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**Mahdi Soltanolkotabi\***, 3740 McClintock Avenue, Los Angeles, CA 90089. *Breaking sample complexity barriers via nonconvex optimization?*

In the past decade there has been significant progress in understanding when convex relaxations are effective for finding low complexity models from a near minimal number of data samples (e.g. sparse/low rank recovery from a few linear measurements). Despite such advances convex optimization techniques are often prohibitive in practice due to computational/memory constraints. Furthermore, in some cases convex programs are suboptimal in terms of sample complexity and provably require significantly more data samples than what is required to uniquely specify the low complexity model of interest. In fact for many such problems certain sample complexity “barriers” have emerged so that there are no known computationally tractable algorithm that can beat the sample complexity achieved by such convex relaxations. Motivated by a problem in imaging, In this talk I will discuss my recent results towards breaking such barriers via natural nonconvex optimization techniques. (Received September 11, 2016)