Special Issue Proposal for Pattern Recognition Special Issue on
Open-Set Big Data Understanding: Theory and Applications

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Aim and Scopes

Living in the era of big data, we have witnessed a dramatic growth of heterogeneous data, such as text, image, video, audio, graphics, and time series, emerging from surveillance, social media, wearable devices, IoT, and so on. The hybrid big data has posed new challenges in designing effective algorithms and generalized frameworks to meet the heterogeneous computing requirements. Although significant improvements have been achieved in diverse key areas, such as object detection, image classification, action recognition, event modeling, and scene parsing, a tremendous performance gap exists between the theoretical & laboratory evaluations and under real-world application scenarios.

The key drawback is the inconsistency of class setting and data conditions between the training dataset and application scenario. In particular, this is due to two largely ignored problems: (1) open-view problem: the trained model is required to recognise a familiar class under drastically different environment; and (2) open-set problem: the trained model is required to reject an imposter from claiming the identity of one of the known class. In fact, it is not feasible to assume all potential classes can be enumerated during the training phase. Take action recognition as an example, how to deploy a lab-trained action recognition model with limited video samples to real-world surveillance environment without camera-specific re-tuning stage. To address this challenge, it is necessary to develop new theories and methods that are in contrast to the traditional frameworks which assume all classes are known during the training phase, and the test dataset exhibit similar conditions as the training dataset.

This special issue serves as a forum to bring together active researchers all over the world to share their recent advances in this exciting area. We solicit original contributions that: (1) present state-of- the-art theories and novel application scenarios related to open-set big data understanding; (2) develop novel methods and applications; (3) survey the recent progress in this area; and (4) establish benchmark datasets.

Original papers to survey the recent progress in this exciting area and highlight potential solutions to common challenging problems are also welcome. The topics include, but not limited to:

- Theory
    - Data-driven feature learning
    - Cross-domain feature embedding
    - Zero-shot / One-shot learning
    - Transfer learning
    - Multi-task learning
    - Weakly supervised learning
    - Deep learning

- Applications
    - Object detection / classification
    - Human action recognition
    - Video event identification
    - Multimedia retrieval and search
    - Name entity recognition
    - Question answering system
    - Biomedical image analysis
    - Novel dataset and benchmark for open domain big data analytics

Important Dates (Tentative)

- Full paper submission deadline: 01 December 2017
- First review decision: 01 March 2018
- Revised paper due: 15 April 2018
- Final review decision: 15 May 2018
- Publication of the special Issue: 2018