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Opinion

Object recognition and segmentation by a fragment-based hierarchy

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How do we learn to recognize visual categories, such as dogs and cats? Somehow, the brain uses limited variable examples to extract the essential characteristics of new visual categories. Here, I describe an approach to category learning and recognition that is based on recent computational advances. In this approach, objects are represented by a hierarchy of fragments that are extracted during learning from observed examples. The fragments are class-specific features and are selected to deliver a high amount of information for categorization. The same fragments hierarchy is then used for general categorization, individual object recognition and object-parts identification. Recognition is also combined with object segmentation, using stored fragments, to provide a top-down process that delineates object boundaries in complex cluttered scenes. The approach is computationally effective and provides a possible framework for categorization, recognition and segmentation in human vision.



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