

## **Fast improvised influential distance for the identification of influential observations in multiple linear regression**

### **ABSTRACT**

Influential observations (IO) are those observations that are responsible for misleading conclusions about the fitting of a multiple linear regression model. The existing IO identification methods such as influential distance (ID) is not very successful in detecting IO. It is suspected that the ID employed inefficient method with long computational running time for the identification of the suspected IO at the initial step. Moreover, this method declares good leverage observations as IO, resulting in misleading conclusion. In this paper, we proposed fast improvised influential distance (FIID) that can successfully identify IO, good leverage observations, and regular observations with shorter computational running time. Monte Carlo simulation study and real data examples show that the FIID correctly identify genuine IO in multiple linear regression model with no masking and a negligible swamping rate.

**Keyword:** Bad leverage point; Good leverage point; Influential distance; Influential observations