

```
begin real t, t1, Tem;
    r := n;  t := V;  t1 := 0;
RECURRENCE: r := r - 2;
    if r < 0 then go to FINISH;
    Tem := t;  t := t × C2a - t1 + V;  t1 := Tem;
    go to RECURRENCE;
FINISH: if r = - 2 then begin c := t - t1 × C2;
    s := t1 × S2 end
    else begin c := (t - t1) × C1;
    s := (t + t1) × S1 end
end Fourier
```

### CPL program

```
function Fourier [vector V, index n] = result of
    §1 real t, t' = V[n], 0;  index r = n - 2
    while r ≥ 0 do
        t, t', r := C2't - t' + V[r], t, r - 2
    result := (r = - 2) → (t - t'C2, t'S2),
        ((t - t') C1, (t + t')S1) §1
    where C2', C2, S2, C1, S1 = 2 Cos [2θ], Cos [2θ],
        Sin [2θ], Cos [θ], Sin [θ]
```

### References

- BARRON, D. W., BUXTON, J. N., HARTLEY, D. F., NIXON, E., and STRACHEY, C. (1963). "The Main Features of CPL," *The Computer Journal*, Vol. 6, p. 134.
- WATT, J. M. (1959). "A Note on the Evaluation of Trigonometric Series," *The Computer Journal*, Vol. 1, p. 162.

## Book Review

*Textbook on Mechanized Information Retrieval*, by ALLEN KENT, 1962. (New York and London: Interscience Publishers.)

This book contains a great deal of carefully presented information about methods and machines which have been used for mechanized information retrieval. The illustrations are copious and detailed (sometimes a bit too much so—for example, there is a picture consisting of a black rectangle 6 cm by 1 cm labelled "magnetic tape") and the coverage very complete. Dr. Kent's book is thus to be welcomed as a reference on the mechanical side which should be very useful to anyone concerned with shuffling and selecting data on a scale below the computer.

Beyond this, however, the book has a fundamental defect. On reading it as a first introduction one would be surprised to discover afterwards that rather little genuine mechanized information retrieval goes on. On careful rereading some of the unsolved problems might show up, but they are given very little prominence in the discussion. This is a most difficult point to pin down; just when it appears that some topic is ill treated, some very apposite remark or illuminating example turns up. However, the general impression remains. This may be illustrated by the discussion of classification, pages 97–100. Dr. Kent starts off with some extremely sound points, mentioning the basis of classifying in assessment of similarity and difference, and the essentially relative nature of any particular classification. He then goes on to make a curious distinction between "rigid" (one-dimensional) and 'non-rigid' (multi-dimensional) classifications, with as much explanation and discussion as I have just given the topic, and exemplifies the former in  $\frac{3}{4}$  page and the latter in  $\frac{1}{2}$ . This does not amount to very much and gives no guidance on which to choose the one or the other. One would never guess that library classification is the subject of enormous efforts and contentions, or that it is anything other than a trick one learns like using a razor.

It would have been captious to produce this point if there were only one example, but the same tendency goes through all the chapters except that on hardware description. The book discusses document analysis techniques, codes and notations, and the linguistic aspects of retrieval. In all of these we start off well and stop just before the point. It is all the odder because Dr. Kent certainly knows a great deal more than he says. Admittedly the book is a textbook, and so the content has to be streamlined a bit; however, it seems rather unbalanced to give two pages to details of pushing needles through edge-notched cards,  $\frac{1}{4}$  page to "search by logical difference," i.e. on the absence of a certain label, which is a very chancy procedure if done in a naïve way, and 0 pages on the difference between Uniterms and descriptors, without which many retrieval experiments can hardly even be talked about.

The real trouble is that it is too early to write a textbook on information retrieval. It is rather as if one were to write a textbook on the design of universally applicable programming languages, or on the implementation of nanosecond computers. For, in writing the book as a textbook, Dr. Kent has omitted a great deal of material on the grounds that it is not part of the conventional wisdom, and there just is not enough left that is. So we have no discussions of what happens when a search requirement is not exactly fulfilled, and of how we judge the relevance of the index coding of a document to an encoded request when they do not quite match; nor is there mention of the crucial problem of "recycling time"—how long it takes for a requester to have a revised request processed, which he has formulated after looking at an initially unsatisfactory output. In any adequate retrieval system there must be some built-in answers to these problems, and it may well be these, rather than the aspects discussed in the book, which determine whether a system is useful or not.

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