

Research Highlights from Dr. Ashok Kumar's Research Group

Real time data is invariably noise, contaminated, and does not always conform to a fixed model. Robust estimation involves a key re-weighting procedure on the likelihood score equation which enables us to control the effect of outliers while retaining the efficiency of the estimators to a larger extent. This re-weighting induces an information measure, which is generally an extension of the well-known Kullback-Leibler divergence (which is known to be associated with the maximum likelihood estimation). We study various estimation procedures, the information measures associated with them, and their efficacies. We also study the geometry of these information measures on various statistical models and exploit them to provide possible algorithmic simplifications for the underlying estimation problem. Recently, we have applied these techniques and found robust estimators for the parameters of the alpha-power-law model which includes the well-known Student-t distributions.

