

VARIATION IN THE MEAN SQUARED ERROR OF ESTIMATES DUE TO FUZZINESS IN THE INFORMATION SYSTEM

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ABSTRACT

In the general problem of Parametric Point Estimation the Mean Squared Error often appears as a useful measure of goodness or closeness of estimates. Nevertheless, in very rare cases an estimator with smallest Mean Squared Error exists, but Statistical Inference provides a variety of methods to find estimates that are usually characterized by a small Mean Squared Error.

When the observation of outcomes from the probabilistic information system or experiment concerning the estimation problem involves fuzzy imprecision, so that the observable events are described by means of fuzzy events on the sample space, the use of Zadeh's probabilistic definition allows us to immediately extend the Mean Squared Error.

In the present paper we are going to verify that the presence of fuzziness in experimental data entails a variation in that measure of goodness of estimation. On the basis of the last assertion the problem of selecting the suitable sample size, in order to remove the variation in the Mean Squared Error due to fuzziness or to estimate the parameter with a specified degree of precision, will be then discussed.

Keywords: Fuzzy Information; Mean Squared Error; Point Estimation; Zadeh's Probabilistic Definition.