



IEEE CIS Newsletter, Issue 93, October 2020

Research Frontier | Member Activities | Technical Activities
Journal Special Issues | CIS Conferences

Announcements

CIS Strengthens Ties with Industry

After the meeting of the IEEE CIS Adcom in July and a virtual Strategic Planning Retreat in September, the IEEE Computational Intelligence Society decided to strengthen its ties with industry in every possible way.

To this end, an Industrial Activities Ad Hoc Committee was established under the leadership of Piero Bonissone (piero@ppb-analytics.com). The purpose is to identify the elements which would attract new IEEE members from industry to the CIS, to increase the number of senior and Fellow CIS members from industry, to foster collaboration between companies and the IEEE CIS, as well as to reinforce the presence of industry speakers and the industrial sponsorship of IEEE CIS conferences.

All members from industry who are interested in participating in such a global movement toward more interaction between the industrial world and the IEEE CIS are welcome to get in touch with Piero Bonissone.

Second IEEE-CIS Technical Challenge: Energy Prediction from Smart Meter Data (US\$20k in prizes)

The IEEE Computational Intelligence Society (IEEE-CIS) presents its second technical challenge, this year on the topic of predicting monthly and yearly energy consumption for a number of households. We want to improve energy prediction based on smart meter data, while also improving the customer experience. IEEE-CIS works across a variety of Artificial Intelligence and machine learning areas, including deep neural networks, fuzzy systems, evolutionary computation, and swarm intelligence. Today we are partnering with one of the leading international energy providers, E.ON, seeking the best solutions for energy prediction using smart meters, and now you are invited to join the challenge. Winners will be invited to present their solution at the 2020 IEEE Symposium Series on Computational Intelligence (SSCI). <https://iee-dataport.org/competitions/ieee-cis-technical-challenge-energy-prediction-smart-meter-data>

Prizes

- 1st prize: US\$7,000
- 2nd prize: US\$5,000
- 3rd prize: US\$3,000
- 4th and 5th prizes: US\$1,000

Important Dates

- 15 August 2020 – **Competition starts**
- 15 November 2020 – **Final submission deadline**
- 18 November 2020 – Shortlisting announcement
- 25 November 2020 – Deadline final description report
- 1 December 2020 – Shortlisted solution presentations at the 2020 IEEE Symposium Series on Computational Intelligence (SSCI). The conference will be held virtually and registration for the 5 shortlisted submissions will be covered
- 4 December 2020 – Awards ceremony Important links
Submission platform Data description Submission guide
Evaluation

Important links

- [Submission platform](#)
- [Data description](#)
- [Submission guide](#)
- [Evaluation](#)

Research Frontier

Evolutionary Black-Box Topology Optimization: Challenges and Promises

Black-box topology optimization (BBTO) uses evolutionary algorithms and other soft computing techniques to generate near-optimal topologies of mechanical structures. Although evolutionary algorithms are widely used to compensate for the limited applicability of conventional gradient optimization techniques, methods based on BBTO have been criticized due to numerous drawbacks. In this article, we discuss topology optimization as a black-box optimization problem. We review the main BBTO methods, discuss their challenges and present approaches to relax them. Dealing with those challenges effectively can lead to wider applicability of topology optimization, as well as the ability to tackle industrial, highly constrained, nonlinear, many-objective, and multimodal problems. Consequently, future research in this area may open the door for innovating new applications in science and engineering that may go beyond solving classical optimization problems of mechanical structures. Furthermore, algorithms designed for BBTO can be added to existing software toolboxes and packages of topology optimization. [Read More](#)



IEEE Transactions on Evolutionary Computation, Aug. 2020

Extracting Relational Explanations From Deep Neural Networks: A Survey From a Neural-Symbolic Perspective

The term "explainable AI" refers to the goal of producing artificially intelligent agents that are capable of providing explanations for their



decisions. Some models (e.g., rule-based systems) are designed to be explainable, while others are less explicit "black boxes" for which their reasoning remains a mystery. One example of the latter is the neural network, and over the past few decades, researchers in the field of

neural-symbolic integration (NSI) have sought to extract relational knowledge from such networks. Extraction from deep neural networks, however, has remained a challenge until recent years in which many methods of extracting distinct, salient features from input or hidden feature spaces of deep neural networks have been proposed. Furthermore, methods of identifying relationships between these features have also emerged. This article presents examples of old and new developments in extracting relational explanations in order to argue that the latter have analogies in the former and, as such, can be described in terms of long-established taxonomies and frameworks presented in early neural-symbolic literature. We also outline potential future research directions that come to light from this refreshed perspective. [Read More](#)

