

Learning under Weak Moment Conditions

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In this talk, I will talk about a robust empirical risk minimization (RERM) scheme which has been finding numerous successful applications across various data science fields owing to its robustness to outliers and heavy-tailed noise. The specialties of RERM lie in its nonconvexity and that it is induced by a loss function with an integrated tuning parameter, both of which bring barriers when assessing its learning performance theoretically. In this talk, I will first introduce the applications of RERM in various fields. Then a no-free-lunch result for RERM will be reported, which indicates that there is no hope of distribution-free learning with RERM without adjusting the tuning parameter. Some theoretical results regarding the learnability and prediction ability of RERM under weak moment conditions will then be presented. This presentation is based on joint work with Professor Qiang Wu.