Artificial Intelligence & Machine Learning in Computer Vision Applications

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Call for submission. This editorial introduces the second issue of 2020 for *Embedded Selforganising Systems (ESS)* journal. The focus of this issue is Robotics and Embedded Systems.

Our journal uses electronic publication, which provides a flexible way to submit and review contributions of authors from all of countries. The advantages of such an e-journal are multifarious. In comparison to traditional paper journals, we replace the classic review and creation process with a new Sliding Issue model. Each issue starts with an initial editorial and an official call for papers. The submitted articles will be reviewed and, if accepted, published as soon as the final version is received by the committee. Based on this process, each sliding issue can be filled successively until the maximum number of article is reached. During this period, all accepted papers can, already be read by other researchers while other papers are still in the reviewing process. Accordingly, the time to publish shrinks to a minimum. In addition, multiple issues with different focus can co-exist at the same time, which provides completely new possibilities to react on latest research topics. The journal allows also the integration of discussions and other reactions on published articles in the same journal issue.

We are welcoming fresh ideas, on-going research technical reports and novel scientific works. We also intend to create a promising platform for creative and constructive discussions.

Artificial Intelligence & Machine Learning in Computer Vision Applications

Deep learning and machine learning innovations are at the core of the ongoing revolution in Artificial Intelligence for the interpretation and analysis of multimedia data. The convergence of large-scale datasets and more affordable Graphics Processing Unit (GPU) hardware has enabled the development of neural networks for data analysis problems that were previously handled by traditional handcrafted features. Several deep learning architectures such as Convolutional Neural Networks (CNNs), Recurrent Neural Networks (RNNs), Long Short Term Memory (LSTM)/Gated Recurrent Unit (GRU), Deep Believe Networks (DBN), and Deep Stacking Networks (DSNs) have been used with new open source software and libraries options to shape an entirely new scenario in computer vision processing.

Traditional computer vision applications are an amalgamation of different algorithms that cooperate in an attempt to address the challenging problems such as detection and identification of objects, recognizing the temporal context between scenes, and developing a high-level understanding of what is happening for the relevant time period. The primary purpose of these algorithms is to extract features from the image, which includes sub-tasks such as edge detection, corner detection and segmentation. The accuracy of the applied algorithms for feature extraction depends on the design and flexibility of each algorithm. The major drawback of traditional computer vision approach is that the system must be notified of the features to be searched for in an image. Since the algorithm will operate as specified by the algorithm designer, the extracted features are mainly human engineered (hand-crafted features).

While there are still considerable difficulties in the design of human-quality computer vision techniques, Deep Learning systems have made significant improvements in tackling some of the underlying sub-tasks. this achievement is mainly due to the additional responsibility assigned to the Deep Learning systems.

In traditional computer vision algorithms, the features are manually extracted and then a vector of features that are classified by the learning algorithm or image processing methods is generated. In contrast, deep learning neural networks serve as feature extractors and classifiers. It

automatically recognizes complex patterns and extracts features from the image and then classifies them into different classes.

Deep Learning and machine learning are increasingly widely used in industry. For example, it is employed with tasks such as cancer detection and drug discovery. In the Internet services and mobile telecommunications, there are several applications that use DL for image/video classification and speech recognition. For example, Google Voice, Apple Siri, Microsoft Skype and so on. In media, entertainment and news, applications such as video subtitling, real-time translation and personalization, or recommendation systems like Netflix are example of DL applications. In autonomous vehicles, Dl is used to overcome important problems such as recognizing signs and passengers or tracking. In the security sector, DL is used for face recognition and video surveillance.

The areas of Artificial Intelligence and machine learning in computer vision applications have followed a continuous and steady development over the past few years. This continuous development has been enhanced through the innovative research and contribution of researchers, developers, and practitioners from academia, industry, governmental and scientific organizations. The Embedded Self-organizing Systems (ESS) journal aims to enable synergy between these areas and provides the premier venue to publish the latest research and developments related to research issues of the artificial intelligence and machine learning in computer vision applications.

The Embedded Self-organizing Systems (ESS) journal comprises a set of carefully selected tracks that focus on the particular challenges regarding deep learning and machine learning in computer vision applications. Topics of (ESS) journal include (but not limited to):

- Representation learning, deep learning.
- Machine learning and artificial intelligent systems analysis, modeling, simulation, and application in computer vision.
- Machine learning on-chip and at the edge.
- Intelligence inference in Edge/Fog/Cloud computing and IoT.
- 3D computer vision.
- Image retrieval.
- Motion and tracking.

- Deep Learning for IoT and Robotics.
- Deep Learning for video and Image Processing.

SUBMISSION INSTRUCTIONS

Submissions for the journal must be made as complete papers (there is no abstract submission stage) submitted as PDF documents. Authors are requested to submit papers reporting original research results and experience. The page limit for regular papers is 4 to 6 pages and short papers are from 2 to 4 pages. Papers should be prepared using the IEEE two-column template. An MS Word template or ESS online journal is available here https://www.bibliothek.tu-chemnitz.de/ojs/index.php/cs/information/authors

Papers should submit following link of journal:

https://www.bibliothek.tu-chemnitz.de/ojs/index.php/cs/about/submissions

Submission Deadline: 31.06.2020

There is no charge for submission. Accepted papers are publishing free.

Review in 2 weeks after submission.

Camera ready paper for publication should be submit in 2 weeks after review notes.

Thanks in advance for Your Contribution!