IEEE Transactions on Neural Networks and Learning Systems, Sept. 2020

Member Activities



Webinar Speakers: Women in Computational Intelligence

Webinar Chair: Prof. Sansanee Auephanwiriyaikul

Webinar Title: Membership Promotion and Insight on Competitions in the IEEE Computational Intelligence Society

Date and Time: 3 November 2020, 7:00 (Alabama USA: GMT-6), 13:00 (London time: GMT), 14:00 (Magdeburg Germany: GMT+1), 20:00 (Thailand time: GMT+7), and 21:00 (Singapore time: GMT+8)

Registration URL:

<https://attendee.gotowebinar.com/register/3469922767592163340>

Abstract: Are you a Student member and would like to know about IEEE membership promotion and advancement? Or have you been a IEEE member for many years and would like to know how to progress to the next step? You may have been wondering how to apply for IEEE Computational intelligence Society Awards but did not know how to go about it? Join the IEEE Women in Computational Intelligence Subcommittee members in a webinar exploring the journey from student membership to fellow with tips and guidance. During this webinar we will explore these topics:

- From Student - to full member.
- What are the benefits of IEEE and CIS Membership?
- How to become a Senior Member
- The path to becoming an IEEE Fellow
- IEEE Awards and a Q and A session.

Biography: Professor Sansanee Auephanwiriyaikul is an Associate Professor in the Department of Computer Engineering and an associate director of the Biomedical Engineering Institute, Chiang Mai University, Thailand Professor Alice Smith is the Joe W. Forehand/Accenture Distinguished Professor of the Industrial and Systems Engineering Department at Auburn University, USA Professor Dipti Srinivasan is a Professor in the Dept. of Electrical & Computer Engineering at the National University of Singapore. Professor Sanaz Mostaghim is a full professor of Computer Science at the Otto von Guericke University of Magdeburg, Germany Dr Keeley Crockett is a Reader in Computational Intelligence at Manchester Metropolitan University, UK

Technical Activities

Call for FUZZ-IEEE 2021 Competition, Special Session and Tutorial Proposals

The 2021 IEEE International Conference on Fuzzy Systems (FUZZ-IEEE 2021), will be held in Luxembourg City, Luxembourg, Europe. Under its 2021 theme, "Handling Uncertainty in Interpretable AI", the conference will emphasize the handling of uncertainty, in particular in the context of interpretable and interactive AI, actively promoting engagement across academic disciplines and non-academic partners in industry and government.

Calls for competition, special session and tutorial proposals are now open. The deadline for proposals is 25 October 2020.

Competitions offer an opportunity to compare different solutions of a problem and stimulate discussion on a specific topic and we invite competition proposals from the academic community, industry, government, NGOs and the media.

Special Sessions provide a forum for emerging topics and research community building, and proposers are encouraged to make use of an available Open Discussion Slot to foster interaction during their session.

Tutorials offer experts from academia the opportunity to communicate, educate and engage the community in cutting-edge research methods. In addition, under the umbrella of "reverse tutorials", Fuzz-IEEE explicitly encourages stakeholders from industry to present work providing an understanding of the problem space in respect to data/AI which their businesses are facing, in order to motivate academic engagement and collaboration.

More information: <https://attend.ieee.org/fuzzieee-2021>

Journal Special Issues

- [IEEE TEVC Special Issue on Evolutionary Computation Meets Deep Learning \(Deadline extended: 1 Nov\)](#)
- [IEEE TNNLS Special Issue on Biologically Learned/Inspired Methods for Sensing, Control and Decision Making \(31 Oct\)](#)
- [IEEE TFS Special Issue on Fuzzy Systems Toward Human-Explainable Artificial Intelligence and Their Applications \(31 Oct\)](#)
- [IEEE TEVC Special Issue on Multi-task Evolutionary Computation \(1 Nov\)](#)
- IEEE TCDS Special Issue on Emerging Topics on Development and Learning (15 Jan 2021)
- [IEEE CIM Special Issue on Explainable and Trustworthy Artificial Intelligence \(15 Feb 2021\)](#)

CIS Conferences

Due to the outbreak of the COVID-19 pandemic, dates and details of CIS sponsored conferences should be monitored closely.

