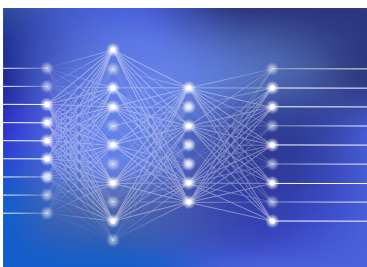




Research Frontier

Deep Transfer Low-Rank Coding for Cross-Domain Learning

Transfer learning has attracted great attention to facilitate the sparsely labeled or unlabeled target learning by leveraging previously well-established source domain through knowledge transfer. Recent activities on transfer learning attempt to build deep architectures to better fight off cross-domain divergences by extracting more effective features. However, its generalizability would decrease greatly when the domain mismatch enlarges, particularly at the top layers. In this paper, a novel deep transfer low-rank coding based on deep convolutional neural networks is developed, where a multilayer low-rank coding at the top task-specific layers is investigated. Specifically, multilayer common dictionaries shared across two domains are obtained to bridge the domain gap such that more enriched domain-invariant knowledge can be captured through a layerwise fashion. With rank minimization on the new codings, the proposed model manages to preserve the global structures across source and target, and thus, similar samples of two domains tend to gather together for effective knowledge transfer. Furthermore, domain/classwise adaption terms are integrated to guide the effective coding optimization in a semisupervised manner, so the marginal and conditional disparities of two domains will be alleviated. Experimental results on three visual domain adaptation benchmarks verify the effectiveness of the proposed approach on boosting the recognition performance for the target domain, by comparing it with other state-of-the-art deep transfer learning.



IEEE Transactions on Neural Networks and Learning Systems, June 2019

A Survey on Cooperative Co-Evolutionary Algorithms

Cooperative co-evolutionary algorithms decompose problems into multiple subproblems, and solve each subproblem using a separate subpopulation, evolved by an individual evolutionary algorithm. A complete problem solution is acquired by assembling the representative members from each subpopulation. The underlying divide-and-conquer and collaboration mechanisms enable such algorithms to tackle complex optimization problems efficiently, and hence they have been attracting wide attention in the evolutionary algorithms community. This paper presents a comprehensive survey of these cooperative co-evolutionary algorithms, covering problem decomposition, collaborator selection, individual fitness evaluation, subproblem resource allocation, implementations, benchmark test problems, control parameters,



CIS Conferences

- ★ [Conference Calendar \(2019-2021\)](#)
- ★ [2019 IEEE Conference on Computational Intelligence in Bioinformatics and Computational Biology \(CIBCB\)](#)
Siena, Italy
9-11 July 2019
- ★ [2019 International Joint Conference on Neural Networks \(IJCNN\)](#)
Budapest, Hungary
14-19 July 2019
- ★ [2019 1st International Conference on Industrial Artificial Intelligence \(IAI\)](#)
Shenyang, China
23-27 July 2019
- ★ [2019 8th International Conference on Data Science, Technology and Applications \(DATA\)](#)
Prague, Czech Republic
26-28 July 2019
- ★ [2019 Joint IEEE International Conference on Developmental Learning and Epigenetic Robotics \(ICDL-EpiRob\)](#)
Oslo, Norway
19-22 August 2019
- ★ [2019 IEEE SmartWorld,](#)

theoretical analyses, and applications. The unsolved challenges and potential directions for their solutions are discussed.

IEEE Transactions on Evolutionary Computation, June 2019

Educational Activities

CEC'2019 Young Professionals, Women in Computational Intelligence and Students Reception



The YP+WCI+Students joint-reception has been successfully held at the IEEE CEC2019 on 10 June 2019. More than one hundred students, young professionals and female researchers have attended the joint-reception, as well as some committee members of the CIS and the organising committees of CEC2019. Mardé Carlos, Mengjie Zhang and Jialin Liu gave short opening talks.

About the attendees:

- Representatives from CIS: Carlos A. Coello Coello (VP for Member Activities, also Program Chair of CEC2019), Jialin Liu (Chair of Young Professionals Sub-Committee), Huanhuan Chen (Chair of Students Activities Sub-Committee), Mardé Helbig and Huynh Thi Thanh Binh (representatives of Women in Computational Intelligence SC) have attended the YP+WCI+Students joint-reception.
- Representatives from CEC2019: More than 10 organisation chairs of CEC2019, including Mengjie Zhang and Kay Chen Tan (General Chairs), Carlos A. Coello Coello (Program Chair), Jurgen Branke, Emma Hart, etc.
- More than 100 students, young professionals, female researchers and some other senior researchers.

Member Activities

Upcoming Webinar

"Deep learning on graphs with applications in smart cities research"

Dr. James Yu

Date and Time: Wed, 3 July 2019 1:00 PM - 2:00 PM GMT.

