

# **FUZZY MODEL IDENTIFICATION: A NEW PARALLEL BB-BC OPTIMIZATION BASED APPROACH**

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## **ABSTRACT**

Evolving a performance evaluation model for universities and institutes of higher learning is very desirable, but is a tedious and time consuming task due to their inherent higher degree of complexity and nonlinearity. Soft Computing based approaches have gained significant popularity towards evolving high dimensional fuzzy logic based models. This paper proposes the application of simple and parallel Big Bang and Big Crunch (BB-BC) based optimization [1 2] approaches to the identification of fuzzy logic based system from the available numerical data. This system identification problem for overall rating and evaluation of institutions of higher learning was formulated as a minimization problem. Simple BB-BC and parallel BB-BC algorithms are applied to identify TSK type zero fuzzy models. Simple BB-BC is a single population approach whereas parallel BB-BC is a multiple population approach. The paper compares performances of both of these algorithms. Parallel BB-BC approach was observed to be computationally more efficient and has much better accuracy.

**KEYWORDS:** Fuzzy Logic Based System Identification, Membership Functions, Optimization, Parallel Big Bang, Big Crunch Algorithm, Simple Big Bang, Big Crunch Algorithm