

Preface

Scene understanding is a key issue in computer vision, which recognizes scene image semantic contents and their corresponding contexts. As one of the most challenging scene understanding problems, scene classification considers the semantic concepts in a scene image and classifies scene images into their associated scene categories. Meanwhile, geometric labeling focuses on the scene layouts, where image pixels are labeled and grouped into different geometrically functional classes. It is also an essential step before any further scene understanding tasks such as recognition, annotation, and retrieval, and its results affect the performance of these applications significantly. With rapidly increasing visual data in volume, variety and velocity, traditional approaches toward solutions of the two problems are not adequate in addressing the new challenges. In this brief, we attempt to provide more accurate and scalable solutions for several scene classification and geometric labeling problems: indoor/outdoor classification, outdoor scene classification, and scene layout estimation. This brief will first give an overview on the state-of-the-art algorithms for each problem. Then, it will introduce several techniques for corresponding solutions. They are Expert Decisions Fusion (EDF), Coarse Semantic Segmentation (CSS) and Global-attributes Assisted Labeling (GAL). Extensive experimental results with comparative analysis will be provided for each approaches. Finally, we will conclude and highlight the contributions of these approaches to big visual data analysis.

Big Visual Data Analysis

Scene Classification and Geometric Labeling

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