The situation is changing very quickly. Please consult the conference web pages frequently to obtain the latest information.

You can find the most recent announcements and updates from all of our Society's conferences and events at <https://cis.ieee.org/volunteer-resources/covid-19-notice> as our organizers make decisions.

2020 International Conference on Process Mining (ICPM 2020)
Virtual Event
5-8 Oct. 2020

2020 IEEE 7th International Conference on Data Science and Advanced Analytics (DSAA)
Virtual Event
6-9 Oct. 2020

2020 Fourth International Conference on Intelligent Computing in Data Sciences (ICDS)
Virtual Event
21-23 Oct. 2020

2nd International Conference on Industrial Artificial Intelligence (IAI)
Shenyang, China
23-25 Oct. 2020

2020 Joint IEEE 10th International Conference on Development and Learning and Epigenetic Robotics (ICDL-EpiRob)
Virtual Event
26-30 Oct 2020

2020 IEEE International Conference on Computational Intelligence in Bioinformatics and Computational Biology (CIBCB)
Virtual Event
27-29 Oct. 2020

7th International Conference on Behavioural and Social Computing (BESC)
Bournemouth, UK
5-7 Nov. 2020

7th International Conference on Soft Computing and Machine Intelligence (ISCM)
Stockholm, Sweden
14-15 Nov. 2020

2020 IEEE Symposium Series on Computational Intelligence (IEEE SSCI 2020)
Virtual Event
1-4 Dec. 2020

2020 IEEE Smart World Conference (SWC 2020)
Melbourne, Australia
8-10 December 2020
Full paper submission deadline: 5 October 2020

2021 10th International Conference on Pattern Recognition Applications and Methods (ICPRAM)
Vienna, Austria
4-6 Feb 2021
Full paper submission deadline: 6 October 2020

2021 12th International Conference on Agents and Artificial Intelligence (ICAART)
Vienna, Austria
4-6 Feb 2021
Full paper submission deadline: 6 October 2020

2021 IEEE Congress on Evolutionary Computation (CEC)
Kraków, Poland
28 Jun 1 Jul 2021
Full paper submission deadline: 31 January 2021

2021 IEEE International Conference on Fuzzy Systems (FUZZ-IEEE)
Luxembourg
11-14 Jul 2021
Full paper submission deadline: 10 Feb 2021

2021 IEEE International Conference on Development and Learning (ICDL)
Beijing, China
23-26 Aug 2021

2021 IEEE Conference on Computational Intelligence in Bioinformatics and Computational Biology (CIBCB)
Melbourne, Australia
13-15 Oct 2021

2020 IEEE Latin American Conference on Computational Intelligence (LA-CCI)
Temuco, Chile
2-4 Nov. 2021

2021 IEEE Symposium Series on Computational Intelligence (SSCI)
Orlando, FL USA
5-8 Dec 2021

2022 IEEE World Congress on Computational Intelligence (IEEE WCCI)
Padua, Italy
18-23 July 2022

2022 IEEE Conference on Games (IEEE CoG 2022)
21-24 Aug 2022
Beijing, China

2022 IEEE Symposium Series on Computational Intelligence (SSCI)
Singapore, Singapore
4-7 Dec 2022

CIS sponsors and co-sponsors a number of conferences across the globe.

[View Full Schedule](#)

Editor

Leandro L. Minku
University of Birmingham, UK
Email: l.l.minku@cs.bham.ac.uk



If you have an IEEE Account, manage your IEEE communications preferences [here](#). Users without an IEEE Account can access the [Privacy Portal](#) to view selected preferences and policies.



© 2021 IEEE- All rights reserved.

[Website](#) | [Join CIS](#) | cis-info@ieee.org | [Privacy Policy](#) | [Contact](#) | [Unsubscribe](#)