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ACM Transactions on Multimedia Computing, Communications, and Applications

Special Issue on Fine-Grained Visual Recognition and re-Identification

The ubiquitous surveillance cameras are generating huge amount of videos. Automatic video content analysis and recognition are thus desirable for effective utilization of those data. Fine-Grained Visual Recognition and Re-Identification (FGVRID) aims to accurately identify visual objects and match re-appearing targets, e.g., persons and vehicles from a large set of images and videos. It has the potential to offer an unprecedented possibility for intelligent video processing and analysis, as well as to explore the promising applications on public security.

FGVRID is not a traditional search or classification task due to its goal of accurately identifying visual objects. Compared with traditional search and classification tasks, FGVRID has the following properties, making it a more challenging vision task. First, proper object detection algorithms should be designed to locate objects, their local parts, or meaningful spatial contexts in videos before proceeding to the identification step. Second, the visual appearance of an object is easily affected by many factors like viewpoint changes, illumination changes, occlusions, and camera parameter differences, etc. Third, annotating the fine-grained identity or category cues is expensive and time consuming. Finally, to cope with the large-scale visual data, scalable indexing or feature coding algorithms should be designed to ensure the online recognition efficiency.

In recent years, FGVRID researches like person re-identification, vehicle re-identification, multi-object multi-camera tracking, fine grained image classification, etc., has exhibited impressive performance thanks to the development of Convolutional Neural Networks (CNN). Besides that, novel neural networks architectures like brain inspired networks and spiking neural networks have started to exhibit advantages in applications of fast moving object detection and recognition. Those new research efforts have potential to be applied in FGVRID. This special issue wishes to bring together researchers from FGVRID and machine learning communities, show their latest research works and ideas, and propose novel research problems, ideas, and push current research toward real applications. Specifically, the covered topics include, but are not limited to:

- Person and vehicle re-identification
- Object segmentation and tracking
- Fine-grained visual classification
- Unsupervised, semi-supervised, and transfer learning algorithms
- Robust object counting, detection and tracking in the wild
- Efficient and effective video representations

- Object parsing and layout estimation
- Large-scale indexing, feature coding, and retrieval algorithms
- Brain inspired networks and spiking neural networks
- Visual recognition based on new vision sensors

Tutorial or overview papers, other FGVRID papers outside the areas listed above but related to the overall scope of the special issue are also welcome. Prospective authors can contact the Guest Editors to ascertain interest on such topics.

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