Computational Intelligence Society
Nature-Inspired Problem Solving • cis.ieee.org

IEEE IEEE

IEEE CIS Newsletter, Issue 64, May 2018   **(Online Version)**

Announcement

Invitation to Join Newly Launched IEEE Collabratec AI Community

The IEEE has established a new cross-organizational IEEE Community for artificial intelligence. With the computational intelligence theories, algorithms, methods, applications, and technologies that our IEEE Computational Intelligence Society (IEEE CIS) produces, all members of IEEE CIS are invited to join the newly created IEEE Collabratec AI Community. To join the community, visit website.

As a Founding Instigator for IEEE Collabratec AI Community, please feel free to email me IEEE CIS feedback, topics of interest, or anything you feel is important for this context.

Hussein Abbass, Vice President for Technical Activities

IEEE Reproducibility Initiative with Code Ocean

One way to enhance the visibility and impact of research is to share associated code, software simulations, algorithms, methods, data, and analyses to understand what produced the results in the scholarly article. Through a new IEEE reproducibility initiative with Code Ocean, a cloud-based computational reproducibility platform, authors can now upload, run, and publish code associated with their research, all without having to install anything on their own computer.

Once the code is published on Code Ocean, it will be linked to the associated article in IEEE Xplore$^{®}$. Users of IEEE Xplore can easily search articles with associated code using keywords or facets. Such articles are identified by a unique Code icon in the search results page. Users can also browse and run the code directly from within IEEE Xplore, within a dedicated Code & Datasets tab on the article page.

Learn more at IEEE Xplore or get started by creating a free account at Code Ocean.

Jim Keller, Vice President for Publications

Research Frontier

A Framework for Large-Scale Multiobjective Optimization Based on Problem Transformation

The proposed method called weighted optimization framework is intended generic method that can be used with any population-based metaheuristic algorithm. After explaining some general issues of large-scale optimization, we introduce a problem

---

Important Message

⭐ **Call for Nominations**

The following positions within the IEEE CIS become vacant: President-Elect (2019), VP for Publications (2019-20), VP for Members Activities (2019-20), VP for Education (2019-2020), Five ADCOM Members-at-Large (2019-2021). All the nominations and self-nominations should be sent to Pablo A. Estevez and copy to Jo-Ellen Snyder by **May 31**. (Details)

⭐ **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 must be requested to Bernadette Bouchon-Meunier before preparing the bid.

CIS Conferences

⭐ Conference Calendar (2018-2019)

⭐ 2018 IEEE Conference on Computational Intelligence in Bioinformatics and Computational Biology

May 30-Jun. 2, 2018

transformation scheme that is used to reduce the dimensionality of the search space and search for improved solutions in the reduced subspace. This involves so-called weights that are applied to alter the decision variables and are also subject to optimization. Our method relies on grouping mechanisms and employs a population-based algorithm as an optimizer for both original variables and weight variables. Our experiments use test problems with 2-3 objectives 40-5000 variables. Using our approach on three well-known algorithms and comparing its performance with other large-scale optimizers, we show that our method can significantly outperform most existing methods in terms of solution quality as well as convergence rate on almost all tested problems for many-variable instances.

IEEE Transactions on Evolutionary Computation, Apr. 2018

Affordances in Psychology, Neuroscience, and Robotics: A Survey

The concept of affordances appeared in psychology during the late 60s as an alternative perspective on the visual perception of the environment. It was revolutionary in the intuition that the way living beings perceive the world is deeply influenced by the actions they are able to perform. Then, across the last 40 years, it has influenced many applied fields, e.g., design, human-computer interaction, computer vision, and robotics. In this paper, we offer a multidisciplinary perspective on the notion of affordances. We first discuss the main definitions and formalizations of the affordance theory, then we report the most significant evidence in psychology and neuroscience that support it, and finally we review the most relevant applications of this concept in robotics.

