

## Linear regression in a fuzzy context. The least square method

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**Abstract.** This paper deals with the statistical linear regression. Its aim is to extend the classical least square method to the case where the observations are not crisp, but fuzzy numbers. In order to attain our purpose, we introduce a suitable and very general squared distance between fuzzy numbers which substitute the classical  $(a - b)^2$  on the real line. Then we use a well known theorem of functional theory to prove that, under suitable and reasonable conditions, there exists a unique set of fuzzy coefficients which minimize the sum of the squared distances between the previsions and the observations. Nevertheless the classical variational methods cannot be used to find the regression coefficient due to the particular structure of the domain of the functional to be minimized (its interior is empty). So we complete the paper by describing a numerical solution based on active constraint method.