of geometric problems involving Romanian manifolds, which appear often in general relativity, computer graphics and vision, robotics, image processing and machine learning. The aim of this project is to develop a good background in Riemannian geometry and study techniques for optimization on Riemannian manifolds.

References:

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