IEEE Transactions on Cognitive and Developmental Systems, Mar. 2018

Improving Supervised Learning Classification Methods Using Multigranular Linguistic Modeling and Fuzzy Entropy

We propose to apply linguistic modeling methods in order to obtain a linguistic representation. With the help of multigranular linguistic modeling, data can be transformed and expressed using different (unbalanced) linguistic label sets. Expressing the data using linguistic expressions instead of numbers increases the readability and reduces the complexity of the problem, and data recovering methods allow us to manually control the level of precision. In this paper, several datasets are transformed and utilized for classification tasks using several supervised learning algorithms. For each combination of datasets and algorithms, the data have been expressed using several linguistic label sets that have different granularity values. After carrying out the testing processes, we can conclude that, in some cases, reducing data complexity leads to better classification results. Therefore, it is found that linguistic representation of the training data with just the necessary and sufficient precision can improve the reliability of the classification process.

IEEE Transactions on Fuzzy Systems, Oct. 2017

5 Minutes with Prof. Simon Lucas

IEEE CIS Student Activities Subcommittee invites you to get to know the pioneers and experts in the Computational Intelligence. This month "5 minutes with..." focuses on **Prof. Simon Lucas**.

1. What is your title, full name, and place of work?
   Simon Lucas, Professor of Artificial Intelligence, Head of School Electronic Engineering and Computer Science, Queen Mary University of London.

2. What grade of member in CIS are you?
   Senior Member.

3. How long have you been a member of CIS?
   20 years – I joined in WCCI 1998 in Anchorage, Alaska.

4. One reason why you are a member of CIS:
   Great network of members.

5. What was your service pathway in the Computational Intelligence Society?
   Games Technical Committee chair, AdCom member, program chair of various conferences (co-founded IEEE Conference on Games), founding EiC of IEEE Transactions on Games, VP Education.

6. Can you share with us one success story that will motivate young members and provide useful guidelines for their careers?
   There are many ways to be successful: you have to find what works for you, and embrace new opportunities as they arise if they interest you. Life is a classic bandit optimisation problem of doing what you already like versus exploring new areas. A significant point for me was discovering the wonderfully open-ended challenge of Game AI and using it as a path to more general intelligence, as well as using games as a great application area. For me the magic of computational intelligence is the way that smart behaviour emerges from simple low-level statistical processes, and I observe this every day when developing Game AI agents. Also, one of the most satisfying things has been working with excellent PhD students and colleagues.

7. What is your typical working day?
   Meeting, meeting, meeting, write some cool AI code.

8. What is your ideal weekend?
   5k run plus time with family.

9. What are you reading, watching or listening to at the moment:
   Writing and testing a great new variation of "Planet Wars".

10. Favorite place:
    London!

11. Person you would most like to meet- past or present, real or fictional:
    Ricky Gervais, best comedian in the world.

12. What items would you take on a desert island and why:
    My laptop (plus an everlasting battery!) – I love writing AI code – currently working on a new class of bandit-based evolutionary algorithms that have excellent sample-efficiency and can be applied to a range of problems in Game Design and Game AI.

13. Give one interesting fact about yourself:
    As a budding thespian I had good reviews from the local press.

⌄ Editor

Chuan-Kang Ting
National Tsing Hua University
Taiwan
Email: ckting@pme.nthu.edu.tw

Members Activities

Webinar: The Social and Ethical Implications of Computational Intelligence

Speaker: Dr. Matt Garratt

Date & Time: May 17, 9:00 BST

More information can be found at CIS Webinars.

Call for Papers (Journal)

- 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 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)

Call for Papers (Conference)

- IEEE Congress on Evolutionary Computation (CEC 2019)
- IEEE Smart World Congress (SmartWorld 2018) (May 15)
- Competition/vision/demo/short papers of IEEE Conference on Computational Intelligence and Games (CIG 2018) (May 15)
- International Conference on Neural Information Processing (ICONIP 2018) (Jun 1)
- Australasian Joint Conference on Artificial Intelligence (AI 2018) (Jul 1)

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)
- General Video Game AI Competition at IEEE WCCI 2018 (Jun 6)
- Competitions at IEEE CIG 2018 (Jul 15)
- International Summer School on AI and Games, Chania, Greece (May 28-Jun 1)
- International Summer Camp on AI, Hefei, China (Jul 1-14)

Career Opportunities

- PhD Position in AI and Advanced Autonomy in Aerial Robotics, Aarhus University, Denmark (May 1)
- Two Postdoctoral Fellow Positions in Ishibuchi Lab, SUSTech, C