Registration URL: <https://attendeegotowebinar.com/register/3340088026348409602>

Deep learning is successful in many research and engineering domains, ranging from acoustics,

Ubiquitous Intelligence & Computing, Advanced & Trusted Computing, Scalable Computing & Communications, Cloud & Big Data Computing, Internet of People and Smart City Innovation (SmartWorld / SCALCOM / UIC / ATC / CBDCom / IOP / SCI)

Leicester, United Kingdom

19-23 August 2019

★ 2019 IEEE Conference on Games (CoG)

London, UK

20-23 August 2019

★ 2019 IEEE International Conference on Data Science and Advanced Analytics (DSAA)

Washington, DC USA

5-8 October 2019

★ 2019 6th International Conference on Behavioral, Economic and Socio-Cultural Computing (BESC)

Beijing, China

28-30 October 2019

★ 2019 Third International Conference on Intelligent Computing in Data Sciences (ICDS)

Marrakech, Morocco

28-30 October 2019

★ 2019 7th International Conference on Robot Intelligence Technology and Applications (RiTA)

Daejeon, South Korea

1-3 November 2019

(Submission: 15 July)

★ 2019 IEEE Symposium Series on Computational Intelligence (IEEE SSCI 2019)

Xiamen, China

images to natural language processing. The data in these tasks are typically represented in the Euclidean space. However, there is an increasing number of applications where data are generated from non-Euclidean domains and are represented as graphs with complex relationships and interdependency between objects. The complexity of graph data has imposed significant challenges to apply deep learning to the ubiquitous data structure. Recently, a significant amount of research efforts have been devoted to this area, greatly advancing graph analyzing techniques. In this talk, I will provide an introductory overview of graph neural networks in data mining and machine learning fields, with a focus on graph convolutional networks. I will review alternative architectures that have recently been developed, and discuss the applications of graph neural networks on classical network-related tasks and recent applications in smart cities research.



Biography: James is an assistant professor at Department of Computer Science and Engineering, Southern University of Science and Technology (SUSTech), China, and an honorary assistant professor at Department of Electrical and Electronic Engineering, the University of Hong Kong. He is also the chief research consultant of GWGrid Inc. (Zhuhai) and Fano Labs (Hong Kong). He received the B.Eng. and Ph.D. degree from the University of Hong Kong in 2011 and 2015, respectively. Before joining SUSTech, he was a post-doctoral fellow at the University of Hong Kong. He is broadly interested in smart city and urban computing, deep learning, intelligent transportation systems, and smart energy systems. He is an Editor of the IET Smart Cities journal and the Leading Editor of its special issue on Smart Transport.

Women in Computer Science

Our member, Daniela López De Luise is in charge for organizing an event @Historical Museum Sarmiento 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 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)

- [IEEE Symposium on Cooperative Metaheuristics \(10 July\)](#)
- [The 7th International Conference on Robot Intelligence Technology and Applications \(15 July\)](#)

Call for Participation (Conference)

- [The 1st International Conference on Industrial Artificial Intelligence \(IAI 2019\) \(Jul 23-27\)](#)

6-9 December 2019

(Submission: 10 July)

★ 2020 12th International Conference on Agents and Artificial Intelligence (ICAART)

Valletta, Malta

22-24 February 2020

(Submission: 4 October 2019)

★ 2020 IEEE Conference on Evolving and Adaptive Intelligent Systems (EAIS)

Bari, Italy

27-29 May 2020

★ 2020 IEEE International Conference on Computational Intelligence and Virtual Environments for Measurement Systems and Applications (CIVEMSA)

Tunis, Tunisia

22-24 June 2020

★ 2020 IEEE World Congress on Computational Intelligence (WCCI)

Glasgow, UK

19-24 July 2020

(Submission: 15 January 2020)

★ 2020 IEEE Conference on Games (CoG)

Higashiosaka, Japan

24-27 August 2020

(Submission: 7 August 2020 -- strict deadline)

★ 2020 Joint IEEE 10th International Conference on Development and Learning and Epigenetic Robotics (ICDL-EpiRob)

Valparaíso, Chile

7-10 September 2020

★ 2020 IEEE International Conference on Computational Intelligence in Bioinformatics and Computational Biology (CIBCB)

- [2019 IEEE Smart World Congress \(19-23 Aug\)](#)

Career Opportunities

- [Most Prestigious PhD Scholarship at UNSW Australia, a Scientia PhD Scholarship on All-optical Artificial Neural Networks \(12 July\).](#)
- [Most Prestigious PhD Scholarship at UNSW Australia, a Scientia PhD Scholarship on Real-time Cognitive Load Measures to Improve Trust in Autonomous Systems \(12 Jul\)](#)

Viña del Mar, Chile
27-29 October 2020

★ 2020 IEEE Symposium
Series on Computational
Intelligence (IEEE SSCI
2020)

Canberra, Australia
1-4 December 2020

(Submission: 7 August 2020 --
strict deadline)

 Editor

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