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IEEE CIS Newsletter, Issue 76, May 2019

## 2019 IEEE CIS Call for Nominations (Deadline 31 May 2019)

The following positions and respective terms within the IEEE Computational Intelligence Society (CIS) become vacant:

1. Vice President for Conferences (2020-2021)
2. Vice President for Finances-Elect (2020) and then Vice President for Finances (2021-2022)
3. Vice President for Technical Activities (2020-2021)
4. Five ADCOM Members-at-Large (2020-2022)
5. One vacated ADCOM Members-at-Large (remaining 2019)

According to the CIS Bylaws, ARTICLE XI – GOVERNANCE AND ADMINISTRATION, Section 31 Schedule for ADCOM Elections:


"Five ADCOM Members-at-Large are elected each year, plus any vacated positions."

"The election of Vice President for Conferences, Vice President for Finances, and Vice President for Technical Activities shall take place in odd-numbered years."

In this year, a vacated ADCOM position due to an officer election requires we fill the position for the remainder of the term ending 31 December 2019

Eligibility requirements are defined in the CIS Bylaws, ARTICLE XIII – NOMINATIONS, ELECTIONS AND APPOINTMENTS, Section 2 Officers

Eligibility requirements are defined in the CIS Bylaws ...

- (e) Eligibility for Vice Presidents– All ADCOM members, Editors-in-Chief, Standing Committee Chairpersons, and Technical Committee Chairpersons, who
  - held at least one of these positions for at least one year during the five years prior to the year of the election,
  - are IEEE Members or higher-grade members in good standing at the time of the election, and
  - are CIS members in good standing at the time of the election,

  are eligible to be nominated as Vice President, except in the cases listed hereinafter. Each Vice President, with the exception of the Vice President for Finances, may serve a maximum of two consecutive full terms in such a vice presidency; eligibility is restored after a lapse of one year.

  A candidate, whose former position in the CIS was vacated according to Art. XII Sect. 1 Pts. B or C, shall not be eligible for three years following the year in which he/she was removed from office. Please see https://cis.ieee.org/images/files/Documents/governing/cis-bylaws-approved.pdf

and Section 1 ADCOM Members-at-Large

CIS Conferences

- Conference Calendar (2019-2021)
- 2019 IEEE Conference on Computational Intelligence for Financial Engineering & Economics (CIFEr)
  Shenzhen, China
  4-5 May 2019
- 2019 3rd International Symposium on Autonomous Systems (ISAS)
  Shanghai, China
  29-31 May 2019
- 2019 IEEE Colombian Conference on Applications in Computational Intelligence (ColCACI)
  Barranquilla, Colombia
  4-7 June 2019
- 2019 IEEE Congress on Evolutionary Computation (IEEE CEC 2019)
  Wellington, New Zealand
  10-13 June 2019
- 2019 IEEE International Conference on Computational Intelligence and Virtual Environments for Measurement Systems
  Tianjin Shi, China
  14-16 June 2019

- (a) Eligibility– All CIS members at any IEEE grade of membership higher than Student member and in good standing at the time of the election are eligible to be nominated as ADCOM Members-at-Large, except in the cases listed hereinafter.

  Not more than two consecutive full terms as ADCOM Member-at-Large are permitted: eligibility is restored after a lapse of one year.

  A candidate, whose former position in the CIS was vacated according to Art. XII Sect. 1 Pts. B or C, shall not be eligible for three years following the year in which he/she was removed from office. Please see https://cis.ieee.org/images/files/Documents/governing/cis-bylaws-2009-06-15-approved.pdf.

  The Nominations Committee reminds CIS members that additional nominations may be made by petition signed by CIS voting members. Interested individuals should get in touch with the Chair of the Nominations Committee for details.

This email is the official call for nominations, including self-nominations, for the above vacancies. In the case of nominations, the nominee needs to accept to serve in the position if he/she is selected and to prepare a position statement as part of the nomination package (see below).

The nomination materials for the openings of Vice Presidents include the following:

1. A brief CV of no more than two pages.
2. A position statement of no more than one page, explaining (a) nominee's vision of CIS's conference activities/ finance activities and technical activities (depending on the position) and how they contribute to CIS's overall growth and serve members' needs; (b) challenges faced by the society and nominee's ideas of tackling them;
3. A list of previous volunteering experience within CIS, IEEE, and other professional organizations, and relevant achievements. (No more than one page).
4. Commitment to serve in the position if selected.

The nomination materials for the openings of ADCOM Members-at-Large include the following:

1. A brief CV of no more than two pages.
2. A brief write-up explaining nominee's general CIS vision, challenges, ideas and objectives (No more than one page).
3. A list of previous volunteering experience within CIS, IEEE, and other professional organizations, and relevant achievements. (No more than one page)
4. Commitment to serve if selected and to prepare a position statement as part of the election package.

