



## Research Frontier

### Dynamic Multiobjectives Optimization With a Changing Number of Objectives

Instead of changing the shape or position of the Pareto-optimal front/set (PF/PS) when having time-dependent objective functions, increasing or decreasing the number of objectives usually leads to the expansion or contraction of the dimension of the PF/PS manifold. Unfortunately, most existing dynamic handling techniques can hardly be adapted to this type of dynamics. In this paper, we report our attempt toward tackling the DMO problems with a changing number of objectives. We implement a dynamic two-archive evolutionary algorithm which maintains two co-evolving populations simultaneously. In particular, these two populations are complementary to each other: one concerns more about the convergence while the other concerns more about the diversity. The compositions of these two populations are adaptively reconstructed once the environment changes. In addition, these two populations interact with each other via a mating selection mechanism. Comprehensive experiments are conducted on various benchmark problems with a time-dependent number of objectives. Empirical results fully demonstrate the effectiveness of our proposed algorithm.



IEEE Transactions on Evolutionary Computation, Feb. 2018

### Deep Reinforcement Learning With Visual Attention for Vehicle Classification

Owing to the mechanism of visual attention, the human vision system shows remarkable capability compared with the computer vision system, especially in distinguishing nuances processing. Inspired by this mechanism, we propose a convolutional neural network (CNN) model of visual attention for image classification. A visual attention-based image processing module is used to highlight one part of an image and weaken the others, generating a focused image. Then the focused image is input into the CNN to be classified. According to the classification probability distribution, we compute the information entropy to guide a reinforcement learning agent to achieve a better policy for image classification to select the key parts of an image. Systematic experiments on a surveillance-nature dataset which contains images captured by surveillance cameras in the front view, demonstrate that the proposed model is more competitive than the large-scale CNN in vehicle classification tasks.



IEEE Transactions on Cognitive and Developmental Systems, Dec. 2017

A Three-Layer Privacy Preserving Cloud Storage Scheme Based on Computational Intelligence in Fog Computing

## Important Message

### ★ Proposals for IEEE CEC or FUZZ-IEEE in 2021

Proposals for the organization of IEEE CEC or FUZZ-IEEE in 2021 must be submitted as soon as possible, and no later than **May 31**. Policies, procedures and budget worksheet for such proposals are [available](#). More detailed guidelines can be obtained upon request to [Bernadette Bouchon-Meunier](#).

## CIS Conferences

### ★ Conference Calendar (2018-2019)

#### ★ 2018 IEEE Conference on Computational Intelligence in Bioinformatics and Computational Biology (CIBCB 2018)

Missouri, USA  
May 30-Jun. 2, 2018

#### ★ 2018 IEEE International Conference on Computational Intelligence and Virtual Environments for Measurement Systems and Applications (CIVEMSA 2018)

Ottawa, Canada  
Jun. 12-14, 2018

Intelligence (WCCI 2018)

Traditional privacy protection schemes are usually based on encryption technology, but these kinds of methods cannot effectively resist attack from the inside of cloud server. In order to solve this problem, we propose a three-layer storage framework based on fog computing. The proposed framework can both take full advantage of cloud storage and protect the privacy of data. Besides, Hash-Solomon code algorithm is designed to divide data into different



parts. Then, we can put a small part of data in local machine and fog server in order to protect the privacy. Moreover, based on computational intelligence, this algorithm can compute the distribution proportion stored in cloud, fog, and local machine, respectively. Through the theoretical safety analysis and experimental evaluation, the feasibility of our scheme has been validated, which is really a powerful supplement to existing cloud storage scheme.

IEEE Transactions on Emerging Topics in Computational Intelligence, Feb. 2018

### A Survey on Story Generation Techniques for Authoring Computational Narratives

Computers are often used as tools to design, implement, and even visualize a variety of narrative forms. Many researchers and artists are now further attempting to engage the computer actively throughout the development of the narrative itself. Any form of computational narrative authoring is at some level always mixed-initiative, meaning that the processing capabilities of the computer are utilized with a varying degree to automate certain features of



the authoring process. We structure this survey by focusing on two key components of stories, plot and space, and more specifically the degree to which these are either automated by the computer or authored manually. By examining the successes of existing research, we identify potential new research directions in the field of computational narrative. We also identify the advantages of developing a standard model of narrative to allow for collaboration between plot and space automation techniques. This would likely benefit the field of automated space generation with the strengths in the field of automated plot generation.

