An Information -Theoretic Approach for Estimation and Image Reconstruction

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Abstract. In this paper an Information-Theoretic method for solving linear estimation problems and for reconstructing noisy and blurry images is developed. Basically, the inverse problem is transformed into a generalized moment problem, which is then solved by an information theoretic method. This estimation approach is robust for a whole class of distributions and allows the use of prior information. The resulting method builds on the foundations of information-theoretic methods, uses minimal distributional assumptions, performs well and uses efficiently all the available information (hard and soft data). This method is computationally efficient. A number of empirical examples are presented.

Key Words: Entropy, Estimation, Image Reconstruction, Information, Linear Models