The nomination materials should clearly specify the position for which the nomination is made. Please note one could choose to run for the vacated ADCOM position (with term 2019) and at the same time to be considered for five ADCOM openings (with term 2020-2022). However, if one is a current ADCOM member with term ending 2019, he or she cannot apply for both positions at the same time.

All the nominations and self-nominations should be sent to the Chair of the CIS Nominations Committee, (gyen@okstate.edu) and copy to Jo-Ellen Snyder (j.e.snyder@ieee.org) by 31 May 2019.

Best regards,
Gary G. Yen
Chair, 2019 CIS Nominations Committee

## Research Frontier

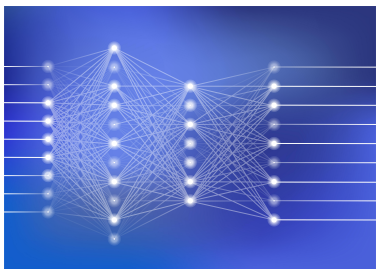
### An Evolutionary Strategy For Concept-Based Multi-Domain Sentiment Analysis

Inferencing the sentiment expressed within a document is still a challenging task, especially when it is necessary to consider the domain dimension. In order to improve inference algorithm effectiveness, one of the main challenges is to learn polarity va concept-domain pair. In this paper, an approach which relies on evolutio exploiting semantic relationships for estimating domain-dependent polar concepts is presented. The SenticNet resource is used as a starting point for extracting both concepts and common-sense expression relevant to the sentiment analysis topic. Subsequently, the creation of semantic relations is performed by exploiting the alignments

between SenticNet and WordNet. Finally, an evolutionary strategy has been implemented for learning the polarity values of concept-domain pairs. The approach has been validated by following the Dranziera protocol and obtained results demonstrated the suitability of the proposed solution.

IEEE Computational Intelligence Magazine, May 2019

## Denoising Adversarial Autoencoders



Unsupervised learning is of growing interest because it unlocks the potential held in vast amounts of unlabeled data to learn useful representations for inference. Autoencoders, a form of generative model, may be trained by learning to reconstruct unlabeled input data from a latent representation space. More robust representations may be produced by an autoencoder if it learns to recover clean input samples from corrupted ones. Representations may be further improved by introducing regularization during training to shape the distribution of the encoded data in the latent space. This paper suggests denoising adversarial autoencoders (AAEs), which combine denoising and regularization, shaping the distribution of latent space using adversarial training. A novel analysis shows how denoising may be incorporated into the training and sampling of AAEs. Experiments are performed to assess the contributions that denoising makes to the learning of representations for classification and sample synthesis. The results suggest that autoencoders trained using a denoising criterion achieve higher classification performance and can synthesize samples that are more consistent with the input data than those trained without a corruption process.

IEEE Transactions on Neural Networks and Learning Systems, Apr. 2019

## Robust Multiobjective Optimization via Evolutionary Algorithms

Uncertainty inadvertently exists in most real-world applications. In the optimization process, uncertainty poses a very important issue and it directly affects the optimization performance. Nowadays, evolutionary algorithms (EAs) have been successfully applied to various multiobjective optimization problems (MOPs). However, current research on EAs rarely considers uncertainty in the optimization process and existing algorithms often fail to handle the uncertainty, which have limited EAs' applications in real-world problems. When MOPs come with uncertainty, they are referred to as robust MOPs (RMOPs). This paper aims at solving RMOPs using EA-based optimization search. A novel robust multiobjective optimization EA (RMOEA) is proposed. It has two distinct, yet complementary, parts: 1) multiobjective optimization finding global Pareto optimal front ignoring disturbance at first and 2) robust optimization searching for the robust optimal front afterward. A comprehensive performance evaluation method is proposed to quantify the performance of RMOEA in solving RMOPs. Experimental results on a group of benchmark functions demonstrate the superiority of the proposed design in terms of both solutions' quality under the disturbance and computational efficiency in solving RMOPs.

IEEE Transactions on Evolutionary Computation, Apr. 2019

Marrakech, Morocco
28-30 October 2019

2019 IEEE Symposium Series on Computational Intelligence (IEEE SSCI 2019)
Xiamen, China
6-9 December 2019
(Submission: 10 July)

2020 IEEE World Congress on Computational Intelligence (IEEE WCCI 2020)
Glasgow, UK
19-24 July 2020

2020 IEEE Symposium Series on Computational Intelligence (IEEE SSCI 2020)
Canberra, Australia
1-4 December 2020

### Editor

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## Educational Activities

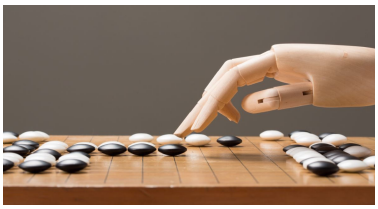
**2019 Graduate Student Research Grants**

The CIS Graduate Student Research Grants subcommittee are delighted to announce that 5 scholarships have been awarded to support research visits for collaborations in fields related to Computational Intelligence.

