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Improved multi-variable grey forecasting model with a dynamic background-value coefficient and its application

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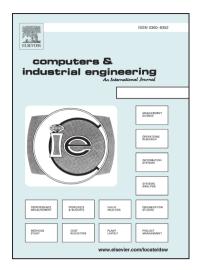
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### **ACCEPTED MANUSCRIPT**

## Title Page including Author Details

#### 1. Paper title

Improved multi-variable grey forecasting model with a dynamic background-value coefficient and its application

#### 2. Author Details

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**Prof. Chuan Li** was born in 1975. After receiving his Ph.D. degree from Chongqing University of China in 2007, he has been successively a postdoctoral fellow with University of Ottawa, Canada, a research professor with Korea University, South Korea, and a senior research associate with City University of Hong Kong, China. He is a professor at Chongqing Technology and Business University. His research interests include health maintenances for operational equipments, intelligent system theories and applications.

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#### 4. Abstract

In grey system theory, the value of the background-value coefficient has a significant impact on the performance of a multi-variable grey forecasting model (MGFM). However, for most existing MGFMs, the background-value coefficient is fixed at 0.5 to simplify the modelling process. For this, a new MGFM model is proposed, which is based on a dynamic background-value coefficient. Then, the time response function and the final restored

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