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Conference report on 2022 IEEE symposium series on computational intelligence (IEEE SSCI 2022)

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IEEE SSCI 2022 General Co-Chairs

Conference Report on 2022 IEEE Symposium Series on Computational Intelligence (IEEE SSCI 2022)

On behalf of the organizing committee, we are delighted to deliver this conference report for the 2022 IEEE Symposium Series on Computational Intelligence (SSCI 2022), which was held in Singapore from 4th to 7th December 2022. IEEE SSCI is an established flagship annual international series of symposia on computational intelligence (CI) sponsored by the IEEE Computational Intelligence Society (CIS) to promote and stimulate discussions on the latest theory, algorithms, applications, and emerging topics on computational intelligence. After two years of virtual conferences due to the global pandemic, IEEE SSCI returned as an in-person meeting with online elements in 2022.

One unique feature of IEEE SSCI is to co-locate multiple symposia and special sessions under one roof, each dedicated to a specific topic in the CI domain, thereby encouraging cross-fertilization of ideas and providing a unique platform for researchers, practitioners, and students from all around the world to discuss and present their findings. The call for symposia and special sessions of SSCI 2022 was

IEEE SSCI aims to promote and stimulate discussions on the latest theory, algorithms, applications, and emerging topics on computational intelligence.

responded with proposals of 41 symposia and 11 special sessions. The subsequent call for papers of SSCI 2022 received a total of 379 submissions by 672 authors across 57 countries. While the individual symposium and special session chairs handled the reviewer assignment and acceptance/rejection recommendation for each paper, the acceptance/rejection decision was finalized by the program chairs. For papers contributed by the symposium and special session chairs, a separate Conflict of Interest (COI) track was set up to handle the paper submission, reviewer assignment, and acceptance/rejection recommendation. In addition, a separate submission site was created to cater for papers submitted by the conference and program chairs. Following a rigorous review process, 230 regular papers were selected for oral presentations at the conference and included in the conference proceedings published by IEEE Xplore. After merging some small symposia and special sessions, the regular papers

were organized into 32 symposia and 6 special sessions presented in six parallel tracks over three days. In addition to the accepted regular papers, 20 late breaking papers were selected and featured as poster presentations at the conference.

For recognizing outstanding original contributions to areas in the field of computational intelligence, SSCI 2022 has taken much effort to provide two best paper awards with external sponsorship. The IEEE SSCI 2022 Best Paper Award, received by Siying Zhang, Andi Han and Junbin Gao for their paper entitled “Robust Denoising In Graph Neural Networks” was sponsored by the AI, Analytics & Informatics (AI3) Horizontal Technology Programming Office of the Agency for Science, Technology and Research (A*STAR). On the other hand, the IEEE Brain Best Paper Award, received by Shuailei Zhang, Dezhi Zheng, Ning Tang, Effie Chew, Rosary Yuting Lim, Kai Keng Ang, and Cuntai Guan for their paper

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on “Online Adaptive CNN: A Session-to-Session Transfer Learning Approach for Non-Stationary EEG” was sponsored by IEEE Brain to recognize outstanding original contributions to areas related to neurotechnology and brain research.

Jointly organized by Singapore Management University (SMU), Nanyang Technological University (NTU) and National University of Singapore (NUS), IEEE SSCI 2022, held in the SMU campus located in downtown Singapore, was attended by more than 300 delegates from 42 countries. Surrounded by many interesting places and attractions, including museums, theatres, cafes, shops, and education institutes, SMU offered a modern and well-connected city venue with state-of-the-art conference facilities.

Besides the symposia and special sessions, IEEE SSCI 2022 featured five plenary talks provided by world renowned researchers in the field of computational intelligence: Witold Pedrycz, Mengjie Zhang, Chuan-Kang Ting, Shuicheng Yan, and Donald C. Wunsch II. In addition, six symposia keynotes were presented by leading scholars, including Daniel Polani, Ruhul Sarker, Yubiao Sun, Kumar Venayagamoorthy, Luca Oneto, and Donald C. Wunsch II. These plenary and keynote speeches have served to present the audience with an opportunity to listen firsthand and engage directly with world-leading experts on cutting edge technology development and insights in the field of computational intelligence.

For knowledge dissemination, eleven technical tutorials were offered by experts in the field on the pre-conference day, which were free to attend for all participants. The very well-attended tutorials covered a diverse range of specialized topics, ranging from Brain-Inspired Computation based on Spiking Neural Networks,

Evolving Fuzzy Systems, Prototype-based Deep Learning, Hyperplane based Autonomous machine learning,

Decomposition Multi-Objective Optimization, Genetic Programming and Machine Learning for Job Shop Scheduling, Unrevealing Data Correlations with Self-Supervised Learning, Evolutionary Computation for Automating Deep Neural Architecture Design, Randomization Based Deep and Shallow Learning Methods, Machine Learning Applications in Adversarial Attacks and Mitigation



FIGURE 1 On behalf of the three general Co-Chairs, Ah-Hwee Tan welcomed the conference delegates at the opening of IEEE SSCI 2022.