Congratulations to the following successful applicants:

- Xue Jiang for the project "Active Learning and Deep Learning for Adversarial Attacks in EEG-Based Brain-Computer Interfaces"
- Xiaohu Zhou for the project "A Neural-Network-Based Multilayer Learning Framework for Cardiovascular Robots" Chandan Kumar Behera for the project "Brain circuits and emotional learning"
- Jinli Yao for the project "An Area-based Similarity Measure for Interval Type-2 Fuzzy Set and Its Application to Multi-attribute Decision Making"
- Artur Luis Fernandes de Souza for the project "Automated Adaptation of Deep Learning Topologies Applied to Serial Crystallography"

**FML-based Machine Learning Competition Human and Smart Machine Co-Learning**



With the success of AlphaGo, there has been a lot of interest among students and professionals to apply machine learning to gaming and in particular to the game of Go. Several conferences have held competitions human players vs. computer programs or computer programs against each other. While computer programs are already better than human players (even high-level professionals), machine learning still offers interesting prospects, both from the fundamental point of view 1) to even further know the limits of game playing (having programs playing against each other), 2) to better understand machine intelligence and compare it to human intelligence, and from the practical point of view 3) to enhance the human playing experience by coaching professionals to play better or training beginners. The latter prospect also raises interesting questions of the explainability of machine game play. This competition will evaluate the potential of learning machines to teach human players. The goal of this competition includes:

- Understand the basic concepts of an FML-based fuzzy inference system.
- Use the FML intelligent decision tool to establish the knowledge base and rule base of the fuzzy inference system.
- Use the data predicted by Facebook AI Research (FAIR) Open Source Darkforest AI Bot as the training data.
- Use the data predicted by Facebook AI Research (FAIR) Open Source ELF OpenGo AI Bot as the desired output of the training data.
- Optimize the FML knowledge base and rule base through the methodologies of evolutionary computation and machine learning in order to develop a regression model based on FML-based fuzzy inference system.

Deadline for submission of applications is **10 May 2019**. More information and application details can be found here.

## Technical Activities

**Call for submissions -- Late Breaking Research for FUZZ-IEEE**

Got Some “Hot-Off-The-Press” Research Results?
But missed the FUZZ-IEEE 2019 submission deadline?
Want feedback on your ideas/results?

Try out Late Breaking Research for FUZZ-IEEE! For FUZZ-IEEE 2019, we are inviting you to submit an abstract about your newest research. After it is checked out by the program committee, you can then participate in the conference and present your research in the poster

session. The feedback during the poster session and conversations at the conference should help you clarify your ideas. The abstract will be made available to all participants in Whova, but there will be no publication in the Proceedings. You can talk to people about your research, get some feedback, and then work on a publication for FUZZ-IEEE 2020 or the Transactions on Fuzzy Systems.

Submit your abstract now!
Send them to the program chairs at programfuzzieee2019@gmail.com. Register and bring your poster to FUZZ-IEEE 2019. More details at: http://sites.ieee.org/fuzzieee-2019/late-breaking-research/

## Member Activities

**Women in Computer Science**

Our member, Daniela López De Luise is in charge for organizing an event @Historical Museum Sarniento regarding STEAM (Science, Technology, Engineering, Art and Mathematics), where she will lecture on how metrics for STEAM is designed by using Computational Intelligence.

The event STEAM NEXUM will take place on 17 July 2019 at Museo Histórico Sarmiento Cuba 2070.

Organizers: Museo Histórico Sarmiento, IEEE CIS Argentina, Sociedad Científica Argentina

We look forward to hearing your comments and suggestions for future activities of WCI. Please email them to Vesna Šešum-Čavić, Chair, IEEE Computational Intelligence Society Women in Computational Intelligence Sub-committee 2019.

## Call for Papers (Journal)

- IEEE TFS Special Issue on Fuzzy Rough Sets for Big Data (15 May - extended)
- IEEE TFS Special Issue on Toward Humanoid Robots: Fuzzy Sets and Extensions (31 May)
- IEEE TFS Special Issue on Nature-inspired Optimization Methods in Fuzzy Systems (1 July)
- IEEE CIM Special Issue on Evolutionary Machine Learning (15 July)
- IEEE TFS Special Issue on Fuzzy Based AI: Emerging Techniques and their Applications (1 August)
- IEEE TFS Special Issue on Smart Fuzzy Optimization in Operational Research and Renewable Energy: Modelling, Simulation and Application (1 November)

## Call for Papers (Conference)

- The 12th International Conference on Knowledge Science, Engineering and Management (3 May)
- 2019 IEEE Smart World Congress (6 May)
- ICDL-EpiRob Workshop on Naturalistic Non-Verbal and Affective Human-Robot Interactions (12 May)
- The 15th International Conference on Predictive Models and Data Analytics in Software Engineering (31 May)

## Call for Participation (Conference)

- The 3rd International Symposium on Autonomous Systems (ISAS 2019) (29-31 May)