

## Formulating a Flexible-Spread Fuzzy Regression Model Based on Dissemblance Index

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**Abstract :** This study proposes a regression model with flexible spreads for fuzzy input-output data to cope with the situation that the existing measures cannot reflect the actual estimation error. The main idea is that a dissemblance index (DI) is carefully identified and defined for precisely measuring the actual estimation error. Moreover, the graded mean integration (GMI) representation is adopted for determining more representative numeric regression coefficients. Notably, to comprehensively compare the performance of the proposed model with other ones, three different criteria are adopted. The results from commonly used test numerical examples and an application to Taiwan's business monitoring indicator illustrate that the proposed dissemblance index method not only produces valid fuzzy regression models for fuzzy input-output data, but also has satisfactory and stable performance in terms of the total estimation error based on these three criteria.

**Keywords :** dissemblance index, forecasting, fuzzy sets, linear regression

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