北京理工大學

数学与统计学院学术报告

Solving Robust Sparse Phase Retrieval via Linearly Convergent Majorization-Minimization Algorithm

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地　点： **良乡校区 文萃楼 I101**

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摘　要： Phase retrieval is a popular research topic in signal processing and machine learning. However, its performance degrades significantly when corrupted by noise or outliers. To address this problem, we propose a novel robust sparse PR method covering both real and complex cases. The core is to make full use of the Huber function to measure the loss and adopt the L1/2-norm regularization to realize feature selection, thereby improving the robustness of PR. In theory, we establish necessary optimality conditions for global minimizers. Particularly, for the complex case, we provide a fixed point inclusion property inspired by Wirtinger derivatives. Furthermore, we develop an efficient optimization algorithm by integrating the gradient descent method into a majorization-minimization framework. It is rigorously proved that the whole generated se quence is convergent and has a linear convergence rate under mild conditions, which has not been investigated before. Numerical examples under different types of noise validate the robustness and efficiency of the proposed method.

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