IEEE Transactions on Computational Intelligence and AI in Games, Sep. 2017

## Educational Activities

### 2018 Graduate Student Research Grants

The IEEE Computational Intelligence Society (CIS) funds scholarships for deserving undergraduate, graduate and PhD students who need financial support to carry out their research during an academic break period. The primary intent of these scholarships is to cover the expenses related to a visit to another university, institute or research agency for collaboration with an identified researcher in the field of interest of the applicant. Funds can be used to cover travel expenses as well as certain living expenses (such as housing).



The field of interest of applicants is open, but should be connected with identifiable components of the CIS (neural networks, fuzzy systems, or evolutionary computation). Deadline for submission of applications is **Mar 15**. More information can be found [here](#).

Rio de Janeiro, Brazil  
Jul. 8-13, 2018

★ 2018 IEEE Conference on Computational Intelligence and Games (CIG 2018)  
Maastricht, The Netherlands  
Aug. 14-17, 2018  
(Submission: Mar. 15)

★ 2018 Joint IEEE International Conference on Developmental Learning and Epigenetic Robotics (ICDL-EpiRob 2018)  
Tokyo, Japan  
Sep. 17-20, 2018  
(Submission: Apr. 1)

★ 2018 IEEE Smart World Congress (SmartWorld 2018)  
Guangzhou, China  
Oct. 8-12, 2018  
(Submission: Apr. 8)

★ 2018 IEEE Latin American Conference on Computational Intelligence (LA-CCI 2018)  
Guadalajara, Mexico  
Nov. 7-9, 2018

★ 2018 IEEE Symposium Series on Computational Intelligence (SSCI 2018)  
Bangalore, India  
Nov. 18-21, 2018

★ 2018 IEEE International Conference on Data Science and Advanced Analytics (DSAA 2018)  
Turin, Italy  
Dec. 1-3, 2018

★ 2019 IEEE Congress on Evolutionary Computation (CEC 2019)

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## Call for Papers (Journal)

- [IEEE CIM Special Issue on Computational Intelligence for Affective Computing and Sentiment Analysis \(Mar 31\)](#)
- [IEEE CIM Special Issue on Deep Reinforcement Learning and Games \(Oct 1\)](#)
- [IEEE TEVC Special Issue on Theoretical Foundations of Evolutionary Computation \(Oct 1\)](#)
- [IEEE TNNLS Special Issue on Recent Advances in Theory, Methodology and Applications of Imbalanced Learning \(Apr 30\)](#)
- [IEEE TETCI Special Issue on Computational Intelligence for Smart Energy Applications to Smart Cities \(May 15\)](#)
- [IEEE TETCI Special Issue on New Advances in Deep-Transfer Learning \(Jun 30\)](#)

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## Call for Papers (Conference)

- [IEEE Conference on Evolving and Adaptive Intelligent Systems \(EAIS 2018\) \(Mar 18\)](#)
- [International Conference on Swarm Intelligence \(ICSI 2018\) \(Mar 15\)](#)
- [Pacific Rim International Conference on Artificial Intelligence \(PRICAI 2018\) \(Mar 31\)](#)
- [International Workshop on Semantic and Social Media Adaptation and Personalization \(SMAP 2018\) \(Apr 23\)](#)

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## Call for Participation

- [IEEE World Congress on Computational Intelligence \(IEEE WCCI 2018\), Rio de Janeiro, Brazil \(Jul 8-13\)](#)
- [IEEE Conference on Computational Intelligence in Bioinformatics and Computational Biology \(CIBCB 2018\), Missouri, USA \(May 30-Jun 2\)](#)
- [IEEE International Conference on Computational Intelligence and Virtual Environments for Measurement Systems and Applications \(CIVEMSA 2018\), Ottawa, Canada \(Jun 12-14\)](#)
- [International Metaheuristics Summer School \(MESS 2018\), Taormina, Italy \(Jul 21-25\)](#)

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## Career Opportunities

- [Post-Doctoral Research Associate at Cognitive Robotics, TU Delft, the Netherlands \(Mar 18\)](#)
- [Associate/Assistant Professor at Cognitive Robotics, TU Delft, the Netherlands \(Apr 1\)](#)
- [Fully-funded PhD Studentship in Meta-heuristic Optimisation and Machine Learning, University of Birmingham, UK \(Apr 30\)](#)

