CALL-FOR-PAPERS

Multimedia Tools and Applications (MTAP)

Special Issue on

Few-shot Learning for Multimedia Content Understanding

Overview

The multimedia analysis and machine learning communities have long attempted to build models for understanding real-world applications. Driven by the innovations in the architectures of deep convolutional neural network (CNN), tremendous improvements on object recognition and visual understanding have been witnessed in the past few years. However, it should be noticed that the success of current systems relies heavily on a lot of manually labeled noise-free training data, typically several thousand examples for each object class to be learned, like ImageNet. Although it is feasible to build learning systems this way for common categories, recognizing objects "in the wild" is still very challenging. In reality, many objects follow a long-tailed distribution: they do not occur frequently enough to collect and label a large set of representative exemplars in contrast to common objects. For example, in some real-world applications, such as anomalous object detection in a video surveillance scenario, it is difficult to collect sufficient positive samples because they are "anomalous" as defined, and fine-grained object recognition, annotating fine-grained labels requires expertise such that the labeling expense is prohibitively costly.

The expensive labeling cost motivates the researchers to develop learning techniques that utilize only a few noise-free labeled data for model training. Recently, some few-shot learning, including the most challenging task zero-shot learning, approaches have been proposed to reduce the number of necessary labeled samples by transferring knowledge from related data sources. In the view of the promising results reported by these works, it is fully believed that the few-shot learning has strong potential to achieve comparable performance with the sufficient-shot learning techniques and significantly save the labeling efforts. There still remains some important problems. For example, a general theoretical framework for few-shot learning is not established, the generalized few-shot learning which recognizes common and uncommon objects simultaneously is not well investigated, and how to perform online few-shot learning is also an open issue.

The primary goal of this special issue is to invite original contributions reporting the latest advances in few-shot learning for multimedia (e.g., text, video and audio) content understanding towards addressing these challenges, and to provide the opportunity for researchers and product developers to discuss the state-of-the-art and trends of few-shot learning for building intelligent systems. The topics of interest include, but are not limited to:

Topics

- Few-shot/zero-shot learning theory;
- Novel machine learning techniques for few-shot/zero-shot learning;
- Generalized few-shot/zero-shot learning;
- Online few-shot/zero-shot learning;
- Few-shot/zero-shot learning with deep CNN;

- Few-shot/zero-shot learning with transfer learning;

- Few-shot/zero-shot learning with noisy data;

- Few-shot learning with actively data annotation (active learning);

- Few-shot/zero-shot learning for fine-grained object recognition;

- Few-shot/zero-shot learning for anomaly detection;

- Few-shot/zero-shot learning for visual feature extraction;

- Weakly supervised learning and its applications;

- Attribute learning and its applications;

- Leaning to hash and its applications;

- Applications in object recognition and visual understanding with few-shot learning;

Important Dates

- Manuscript submission deadline: 31 August 2017

- Review decision: 30 Nov 2017

- Submission of final revised manuscript due: 31 Dec 2017

- Publication of special issue: TBD

Submission Procedure

Submitted papers should present original, unpublished work, relevant to one of the topics of the Special Issue. All submitted papers will be evaluated on the basis of relevance, significance of contribution, technical quality, scholarship, and quality of presentation, by at least three independent reviewers. It is the policy of the journal that no submission, or substantially overlapping submission, be published or be under review at another journal or conference at any time during the review process.

Manuscripts should be submitted online at http://mtap.editorialmanager.com choosing "1079 – Few-Shot Learning for MM Content Understanding" as article type, no later than 31 August, 2017. All the papers will be peer-reviewed following the MTAP reviewing procedures.

Guest Editors

Dr. Guiguang Ding (Lead)

Tsinghua University, China

E-mail: dinggg@tsinghua.edu.cn

Dr. Jungong Han

Northumbria University at Newcastle, UK

E-mail: jungonghan77@gmail.com

Dr. Eric Pauwels

Centrum Wiskunde & Informatica (CWI), Netherlands

E-mail: eric.pauwels@cwi.nl