

## Editorial

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### Image retrieval

The performance and price of microcomputer hardware, software, and storage have progressed to the point where well reproduced pictures—that is images of people or scenes—can be handled on small machines. By “well reproduced” I mean printed in good colour with an almost invisible dot structure, and by “handled” I mean input, modified, stored, etc.

There is no shortage of suppliers urging us to buy colour scanners, image-capture boards, processing and compressing software etc., in order to get into the “imaging” business.

I did not add the words “and retrieved” to the first paragraph above because there is considerable doubt about that function. Once anything disappears into a computer it must have a label if it is to be retrieved because visible objects like pink folders, shelves, and even piles on the desk are no longer available—so how do you label (index) an image?

Thousands of articles have been published about images but only a handful about image retrieval. By examining citation connections I discovered that “imaging” people don’t talk to “classification” people. As a matter of fact classification people don’t talk much between themselves about picture classification.

The bigger the collection of pictures and the more diverse their contents the better the indexing must be in order to select one. The usual method is to attach descriptive words to a stored picture and retrieve on the words. However people’s perception of a picture’s contents varies far more than their interpretation of word meanings. Ask three people interested in history, transport, and architecture respectively, to describe a photograph of a Victorian street scene. People of different cultural backgrounds interpret pictures of each other’s culture even more differently.

If people cannot agree what a picture is about how can they index it? Some work is being done on this problem but nobody seems to have appreciated that schemes proposed will need to be tested and compared for performance, but how? Cleverdon used a large collection of aeronautical documents for his classic work on word-index testing. Is it feasible to assemble a “representative” image collection in order to compare picture indexing performance?

Unfortunately the automatic recognition of a picture's contents by pattern examination or matching cannot yet be accomplished and is unlikely to become available for many years.

The "Visual Thesaurus" may be a way out of these problems. Don't use words at all. Use computer-aided human-matching of query pictures against collection pictures in order to select a picture from a collection. I cannot elaborate in this editorial but the idea seems to have something going for it. I hope an article about this intriguing topic will soon appear in these pages.

*A.E. Cawkell*