FIGURE 2 SSCI 2022 Guest of Honor Professor Jim Keller (President, IEEE Computational Intelligence Society) providing the opening welcome address.

Strategies, AI for Manufacturing data analysis in Industrial 4.0, as well as Ethical Challenges and Opportunities with Computational Intelligence Systems.

As an integral part of the conference program, two engaging panel sessions

IEEE SSCI encourages cross-fertilization of ideas and provides a unique platform for researchers, practitioners, and students from all around the world to discuss and present their findings.



2022 IEEE Symposium Series On Computational Intelligence (IEEE SSCI)

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FIGURE 3 Professor Witold Pedrycz, our first plenary speaker, delivering his speech in the SMU's Ngee Ann Kongsi Auditorium.



FIGURE 4 Professor Witold Pedrycz, our plenary speaker, receiving the certificate of appreciation from Professor Marley Vellasco (IEEE CIS Vice President for Conferences).

were organized. The panel on “Women in Computational Intelligence Achieving IEEE Fellow Status - The Way Forward” was a joint initiative between IEEE CIS Women in Computational Intelligence (WCI) and IEEE Women in Engineering (WIE) to provide support and encouragement to women in Computational Intelligence to achieve IEEE fellow status. The panel session on “Artificial and Computational Intelligence: Opportunities and Challenges”, organized and moderated by Professor Yaochu Jin, provided an interactive platform to discuss the opportunities and challenges in the field, and efforts that need to be made to ensure a healthy and sustainable growth.

Also collocated with SSCI 2022 was a number of CIS events, including the 2022 IEEE CIS Student Hackathon on Computational Intelligence in Biomedicine and Healthcare organized by the IEEE CIS and Miin Wu School of Computing, National Cheng Kung University, Taiwan, the CIS Student Activities organized by the IEEE CIS Students Activities Sub-Committee and IEEE Guangzhou Section YP Affinity Group, as well as the CIS Membership Round Table, all of which were open to the participants.

A conference is not complete without an accompanying social program. IEEE SSCI 2022 has provided ample opportunities for delegates to interact and connect, including a pre-conference welcome reception on 4th December at the SMU Concourse T-Junction, daily luncheons and coffee breaks during the main conference days, as well as a conference banquet on 6th December. As a special highlight, our social events further included an off-site visit to the Gardens by the Bay, arguably the Singapore’s jewel of the crown, followed by a cocktail reception and conference dinner at the Sands Expo and Convention Centre.



FIGURE 5 Professor Yaochu Jin leading an all-star expert panel session on Artificial and Computational Intelligence: Opportunities and challenges.



FIGURE 6 SSCI 2022 delegates visiting the Gardens by the Bay, Singapore.



FIGURE 7 SSCI 2022 delegates danced away with the cultural dance troupe at the conference banquet held at the Sands Expo and Convention Centre, Singapore.

Though SSCI 2022 was organized as an in-person physical event, the conference had further provided support for online access to our conference registrants, who were unable to travel. In particular, online meeting platform Zoom has been used to support remote presentations for some of our tutorial speakers as well as paper authors. The conference also adopted and made extensive use of Whova, which served a wide range of functions, such as online event management, information dissemination, and social interaction.

The success of a conference cannot come without the support and hard work of many dedicated individuals. We have many to thank for their generous contributions, in particular the leadership of the IEEE Computational Intelligence Society, in particular Professor Jim Keller and Professor Marley Vellasco, for their continual support and guidance. We also thank the Singapore Tourism Board for providing the conference grant, Singapore Management University for sponsoring the conference venue and facilities, as well as Agency for Science, Technology and Research (A*STAR) and IEEE Brain for sponsoring the Best Paper Awards. We also wish to acknowledge all our speakers for contributing their professional expertise and all the symposium/special session chairs and members of our conference technical and organizing committees, who have worked relentlessly to take care of all necessary administrative, publicity, and logistic arrangement for our technical as well as social programs. Finally, we would like to mention the incredible support provided by our PCO, J. Jayes Pte Ltd, who handled various matters, including registration, finance, logistics, catering, and setting up the Whova content. We trust that IEEE SSCI 2022 has been a memorable event for all who have participated. Thank you all who have walked with us in this journey in co-creating this successful meeting. We look forward to the next successful edition of IEEE SSCI 2023 in Mexico.

