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IEEE CIS Newsletter, Issue 52, May 2017   **(Online Version)**

2017 IEEE CIS Call for Nominations

The following positions within the IEEE Computational Intelligence Society (CIS) become vacant on 1/1/2018:

- VP for Technical Activities (2018-19)
- VP for Finances (2018-19)
- VP for Conferences (2018-19)
- Five ADCOM Members-at-Large (2018-2020)

All the nominations and self-nominations should be sent to the Chair of the CIS Nominations Committee, Prof. Xin Yao (x.yao@cs.bham.ac.uk) in this case, and copy to Jo-Ellen Snyder (j.e.snyder@ieee.org) by **May 14, 2017 (Sunday)** . (Details)

Xin Yao, Chair (2017) of CIS Nominations Committee

Research Frontier

Differential Evolution Based on Self-Adaptive Fitness Function for Automated Test Case Generation

One of the challenges of search-based software testing is the automated test case generation for path coverage (ATCG-PC). There have been several meta-heuristic algorithms proposed to cope with this challenge. However, the cost of test cases generated by the algorithms is still high and even infinite for complete path coverage. The goal of the current study is to propose an improved meta-heuristic algorithm for ATCGPC. Unlike the previous research, our study focuses on how to use more heuristic information to generate more uncovered paths with fewer test cases. We combine a self-adaptive fitness function and a modified differential evolution algorithm to implement this plan. Follow-up experimental studies on eight benchmark problems of classical programs show that the proposed algorithm outperforms those solutions obtained by immune genetic algorithm, artificial bee colony, and random search.

IEEE Computational Intelligence Magazine, May. 2017

Computational Intelligence in Music Composition: A Survey

Composing music is an inspired yet challenging task, in that the process involves many considerations such as assigning pitches, determining rhythm, and arranging. Algorithmic composition aims to develop algorithms for music composition. algorithmic composition using artificial intelligence technologies received considerable attention. In particular, computational intelligence is widely used and achieves promising results in the creation of music. This paper attempts to provide a survey on the computational

Important Message

⭐ **Application for DL Talks**

Applications are solicited for Distinguished Lecturer Talks for the year 2017. Applications can be made by IEEE CIS chapter chairs. (Details)

CIS Conferences

⭐ Conference Calendar (2017-2018)

⭐ 2017 International Joint Conference on Neural Networks (IJCNN 2017)
Alaska, USA
May 14-19, 2017

⭐ 2017 IEEE Congress on Evolutionary Computation (CEC 2017)
San Sebastián, Spain
Jun. 5-8, 2017

⭐ 2017 IEEE International Conference on Computational Intelligence and Virtual Environments for Measurement Systems and Applications (CIVEMSA 2017)
Annecy, France
Jun. 26-28, 2017

⭐ 2017 IEEE International
Systems (
2017)

intelligence techniques used in music composition. First, the existing approaches are reviewed in light of the major musical elements considered in composition, to wit, musical form, melody, and accompaniment. Second, the review highlights the components of evolutionary algorithms and neural networks designed for music composition.

IEEE Transactions on Emerging Topics in Computational Intelligence, Feb. 2017

Contrasting Human and Computational Intelligence Based Autonomous Behaviors in a Blue–Red Simulation Environment

Autonomous systems are making their way to the market. The transition from tasks performed by humans to tasks performed by machines begs for an answer to one of the most challenging questions in this area of research: Will humans understand and trust what a machine does? Analyzing human and machine behaviors offers the foundational steps toward finding answers to this question. This paper contributes a novel methodology for transforming low-level actions by each agent into high-level categorization of strategies to contrast the behaviors of humans and machines using a computational red teaming environment with a red (evader) and a blue (pursuer) agent. Two orthogonal sources of uncertainty were examined: the uncertainty in the blue agent's situation awareness about the red, and the red agent's uncertainty resulting from deceptive actions by the blue. For each uncertainty source, two different experiments were conducted by varying the controller of the red agent.

IEEE Transactions on Emerging Topics in Computational Intelligence, Feb. 2017

Call for Papers

- IEEE CIM Special Issue on Automated Design of Machine Learning and Search Algorithms (Jul 15)
- IEEE CIM Special Issue on Computational Intelligence Techniques in Bioinformatics and Bioengineering (Nov 15)
- IEEE TNNLS Special Issue on Deep Reinforcement Learning and Adaptive Dynamic Programming (May 1)
- IEEE TETCI Special Issue on Computational Intelligence for End-to-End Audio Processing (May 5)
- IEEE TETCI Special Issue on Computational Intelligence for Cloud Computing (May 31)
- IEEE TETCI Special Issue on Data Driven Computational Intelligence for e-Governance, Socio-Political and Economic Systems (Jun 5)
- IEEE TETCI Special Issue on New Trends in Smart Chips & Smart Hardware (Aug 1)
- IEEE TETCI Special Issue on Human-Machine Symbiosis (Sep 3)

- IEEE Symposium on Adaptive Dynamic Programming and Reinforcement Learning (ADPRL'17) (Jul 2)
- International Conference on Data Science, Technology and App (May 17)
- International Conference on Behavioral, Economic, and Socio-Cultural Computing (BESC 2017) (May 29)

Naples, Italy
Jul. 9-12, 2017

⭐ 2017 IEEE Smart World Congress (SWC 2017)
San Francisco, USA
Aug. 4-8, 2017

⭐ 2017 IEEE Conference on Computational Intelligence and Games (CIG 2017)
New York, USA
Aug. 22-25, 2017

⭐ 2017 IEEE Conference on Computational Intelligence in Bioinformatics and Computational Biology (CIBCB 2017)
Manchester, UK
Aug. 23-25, 2017

⭐ Seventh Joint IEEE International Conference on Developmental Learning and Epigenetic Robotics (ICDL-EpiRob 2017)
Lisbon, Portugal
Sep. 18-21, 2017

⭐ 2017 IEEE International Conference on Data Science and Advanced Analytics (DSAA 2017)
Tokyo, Japan
Oct. 19-21, 2017
(Submission: May 25)

⭐ 2017 IEEE Latin American Conference on Computational Intelligence (LA-CCI 2017)
Arequipa, Peru
Nov. 8-10, 2017
(Submission: May 14)

⭐ 2017 IEEE Symposium Series on Computational Intelligence (SSCI 2017)

(Submission: Jul. 2)

- IEEE International Conference on Cyborg and Bionic Systems (CBS 2017) (Jun 15)
- International Conference on Simulated Evolution and Learning (SEAL 2017) (May 20)

Career Opportunities

- Assistant Professor in Intelligent Business Analytics Systems, Netherlands (Jun 15)

⭐ 2018 IEEE World Congress on Computational Intelligence (WCCI 2018)
Rio de Janeiro, Brazil
Jul. 8-13, 2018
(SS/Wksp Proposal: Jan. 15, 2018)

⌄ Editor

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