Low-resolution Analog-to-Digital Converter (ADC) has emerged as a practical solution for reducing system cost and power consumption of massive Multiple-Input-Multiple-Output (MIMO) systems. However, nonlinearity of low-resolution ADCs causes significant distortions in the received signals and makes the channel estimation and data detection tasks become much more challenging. We study the application of machine learning techniques such as K-means clustering, support vector machine (SVM), and deep neural networks to efficiently solve the channel estimation and data detection problems in massive MIMO systems with low-resolution ADCs. For example, in small scale MIMO systems, the K-means clustering technique can be used to perform clustering on the received data. With larger scale systems, SVM or deep neural networks may help. Preliminary results show the efficacy of machine learning for robust estimation and detection with low-resolution quantized signaling.

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