



SDI Review Form 1.6

Journal Name:	Journal of Advances in Mathematics and Computer Science
Manuscript Number:	Ms_JAMCS_34916
Title of the Manuscript:	Recurrent Neural Network Based Modeling of Gene Regulatory Network Using Bat Algorithm
Type of the Article	Original Research Article

General guideline for Peer Review process:

This journal's peer review policy states that **NO** manuscript should be rejected only on the basis of '**lack of Novelty**', provided the manuscript is scientifically robust and technically sound.

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PART 1: Review Comments

	Reviewer's comment	Author's comment (if agreed with reviewer, correct the manuscript and highlight that part in the manuscript. It is mandatory that authors should write his/her feedback here)
Compulsory REVISION comments	-	The authors would like to thank the reviewers and the editor for their valuable comments. We have tried to rectify each and every revision (both major and minor) to the best of our abilities. The modifications are shown by yellow color.
Minor REVISION comments	1. What is importance of BAT 2. Give specific applications of proposed model 3. Give problem formulation in the system	1. What is importance of BAT Response 1: The Bat Algorithm (BA) is very efficient optimization technique which was first proposed by X.-S Yang [23], [24]. BA was based on the use of echolocation of bats during their foraging. It has been already reported [23] that BA has superior performances over other metaheuristics like GA and PSO. However, to the authors' best knowledge, Bat Algorithm (BA) was successfully implemented in others field of engineering [25], [26] has yet to be incorporated for parameters optimization of RNN. As BA can be successfully implemented for continuous parameter optimization and multi-objective optimization [27], [28], it may be suitable for parameter optimization of RNN based model of GRN. Please see the Page 3 (line 87-94) 2. Give specific applications of proposed model



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		Response 2: In this paper, BA metaheuristics is introduced for reconstruction of GRN using decoupled and regularized RNN model. Please see the Page 3 (line 96-97) 3. Give problem formulation in the system Response 3: According to the author, Introduction section clearly describes the problem of the research. However, I mention some important lines that will help to highlight the problem and understand the problem roughly. The study of GRNs appears to be very essential in order to discover the genetic causes of a particular disease and for the subsequent design of new and effective methods of treatment to control the disease causing genes with their mutual interactions [1]. Please see the Page 1 (line 29-32) DNA microarrays [2], [3] are widely used now-a-days for the purpose of investigation of the mechanism that is responsible for gene regulation. Please see the Page 2 (line 34-35) Many types of linear or non-linear mathematical models have been already proposed to infer gene regulatory networks and dynamics from the time series microarray data i.e. a reverse engineering problem. Please see the Page 2 (line 41-43)
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		However, in this work, we have used Recurrent Neural Network (RNN) [15], [36] which is closed loop Neural Network with a delayed feedback variable suitable to model genetic system dynamics from temporal data. Please see the Page 2 (line 51-53) Therefore, inference of small genetic network using other optimization techniques is still an open problem to the researchers. Please see the Page 3 (line 84-85) In this paper, BA is introduced for reconstruction of GRN using decoupled and regularized RNN model. Please see the Page 3 (line 96-97)
<u>Optional/General</u> comments	-	