IEEE Transactions on Neural Networks and Learning Systems (IEEE TNNLS)

Special Issue on: Deep Learning for Intelligent Media Computing and Applications

Introduction

Deep learning has become a key technology in the field of multimedia that facilitates various applications, including multimedia content analysis and interpretation, encoding, retrieval, compression, and transmission. However, existing approaches tend to directly apply deep learning network models to handle multimedia tasks without considering the uniqueness of multimedia data and tasks as well as the hidden semantics that may help to increase the explainability. The rapid advancement of multimedia applications requires smarter and more advanced technologies for data management, query, storage, and retrieval. In addition, intelligence and cognitive interpretation are also required in data management. However, the huge amount of data and resources, the increasing complexity of data structures, and the prodigious variety of data forms are challenging traditional multimedia computing algorithms, which are not good at handling cross-media data in terms of semantic association, inference, generalization, reasoning etc. with the guidance of human knowledge for more explainability.

Through intelligent computing and deep learning, today's media content production, information distribution and human-computer interaction are becoming increasingly personalized and service-oriented. Intelligent media computing represents advanced information components extracted from complex multimedia, including video detection and object recognition, audio generation and analysis, as well as multi-modal data processing and computing. In order to manage these intelligent media computing tasks, the architecture as well as the training and inference methods of current deep neural networks must be adjusted or even redesigned. Moreover, new deep neural network models are required to support intelligent media applications, including the analysis and interpretation of live webcast videos, audio and video generation and creation, and cross-modal retrieval. Inspired by such achievements and challenges, this special issue seeks innovations in applied deep learning techniques for intelligent multimedia computing and applications.

Scope of the Special Issue

Topics of interests include, but are not limited to:

- New deep network structure/learning algorithm for intelligent media
- Multi-modal/Task learning for intelligent media
- Reinforcement/Adversarial deep learning for intelligent media
- Curriculum Learning/Self-Directed Learning for intelligent media
- Cross-media perception, retrieval and reasoning
- AI-based art generation and creation for intelligent media
- Explainable intelligent media representation, reasoning and its applications

- Video coding and processing for intelligent media
- Natural language processing for intelligent media
- Intelligent media analysis and understanding for medical, art and broadcasting applications
- Intelligent AR/VR application with machine/deep learning
- Web intelligent information retrieval, processing and decision
- Uncertain information intelligent reasoning, management and application
- Surveillance and monitoring applications with intelligent media
- Multimedia data mining, representation, and retrieval;
- Statistical, structural and syntactic pattern recognition for intelligent media;

Timeline

- Manuscript submission: 30th October 2022
- Preliminary decision: 26th December 2022
- Revisions due: 15th February 2023
- Final decision: 20th March 2023

Guest Editors

- Hamido Fujita, Iwate Prefectural University, Japan
- Bo Li, Northwestern Polytechnical University, China
- Yiyu Yao, University of Regina, Canada
- Xinbo Gao, Chongqing University of Posts and Telecommunications, China
- Maoguo Gong, Xidian University, China
- Ivan Lee, University of South Australia, Australia
- Martin Ester, Simon Fraser University, Canada
- Xin Wang, Tsinghua University, China

Submission Instructions

- Read the Information for Authors at http://cis.ieee.org/tnnls
- Submit your manuscript at the TNNLS webpage (http://mc.manuscriptcentral.com/tnnls) and follow the submission procedure. Include the following instructions in the header of the first page of your manuscript and cover letter: "Please submit the manuscript to the Special Issue on Deep Learning for Intelligent Media Computing and Applications"