Non-Convex Methods for Low-Rank Matrix Reconstruction

Jianfeng Cai
Department of Mathematics, The Hong Kong University of Science and Technology, Hong Kong, China
Email: jfcai@ust.hk

We present a framework of non-convex methods for reconstructing a low rank matrix from its limited information, which arises from numerous practical applications in machine learning, imaging, signal processing, computer vision, etc. Our methods will be applied to several concrete example problems such as matrix completion, phase retrieval, and robust principle component analysis. We will also provide theoretical guarantee of our methods for the convergence to the correct low-rank matrix.